BASELINE SURVEY OF THE HONDURAN SMALL FARMER TITLING PROJECT:

Descriptive Analysis of the 1985 Sample

prepared by

Edgar G. Nesman, University of South Florida
Mitchell A. Seligson, University of Illinois at Chicago

under

Contract no. 522-0173

with

Land Tenure Center, University of Wisconsin-Madison

in association with

University of South Florida
University of Illinois at Chicago

as submitted to

U.S. Agency for International Development
Tegucigalpa, Honduras

15 November 1985

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ACKNOWLEDGMENTS

This study is probably among the more complex, if not the most complex, ever undertaken by USAID/Honduras. It involves a multiyear project with a complex research design and the collaboration of a host of individuals and institutions. Titling projects have been undertaken in a number of nations in recent years, but the Honduran example is the first to utilize a careful "before-and-after" study design involving a "moving baseline" and selected control groups. The goal of such a study is to attempt to provide a more definitive assessment than had been possible before of the impact of land titling on social and economic development. To carry out such a project is expensive and time consuming. But, perhaps even more important, detailed studies such as this not only examine positive impacts but also uncover flaws and problems created by the titling effort, and therefore they may involve a certain degree of risk for the donors. The mere fact that such a study has been undertaken by USAID/Honduras is testament to the importance that the mission has placed on the Small Farmer Titling Project and a clear indication of its willingness to measure the impacts of the project, whatever they may be. As researchers, we have no doubt that if similar studies were to be conducted as a regular part of development projects undertaken by USAID and other international donors, the quality of development projects would be rapidly and markedly improved and the developmental payoffs considerable.

We should especially like to acknowledge the assistance and guidance of Gordon Straub, William Goodwin, Peter Lara, Barry Lennon, and Jack Jordan, all of USAID/Honduras.

But this study would not have been possible if it were not for the extensive collaboration of the Instituto Nacional Agrario (INA). INA has been not a mere passive observer of this study but has taken an active role, assisting the project with its full collaboration. INA has been involved in every step of the process: from its initial design in 1983, through the first baseline study, and now through this second baseline study. It has painstakingly reviewed the various versions of the questionnaires, helped select and train the interviewers, participated in workshops reviewing the results of the first baseline study, and made available to us the field maps necessary for sample selection. It would not be possible to name all of those in INA who have assisted with this research effort, but we cannot fail to thank the present and former Executive Directors of INA, Lic. Gustavo Alfaro and Ubodoro Arriaga, and the present and former Directors of the Small Farmer Titling Project, Dr. Micheletti and Ing. Emil Falck; Lic. Raul Fuentes and Lic. Roger Lopez assisted in promotional aspects and provided support in ways too numerous to mention.

We wish to especially acknowledge the assistance of Fidelina Robles, former director of the field promotion teams, for helping to select and train the interviewers and for helping to supervise one of the interview teams.

The field interviews for this project were carried out ably by an outstanding group of young and enthusiastic Hondurans under the direction of Alex Coles, of the National University of Costa Rica at Heredia. Their hard work

and dedication, living under very difficult field conditions is hereby acknowledged by naming them in this report: Mario Munguia Ordonez, Marlem Elizabeth Sorto, Gloria Elizabeth Castellon L., Alba Luz Rosa Molina, Ethel Corea Alvarado, Elva Pacheco H., Ada Esperanza Gonzalez, Guillermo Alonzo Caballero R., Jose Francisco Izaguirre M., Francisco Antonio Padilla, Gloria Mercedes Licona, Freddy Rolando Donaire, Francisco Caracciole V., Eleris Francisco Valenzuela F., Raul Zepeda Pastrana, Mario Omar Rodriguez, and Cristobal Vasquez. We thank them all.

Although we have depended upon all of those named above, and others, the responsibility for the data presented and the conclusions drawn rest with the authors of this report and not with any cooperating individuals or institutions. This research was supported by USAID under a cooperative agreement with the Land Tenure Center of the University of Wisconsin with subcontracts to the University of South Florida and the University of Illinois at Chicago. At the University of South Florida, special acknowledgment is made of the assistance of Dr. Raymond Wheeler and Ms. Peggy Evans for their part in the computer analysis.

CHAPTER 1: INTRODUCTION

This report is the third in a continuing series of studies designed to measure the impact of the Honduran Small Farmer Titling Project. The first study,[1] dated 1 October 1983, presented the overall design for the five-year study. Interested readers should refer to that report for an overall picture of the project. Suffice it to note here that the design called for two baseline surveys, the first to be conducted in July 1983 in selected areas of the Department of Santa Barbara and the second to be conducted in July 1984 in an area later determined as the Department of Comayagua. The first study was indeed conducted as programmed, and the descriptive results were provided in a second report.[2] That study has subsequently been translated into Spanish, and the results have been presented in a series of meetings and workshops held in Tegucigalpa and at the Land Tenure Center in Madison, Wisconsin.

The second baseline study was postponed until March 1985 in order to have available the completed lists of potential beneficiaries of the titling program in the second baseline area.

The present study has been conducted under the general supervision of the Land Tenure Center (LTC) of the University of Wisconsin. In February 1985, the authors of this report arrived in Honduras to conduct the second baseline study. As a first activity, a workshop was held on 19 February 1985 and was attended by 35 representatives from INA, Recursos Naturales, IHCAFE, and other agencies of the Honduran government involved in titling. In addition, representatives of USAID were in attendance as well as consultants from the United Nations Food and Agriculture Organization. At the workshop, some of the main results of the first baseline were presented, and suggestions were made for improving the second baseline study. Those suggestions were added to ones that had been made at meetings held at the LTC in Madison, and a revised questionnaire was prepared. The questionnaire was reviewed in detail by INA, and the final version was reproduced for use in the field.

Sample Design

As in the first baseline study, two samples were drawn. The first was a sample of those who were eligible to receive title under the program (i.e., the treatment group), and the second was a control group of those who were not

---

1. See Seligson et al. 1983.

2. See Jones et al. 1984.

in areas to be affected by the titling project. The sample for both baseline studies was designed to produce ±5 percent sampling error for the treatment group and a ±7.5 percent sampling error for the control group.[3] This level of sampling error was based upon considerations of cost and of accuracy of results.

In contrast to many rural surveys that base their sample frames on area maps in which the individuals respondents (i.e., sampling elements) are not identified for the entire universe, the baseline surveys in the treatment areas benefited from a sample frame in which 100 percent of the units were identified and located. Thus this study used as its sample frame the cadastral maps and associated lists of landowners prepared as part of the titling project. Hence, for this study, all of the farm units and the names of the owners of those units were identified. As a result, an extremely accurate sample was drawn.[4]

To the extent possible, the Comayagua sample design mirrored the one used in Santa Barbara. Some variation, however, proved desirable. The survey of the Santa Barbara area was limited to the four *municipios* that had been mapped and enumerated by the time the fieldwork for the project had begun. In order to increase the efficiency of that sample, it was stratified by *municipio*.[5] Within each *municipio*, individual plots included in the survey were chosen by using a systematic selection of elements.[6]

A much larger proportion of Comayagua had been mapped and enumerated by the time this study began (see figure 1.A). On the positive side, that meant that the study could cover a wider range of climates, terrain, and crops than had been possible in the Santa Barbara study; but, on the negative side, it implied additional resource expenditures in order to reach this wider region

---

3. As explained in Seligson et al. (1983:18-24), the sampling error goal was selected based upon a conservative 50:50 binomial split. The error for such a split would represent the highest expected sampling error; on splits of 70:30, for example, the error would drop to ±3.7 percent in the treatment group and ±5.7 percent in the control group.

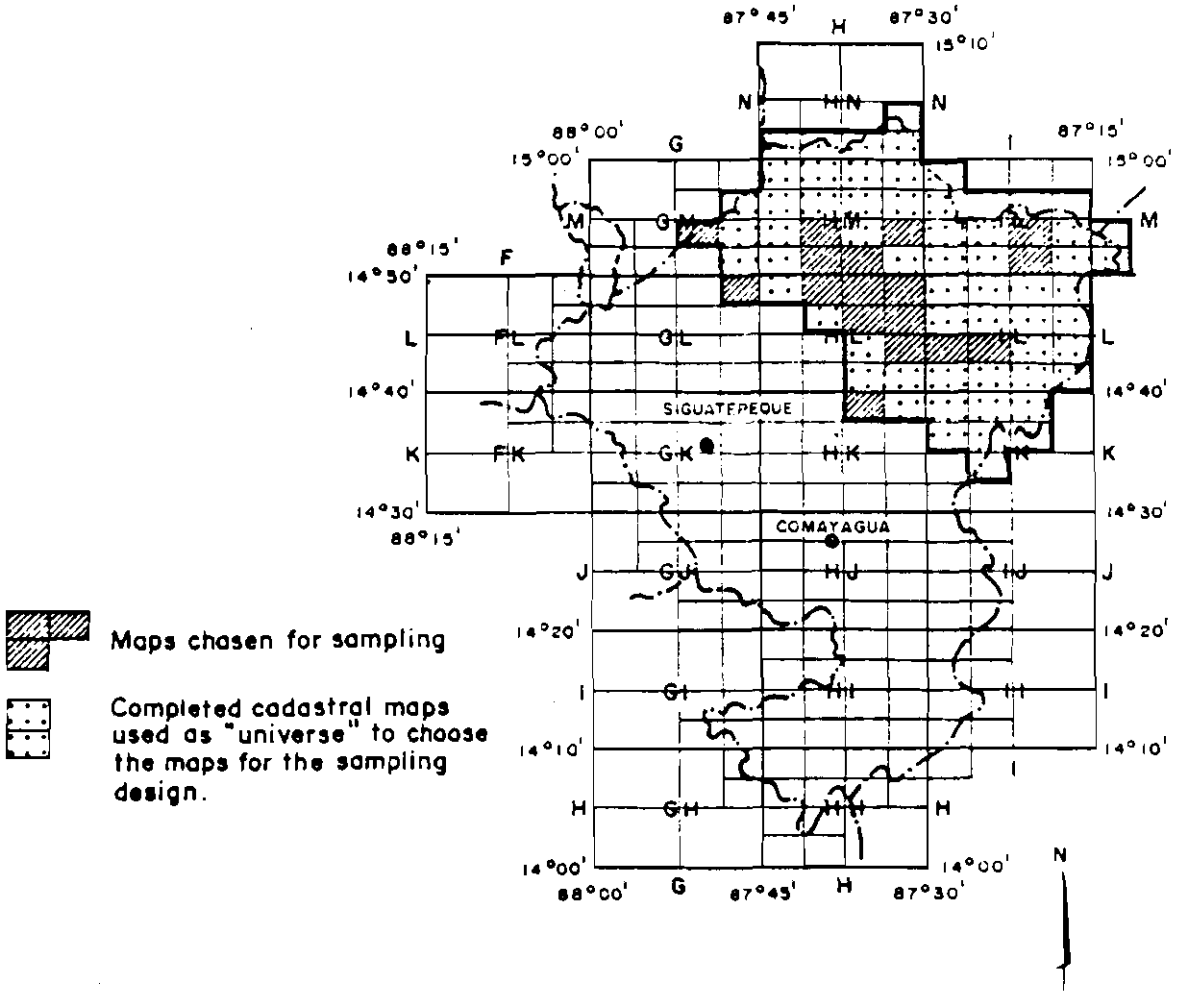
4. The maps and lists for this phase of the baseline study were more complete than those available to the Santa Barbara phase. See Seligson et al. (1983:51-55) for some of the limitations to some of the maps and lists for portions of the Santa Barbara area. These problems are confined largely to the first set of maps prepared in the pilot area of the titling project and did not extend to Comayagua.

5. Actually, disproportional stratified sampling was employed because of the greatly varying size of the four *municipios*.

6. This procedure involves selecting every k^{th} element from a list of the entire population once a random start has been selected. Such a procedure virtually replicates the level of precision obtained by simple random sampling when there are no periodic trends in population lists.

FIGURE 1.A

Completed Cadastral Maps, Comayagua, February 1985



COMPLETED CADASTRAL MAPS ON THE DEPARTMENT OF COMAYAGUA, FEB./85

Based on: Information given by INA. - Feb./85

DRAWN BY F HODGSON

with the survey.[7] Experience in Santa Barbara, furthermore, had shown that considerable cost was incurred in locating the respondents because of their wide dispersion resulting from the systematic selection process. Therefore, it was decided that the Comayagua sample would be clustered in design so as to help reduce travel time between interviews and still permit widespread coverage of the department.

Cluster sampling involves selecting a group of population elements rather than a single element and is used when it is considered too expensive or too inefficient to employ individual selection of elements. The reduced cost per interview, however, is counteracted by an increase in element variance produced by the greater homogeneity of elements found within each cluster.[8] Except in unusual cases, the increase in variance is generally very small and hence has only a slight impact on the overall accuracy of the results. Furthermore, the impact of clustering can be reduced significantly by selecting the clusters with stratification, and hence that procedure was followed in the present study. Indeed, the gains in accuracy produced by stratifying a clustered sample are greater than those produced from an unclustered sample, and therefore the overall accuracy of the Comayagua sample may well be almost identical to that of Santa Barbara.[9] The cluster size selected for this study was based upon the number of interviews that two interviewers could be expected to carry out on an average workday. That number was 10 and became the cluster size for the study.

The available cadastral maps for Comayagua containing 10,820 parcels constituted the sample frame, from which a sample of 800 parcels was selected (see figure 1.A). It was estimated that 75 percent of these selections would produce interviews to yield a total sample for the treatment group of approximately 600, the sample size necessary to achieve the ±5 percent sampling error.

The maps were arranged into three groups based upon the number of parcels each map contained. Maps with fewer than 25 parcels were discarded entirely because the map contained fewer parcels than could be interviewed by a survey brigade in a single day and thus made them highly cost-ineffective. Of those 56 that were left, all maps that individually contained at least 5 percent of the entire population (of 540 parcels) were selected. It was decided that these would be automatically selected ("self-representing units"), much as the largest cities in the United States (e.g., New York, Los Angeles) are automatically selected in most national samples, because to exclude them on the basis

---

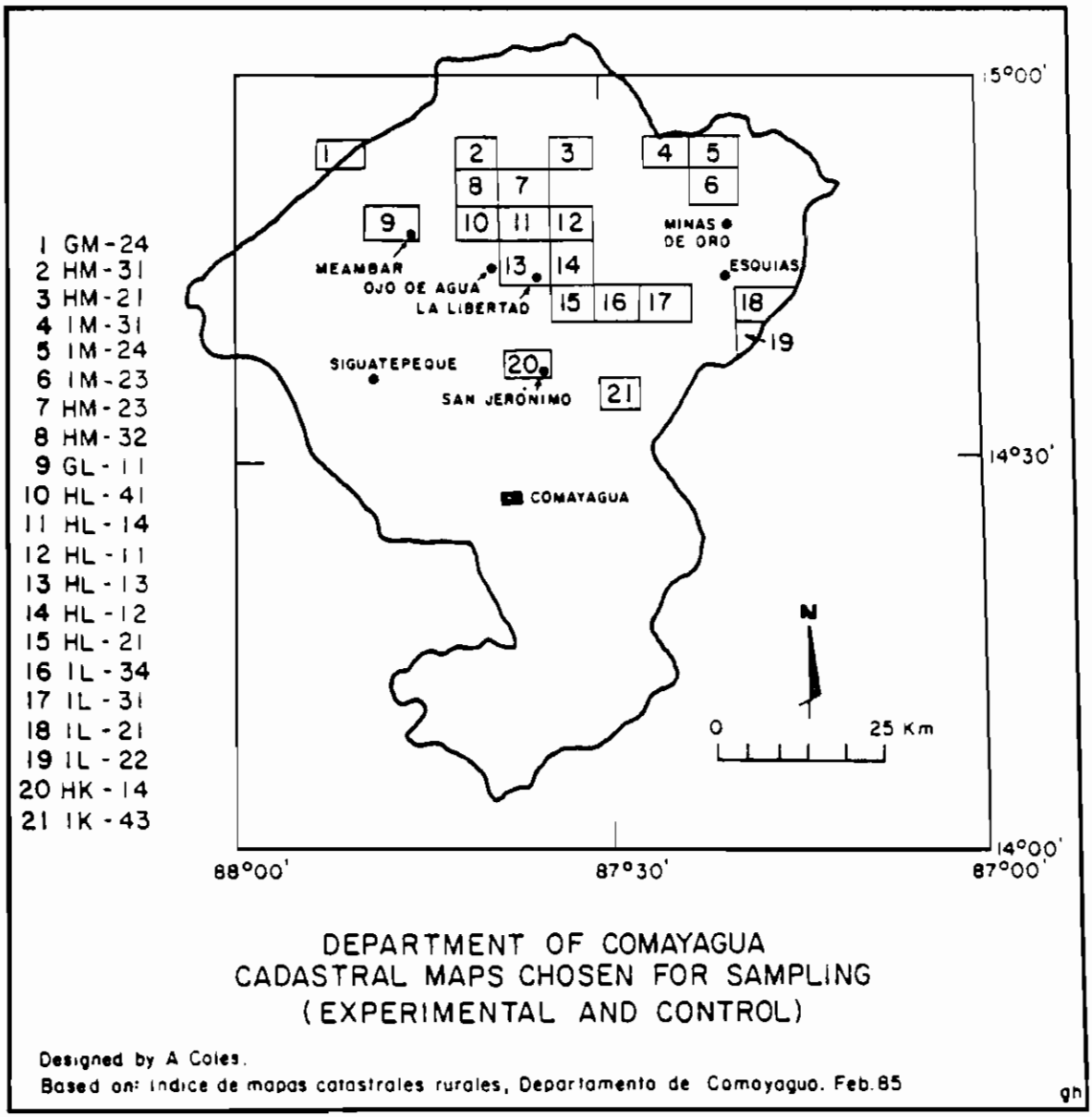
7. In Santa Barbara a total of 84,826 ha. of land was in farms in these four *municipios* according to the 1974 agricultural census, whereas the total area in farms in Comayagua was 125,212 ha. It should be noted that all of Santa Barbara consisted of 265,937 ha. in farms in 1974.

8. Technically, this is referred to as "intraclass correlation," and its magnitude is designated by the coefficient *rho*.

9. For evidence of this assertion see Kish (1967:164-66).

FIGURE 1.8

Cadastral Maps Chosen for Sampling



of random selection would be to exclude too large a proportion of the total population. This procedure produced 4 maps which collectively contained 2,857 parcels, or 26.4 percent of the sample universe. Using "probability proportional to size" (PPS) sampling techniques, a total of 22 clusters were selected from these 4 maps. That is, the number of clusters selected on a given map was in the same proportion to the number of parcels that map contained as to the total number of parcels in all 4 maps (26.4%). Using a random start on each map, a parcel number was selected and located. The next 9 contiguous parcels, in ascending order, were selected and comprised the first cluster.[10] The remaining clusters on a given map were then chosen by using systematic selection in proportion to the total number of clusters designated for that map. Table 1.1 lists the map numbers selected and sample size produced, and figure 1.8 shows their location in Comayagua.

The remaining 52 maps contained a total of 7,963 parcels and were divided into 2 groups (i.e., sample strata). The first group contained anywhere from 200 parcels to a maximum of 539 parcels and consisted of 16 maps containing 4,637 parcels, or 43 percent of the universe. A total of 4 maps were selected at random from these 16, and it was found that these contained 1,292 parcels. A sample was then drawn from these 4 maps by selecting clusters of 10 each, for a total of 36 clusters containing 360 parcels. The last group was selected from the remaining 36 maps and contained 30.6 percent of the universe of plots. These were the maps with the largest average parcel size (i.e., they had the fewest parcels per map). From these maps a total of 9 were selected at random (see table 1.1 and figure 1.8), and it was found that they contained 941 parcels. From these 9 maps, 23 clusters of 10 plots each were selected to yield 29 percent of the entire sample.

A summary of the sample design is contained in table 1.1. There it is seen that the sample frame was comprised of 17 maps which collectively contained 5,090 parcels, or 47 percent of the universe of parcels available in Comayagua. Coverage of the sample, therefore, was quite broad and representative of the universe.

Selection of the sample for the control group was a more complex task. The goal of the control-group sample design was to select a sample that matched as closely as possible the characteristics of the treatment group but differed only insofar as they would not receive title. Ideally, these parcels would be selected from within the same geographic area as the treatment group, but in Santa Barbara that was not possible because virtually all the land in the four *municipios* selected was going to be titled. As a result, the control group was selected from a nearby province (Ocotepeque). In the Comayagua study, a review of the cadastral maps revealed a number of private land areas which, by definition, would not be titled under this project. Nearly all of the private land areas that had been enumerated in the cadastral lists were located in the *municipio* of Las Minas de Oro of Comayagua.

---

10. If the random start occurred within 10 units of the highest parcel number, then the next 9 lower parcels were selected.

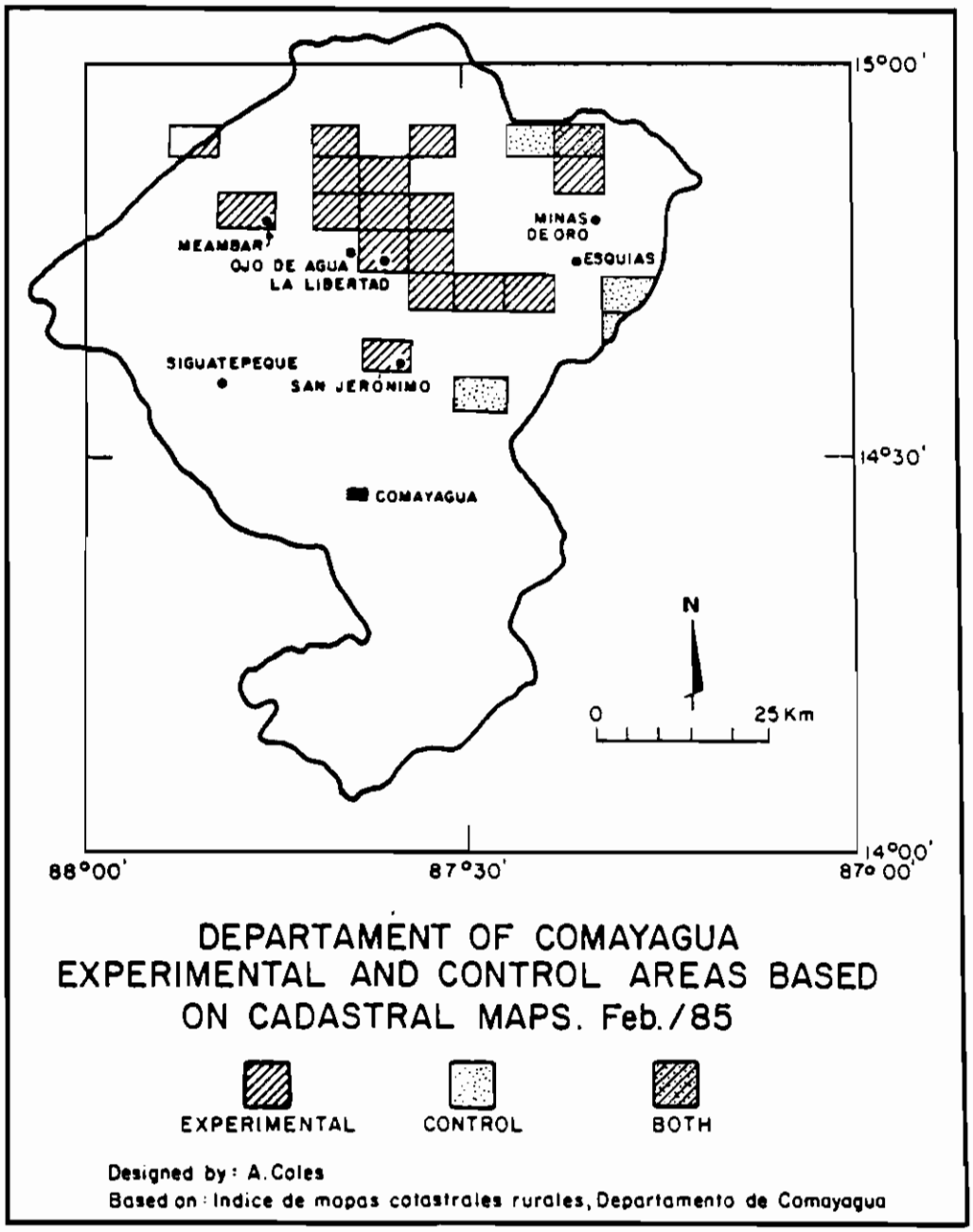
TABLE 1.1

Sample Frame for Treatment Group, Comayagua, 1985

MAP	# OF PARCELS	% OF STRATUM	# OF CLUSTERS	# OF INTERVIEWS
Stratum 1: Small Parcels (540+ per map)				
HL-12	947	33	7	70
HM-23	634	22	5	50
HL-21	638	22	5	50
HL-13	638	22	5	50
Subtotal	2,857	100	22	220
Stratum 2: Medium Parcels (200-539 per map)				
HL-14	204	16	6	60
HL-11	525	41	14	140
IM-23	270	21	8	80
IM-24	293	23	8	80
Subtotal	1,292	100	36	360
Stratum 3: Large Parcels (25-199 per map)				
GL-11	162	17	4	40
GM-24	31	3	1	10
HK-14	74	8	2	20
HL-41	121	13	3	30
HM-31	122	13	3	30
HM-32	121	13	3	30
HM-21	42	4	1	10
IL-31	151	16	3	30
IL-34	117	12	3	30
Subtotal	941	100	23	230
Total	5,090		81	810

FIGURE 1.C

Experimental and Control Areas Based on Cadastral Maps



The private areas, particularly those called "*municipios privados*," as mapped by the Catastro Nacional, appeared to be composed of small plots similar in size and land use to the national and ejidal lands to be titled. The final selection of such areas for the control sample was conditioned by information from the Catastro Nacional regarding the nonpredominance of forest reserve land. We did not wish to select as a control area sectors that were largely forest reserve. This led to the selection of five maps, one of which (*IM-24*) was also selected for the treatment sample. Finally, the cadastral lists were examined, and all plots that had any of the land titled were discarded. The purpose of this step was to try to guarantee that the control group would be untitled so as to allow appropriate comparison with the titling area. The details of that survey selection, with cluster size smaller than for the treatment area because of the smaller number of parcels available, is presented in table 1.2. The location of the control areas in relation to the titling areas is presented in figure 1.C, and an overall view of the sample location is given in figure 1.D.

TABLE 1.2

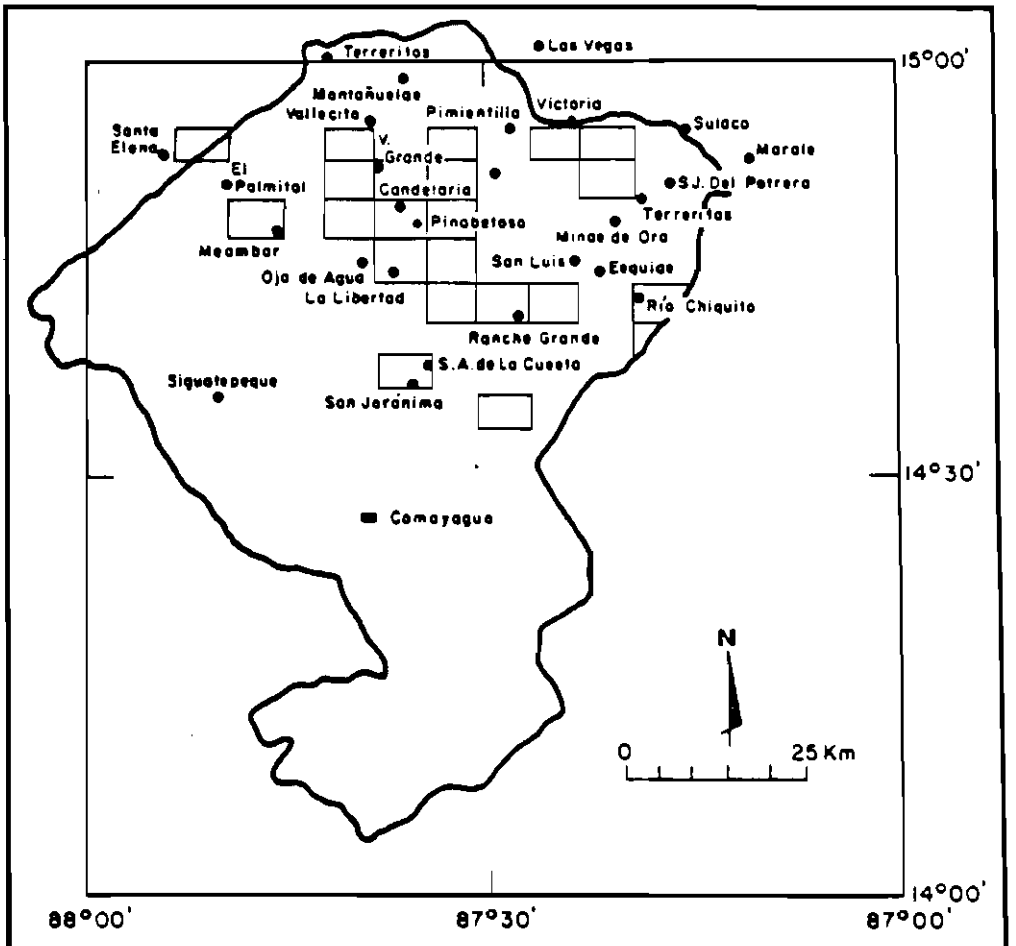
Control Sample, Private Lands, Minas de Oro, Comayagua

MAP	# OF PARCELS	% OF STRATUM	# OF CLUSTERS	# OF INTERVIEWS
IK-43	163	27	9	45
IL-21	82	14	3	15
IL-22	89	15	3	15
IM-24	105	18	6	30
IM-31	159	27	9	45
Total	598	100.0	30	150

Some concern was raised about the possible contamination effect of the titling area on the untitled land in Comayagua; it was also not clear if the control area would contain a sufficient number of coffee farms to be comparable with the experimental area (see figure 1.E). Since, as noted in the first report in this series (see Seligson et al. 1983), improving coffee farms was a major goal of the titling project, it was decided that a subsample of coffee farms would be added in neighboring Yoro Province. This sample was constructed by obtaining lists of small-farmer coffee associations in Yoro from APROCAFE. Two associations were then located in Yoro, one in Las Vegas de la Victoria and the other in San Antonio de Sulaco, and the membership lists were obtained. A systematic sample of farms was selected from these lists. The Las Vegas group contained 279 members and a total of 60 names was selected, while the San Antonio group contained 98 farms, of which 50 were selected.

FIGURE 1.D

Location of Interviewees

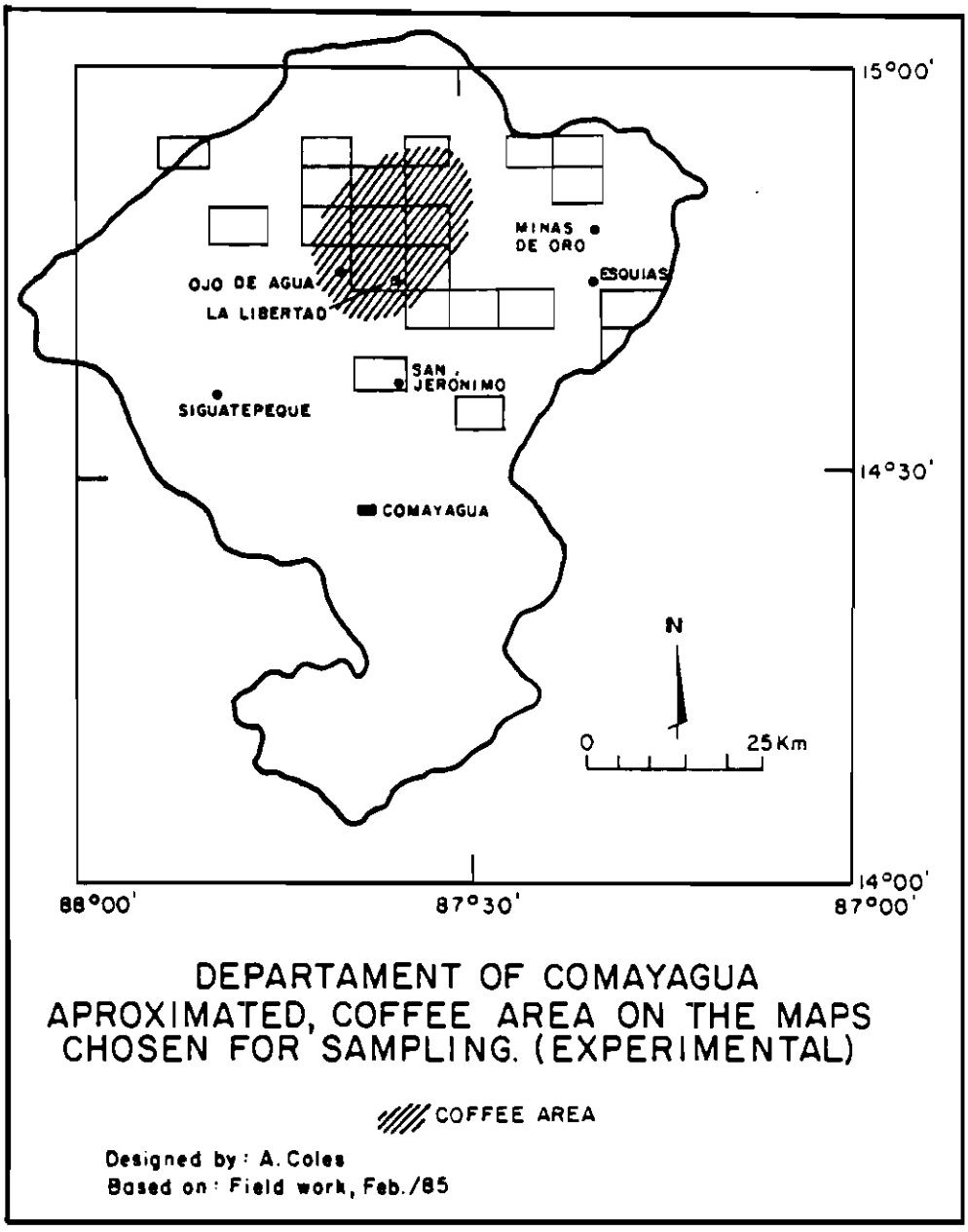


DEPARTAMENT OF COMAYAGUA
LOCATION OF MOST OF THE INTERVIEWEES WHO HELD PARCELS IN THE MAPS CHOSEN FOR SAMPLING

Designed by: A. Coles
Based on: Indice de mapas catastrales rurales, Departamento de Camayagua Feb./85.

FIGURE 1.E

Coffee Area in Sampling Zone



Questionnaire Design

The questionnaire used for this second wave of baseline studies was modeled very closely on that used in the first wave. In order to allow maximum comparability of the various data sets, such a strategy was required. The logic of the design of that questionnaire is contained in Seligson et al. (1983) and need not be repeated here.

Experience in Santa Barbara did indicate a few areas of the questionnaire that could be improved by the addition or rewording of some items.[11] These changes are as follows (refer to variable numbers in the questionnaire located in an appendix to the report):

A22B. The form of document used for titling purposes was noted.

A100-A102. In order to facilitate the process of relocating the respondent owning the selected parcel, information on the residential location of the respondent was coded on each questionnaire.

D7A. Clarification of the form in which coffee was sold (*uva* or *pergamino*) was needed in order to help reduce any confusion regarding unit prices received.

D4A-D6A, D5A-D61A, D6A-D62A. Since producers often stored or sold their crop in units different from those that they used to report production, a code was added to define the unit given by the producer.

D64-D67. A summary series of items obtained data on the proportion of the sample parcel under cultivation in the year of the interview.

F1A. Clarification of source of inheritance of land became necessary.

F2A. An explicit question on size of sampled parcel was included so as to allow direct comparison with cadastral data.

F3 and *F3A*. In this version of the questionnaire, rather than asking if the parcel was titled, the respondent was asked: "Do you have a document for this parcel?" If the answer was yes, question *F3A* followed, asking for the type of document that was held.

F4. This question was reworded to refer to the time that the specified document was held rather than the time the title was held as in original questionnaire. (Note that a printing error on the questionnaires labeled *F4* as *F3B*. In the computerized data file, however, this error is corrected.)

---

11. In order to maintain direct comparability of the various data sets, the additional items were given new variable names. None of the original names were changed. Hence, if a new variable were inserted after variable *A22*, the new variable was called *A22B*. Variable *A22* remained unchanged.

F5A-F5H. This new series first requested information on the number of additional parcels held (*F5A*) and then asked for the specific size of each. These items were included because the cadastral data do not always indicate all other parcels owed by a given individual, especially when those parcels are in areas outside of those already delineated.

F7 and *F7A.* This item was reworded to clarify any ambiguity regarding the amount of land rented *from* others by the respondent.

F8. This item was similarly rewording to clarify renting of respondent's land to others.

F11-F17. This is a new series designed to measure improvements and investments in the sampled parcel so that these may be contrasted with the investments made after title is granted.

E1-E15. These items were moved to follow the tenure questions (F-series) so as to provide a more logical flow of questions. Item E10 was dropped at the request of INA. *E12A* was added to measure participation in religious associations.

I9A-I37A. This new series was introduced to measure the rate of interest paid on each loan.

I40A and *I40B.* These new items obtain information on the collateral used for the loan. (Note that these items are listed in the printed questionnaire as *I40,* but the correct numbers appear in the data file.)

I41-I45. This new series seeks to determine expenditures of farm capital as an indicator of decapitalization.

J13-J14. These two new items inquire as to the use of two additional improved farm practices (pruning of coffee and use of a corn crib).

K7-K17. This new series measures participation in the AID-IHCAFE coffee technicalization program and was incorporated at the request of those institutions. They allow for a separate analysis not directly related to the titling program.

Q10-Q24. This series obtains additional information on farm investments. (Note that on the printed questionnaire items *Q13-Q15* were deleted after pretesting.)

O1-O3. This series of self-esteem items did not work well on the first administration so was dropped in this questionnaire.

Training

Following the reasoning and methodology used in the first baseline, interviewers were selected from among applicants living in the regions to be studied. In addition, six interviewers from the Santa Barbara study were

selected so that their experience would add to the continuity of the baseline survey. Training was conducted in the Escuela Forestal in Siguatepeque, an ideal setting since all of the prospective interviewers were housed in a single location and classroom space was available. The training was supervised by Coles, Nesman, and Seligson, with the participation of other members of the LTC team and Fidelina Robles of INA's promotion unit. The training took place during an intensive three-day period. The trainees first were introduced to the study by presenting them with an overview of the titling project and the study design. They were then given instruction in the titling process itself and the kinds of concerns that the farmers have expressed. This was followed by an introduction to the questionnaire in the form of a simulation exercise in which a model interview was conducted by the trainers. Then each item of the questionnaire was reviewed and further simulations conducted. The trainees then were given time to study the questionnaire and began practicing it by taking turns interviewing each other, with the trainers passing among them and making suggestions. Instruction was then given in recording the answers on the questionnaires, and an additional simulation was conducted, with the trainees marking their questionnaires. After additional practice, all of the trainees conducted three test interviews, each with small farmers residing near the training center. These interviews were observed by the trainers. Each of these test questionnaires was graded and common errors noted and discussed with the group. Based upon the training, the several observations of the simulated and actual interviews, seventeen interviewers were ultimately selected to conduct the fieldwork.

Fieldwork

The success of any survey-research project depends heavily upon the establishment of a trusting relationship between the interviewers and the respondents. Accomplishing this goal was relatively easy in the first wave of interviews conducted in Santa Barbara because extensive promotion work had been previously undertaken by IERAC. In Comayagua, however, the promotional campaign had not got into full swing by the time the fieldwork had begun. Only radio programs were being utilized. Consequently, it was necessary to pay careful attention to explaining the purposes of the study so as not to arouse suspicions among the area's residents.

The first community contacts were made on Monday, 25 February, in the area of La Libertad in the Department of Comayagua. Contact was made with the *alcalde* (chief political officer), and he assisted in identifying the several communities selected for the survey. Each of the selected communities was visited by the director of the fieldwork, accompanied by an assistant from the *alcalde*'s office, and local leaders were provided with explanations of the study. In addition, preliminary attempts were made to locate the place of residence of the owners of the plots selected. As in Santa Barbara, it was found that most of the landowners did not reside on the selected plot but in nearby communities.

The interviewing commenced on 27 February 1985. A total of 17 interviewers made up the survey team. The teams were directed by Alex Coles of the Universidad Nacional (Costa Rica), with initial assistance by Fidelina Robles

(field director of promotion for the INA titling project). Ms. Robles had to return to other INA duties and her place was taken by supervisor/helpers drawn from among the best of the interviewers. The overall supervisor and coordinator of the fieldwork was Ed Nesman.

Many farmers were busy with the coffee harvest and did not return to their homes until the afternoon. As a result, the prime time for conducting interviews was in the afternoon and early evening. The mornings were spent checking over the previous day's questionnaires and preparing lists for the next set of interviews.

In some of the noncoffee areas many farmers did not return home until the weekend. In order to interview these farmers it was necessary to return to these communities at least two times. But even then some farmers had left the region with their families to work on the coffee harvest in other regions of the country. We did not have the resources to pursue these farmers.

The last interviews were conducted on 20 March 1985. In total, 755 interviews were conducted: 553 in the titling area, and 202 in the control areas. Hence, the control group met the size expectations of the sample design, and the experimental group was undersampled by 8 percent, or 47 respondents. The complete absence from the fieldwork area of families who had migrated to work on the coffee harvest is largely responsible for the reduction in the realized sample size. Interviews averaged 29.5 minutes in Comayagua, only a little more than in Santa Barbara, the difference a result of the slightly longer questionnaire.

The field strategy employed in 1985 proved to be much more efficient than that used in 1983. There are a number of reasons why these efficiencies were achieved: (1) prior experience with Santa Barbara helped to avoid some mistakes; (2) the maps and lists available for Comayagua were far more accurate than they had been for Santa Barbara (which, after all, was the pilot zone for the project); (3) the cluster sample cut travel time between interviews;[12] (4) the dry season allowed for easier transportation; (5) the availability of INA jeeps in top running condition meant few breakdowns and repairs; and (6) the presence of one overall field coordinator, absent in 1983, helped to improve the efficiency of the fieldwork.

Coding

In the Santa Barbara study, all of the coding was conducted after the fieldwork was complete. In this second wave, however, the extensive experience with the first questionnaire and the fact that the great bulk of the items were unchanged from that wave allowed coding to commence during the fieldwork period. It was found that an advantage from beginning the coding

---

12. However, the general tendency for the farmers not to live on their plots meant that clustering by farm plot was only of limited help in reducing travel time.

while the interviews were still in progress is that errors could be detected and corrected while the teams were in the field. By the conclusion of the fieldwork, approximately one-third of the coding had been completed.

The bulk of the coding was conducted at the Escuela Forestal in Siguatepeque. Most of the interviewers were assigned to this task, while a small group was assigned to "clean up" interviews that had not been completed in various zones. The coding took approximately a week to complete, with all of the interviewer/coders concluding their work on March 22, 1985. The questionnaires were then transported to Tegucigalpa where a work group reviewed and checked each one.

Time constraints during the Santa Barbara study prevented any further processing of the data in Honduras. For the Comayagua surveys it was possible to have data-entry operations conducted in Honduras by a Honduran data-processing service company. They keyed in all of the data directly to disk. The data were then verified for accuracy (by rekeying all of it). At that point, the entire data set was checked with a program written especially to pinpoint out-of-range codes. The program was directed to flag any codes not specified by the program for each variable. Errors in data entry were corrected by the company, and errors in coding were referred back to the coding team for location and correction.

A tape was written in Honduras with the entire data set and shipped to the University of South Florida. There the specifications for an SPSS^{x} file had been prepared (including variable and value labels as well as missing data codes). The file transferred to the Land Tenure Center and the University of Illinois at Chicago by using the "Export" program of SPSS^{x}.

Comparison of Titling and Control Groups

The justification for the selection of the control sample has already been presented. The goal of that sample was to be as closely similar to the experimental sample as possible, differing only as regard to future prospects for obtaining registered title. Ideally, no statistically significant differences would have emerged between the two groups, but in practice there was no way to assure this outcome. It is important to note these differences in this report, although no further analysis will be conducted of the control group here. Rather, the control group will be compared to the baseline titling group at the end of the project to compare changes that have occurred in each. Comparison of the Santa Barbara sample with its control is found in Jones et al. (1984:9-10).

Significant differences (at p of .05 or better) emerged between the experimental and control groups on relatively very few variables. These are summarized below:

1) The control respondents were older than those in the tiling zone (51.5 years vs. 45.6 years). In consequence, their average number of years living in their departments of residence varied (47.7 years vs. 39.6 years) as did the number of years living in their village (37.7 vs.

27.0). Similarly, the spouses of the respondents were older (44.8 vs. 39.8).

2) The older age of the control group was reflected in variables related to land tenure. The average number of years the sampled parcel was owned was 14.2 years for the control group compared to 10.5 years for the titling sample. The size of the parcels owned, however, did not vary significantly.

3) An important difference emerged in the use of the coffee technicalization program. In the control group only 4 percent of the respondents were participating in this program, whereas in the titling sample 17 percent were involved. The average age of the coffee plantations was much higher in the control group as compared to the titling sample (11.8 years vs. 6.8 years)

4) Although few of the respondents had taken out loans, such activity was more common in the titling sample than in the control (21.4% vs. 19.3%).

5) Participation in savings-and-loan cooperatives, the *patronato*, and religious groups was higher amount titling respondents.

No other statistically significant differences were noted in the two samples.

CHAPTER 2: THE AREA AND ITS PEOPLE

The People and the Economy

The Department of Comayagua is one of eighteen departments in Honduras. Its location relative to the other departments is shown in figure 2.A. In 1974, the year of the most recent agricultural census, Comayagua consisted of 11,124 farms, or 5.7 percent of all farms in Honduras, and occupyied 125,166 ha., or 4.8 percent of all land in farms. The number of farms ranks it tenth among all Honduran departments, and the land area in farms ranks it eleventh.

In 1974, 30.0 percent of the land in farms was planted with either permanent or annual crops, compared to the national average of 22.0 percent. In that same year, Comayagua produced 4.3 percent of all of the corn (*maiz de primera*) grown in Honduras, ranking it eleventh among all departments. Comayagua's bean production was more impressive; its crop of beans (*frijol de primera*) in 1974 totaled 8.9 percent of national production, ranking it third behind first-place Olancho and second-place Francisco Morazan, departments far larger than Comayagua. More recent data from the Banco Nacional de Fomento show that for 1982 Comayagua produced 5,984 metric tons of beans, or only 6.9 percent of the national total, ranking it fourth among the departments. Rice production of 1,219 metric tons in 1974, measuring 6.1 percent of the national total, increased to 4,208 metric tons (5.9% of national production) in 1982.

The most valuable crop in Comayagua, however, was coffee. In 1974 there were 3,732 coffee farms with 10,605 ha. in production. Total production in that year came to 4,395 metric tons of coffee, or 10.5 percent of the national total. The national coffee census for 1979-80 showed that the number of farms producing coffee had remained almost unchanged (3,640), but that the number of hectares dedicated to coffee had increased markedly (to 12,194 ha.). Production of coffee in the 1980/81 crop year had risen markedly, amounting to 12.4 percent of the national total on 10.3 percent of the nation's farmland dedicated to coffee, implying comparatively more efficient production of coffee per unit of land in Comayagua.

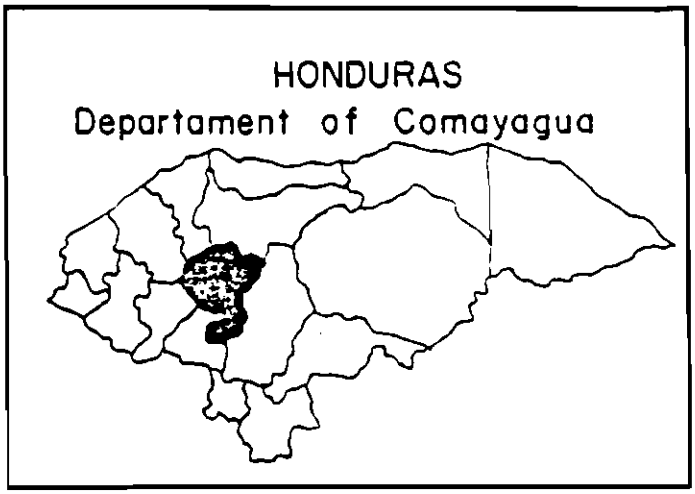
Patterns of Land Tenure

Land Distribution

As noted in the descriptive analysis of the Santa Barbara study (Jones et al. 1984:12), the central independent variable for the longitudinal study is title security, and comparisons will be made between the "before" and "after" results from the samples. That is, the titling project aims to provide secure

FIGURE 2.A

Location of Comayagua in Honduras



title to all of its beneficiaries, and the primary goal of this long-term evaluative effort is to measure the impact of those titles upon the beneficiaries and, by extension, on the nation as a whole. Until the 1987 data (i.e., the "after" data) are collected, however, the purpose of these reports on the baseline surveys is to provide a general descriptive "snapshot" of basic conditions on the farms surveyed. In that context, one of the most important variables is the pattern of landholding. One needs to know how large the farms are, what their tenure status is prior to titling, and other key data related to land tenure. The long-term study will also look very closely at land tenure patterns as key independent variables but will do so in the context of the impact of title. The goal of that study, then, will be to determine what impact title security, tenure, and other key variables, acting together, have on farm production and other important dependent variables. In the present study, the scope is more limited, with title security treated as a constant since the effect of titles had not yet been produced.

At the outset it is necessary to reiterate some of the key points related to the sample design (see Seligson et al. 1983) so that the reader will be in a better position to understand the discussion that follows. Landownership patterns are dynamic, and any study that purports to measure the impact of title on farm production and other variables must be sensitive to the possibility, indeed the probability, that the owner of the land at the moment of the interview may not be the same person when the follow-up interviews are

conducted several years later. For this reason, the sample design selects individual *parcels*, not farmers, as the units of analysis. Ownership may change over time, but the land will still be there, even if subdivided or incorporated into another farm unit. This study design, therefore, allows focusing on the impact of the title on the given sampled plot irrespective of the individual who is in possession of the land.[13]

For the purposes of this report, socioeconomic and demographic information will be given for the holder of the plot at the moment the interview was conducted. Reports based on reinterviews will distinguish between plots that have changed hands and those that are in the hands of the holders contacted in the original baseline interview. Also, production data were gathered for the specific parcel selected for the titling sample. The reason for this is that it was essential to be able to link the production information to the particular parcel under study rather than to the farm in general. If farm production had been measured for all the land owned, including plots which ultimately might not be titled, it would be impossible to separate out the titling effects.

The land contained in the 553 parcels sampled for the titling group (i.e., treatment group) contained a total of 3,191.9 ha., according to the cadastral information provided by INA.[14] Since farmers in Honduras use *manzanas* (0.69 of a hectare, or 1.7 acres) as their unit of land measurement, further references in this report, except where comparisons to the census data are made, will be to *manzanas* (abbreviated henceforth as *mz.*) rather than hectares. Converted into *manzanas*, then, the sampled parcels contained 4,500.6 *mz.* of land. The mean parcel size was 8.0 *mz.*, while the median was 3.2 *mz.* The plots ranged from less than 0.1 *mz.* to a maximum of 71.8 *mz.* Many (62.0 percent) of the respondents also held other parcels of land, as was noted above. Most (46.5%) of those who held additional land had only one other parcel, while an additional 3.8 percent had two parcels, and 14.4 percent had three parcels. There were three respondents who held as many as eight additional parcels. Counting all these parcels, the interviewed beneficiaries in total held, including the sampled parcels, 9,817.6 *mz.* of land. Hence, the selected parcels constituted 45.5 percent of all of the land held by the respondents. Compared to the Santa Barbara sample, the land area included in the sample in Comayagua is smaller. In Santa Barbara, the land area in the 569 sample parcels summed to 7,595.8 *mz.*, and the total land held by the respondents was 12,780.7 *mz.* Also of note, the land in the sampled parcels as a proportion of the total land owned was greater in Santa Barbara (59.4%) than in Comayagua.

A comparison of the distribution of farmland in the Comayagua sample with that of the Department of Comayagua, the Department of Santa Barbara,

---

13. Indeed, some have argued that titling may increase land transfers, although limited previous empirical work in Costa Rica has not supported this contention. See Seligson (1982).

14. This is the information contained on the computerized lists prepared by the National Cadastre Office. It is summarized in variables *A15-A22B* on the questionnaire.

and Honduras as a whole provides a good way of viewing the studied area from relevant comparative contexts. These comparisons are presented in table 2.1 below. In that table, all survey data are converted to hectares to match the distributions presented in the published agricultural census of 1974.

The mean size of the farms in the Comayagua sample was 17.8 *mz.* as compared to 22.5 for the Santa Barbara sample. The modal farm size in Comayagua was also smaller, 6.5 *mz.* vs. 9.0 *mz.*, thus confirming the expectation that the Comayagua farms would be smaller in size. These differences, however, should

TABLE 2.1

Land Distribution of Farm Units: Titling Sample, Santa Barbara Sample, and All Honduras[a]

FARM SIZE (ha.)	COMAYAGUA TITLING SAMPLE (%)	DEPARTMENT OF COMAYAGUA (%)	SANTA BARBARA TITLING SAMPLE (%)	ALL HONDURAS (%)
< 1.0	14.9	15.3	10.0	17.3
1-1.9	15.6	20.6	11.8	19.8
2-2.9	9.3	16.0	8.4	14.7
3-3.9	7.3	6.2	7.2	6.0
4-4.9	6.3	6.3	6.0	6.1
5-9.9	18.7	15.2	18.8	14.5
10-19.9	12.0	10.1	17.0	9.8
20-49.9	10.5	6.9	14.2	7.8
> 50[b]	5.3	3.3	6.5	4.0
Total	100.0	100.0	100.0	100.0

[a] The data presented here include all forms of ownership. For the census data this means all land. For the sample it is based upon variable *F6*, which asked, "What quantity of land do you possess in total?" That is, this includes the entire farm unit.

[b] One farm in the study sample in Comayagua was 710 *mz.*, but the next largest was 232 *mz.* The largest farm in Santa Barbara was 362 *mz.*

not be exaggerated since there is far more similarity in the size distributions than there is dissimilarity. Evidence of this assertion is contained in table 2.1, where it is shown that the distribution of the farms by size category is rather similar for the two samples (compare columns 1 and 3). The Comayagua sample does, however, contain a higher proportion of farms in the small-size class of less than 3 ha. (39.8% vs. 30.2%) and a lower proportion of farms in the large category of 10 ha. and larger (27.8% vs. 37.7%), thereby explaining the lower mean farm size in Comayagua.

Comparison of the Comayagua sample with the department as a whole[15] reveals that the department has a larger proportion of small farms and a smaller proportion of large farms than does the sample. Particularly marked differences appear in the 1-2.9 ha. range and in the farms larger than 20 ha. The same pattern of differences is noted when the Comayagua sample is compared to land distribution for Honduras as a whole.

In sum, while the distribution of the Comayagua sample is similar to that of Santa Barbara, the former plots tend toward the smaller size ranges. In contrast, both samples yield larger farm sizes than their respective departments[16] and the nation as a whole.

Acquisition and Duration of Ownership

The majority (51.9%) of the sampled parcels were acquired via purchase. A little less than a third (29.6%) of the parcels were inherited, 90.2 percent of these being from their parents.[17] An additional 9.8 percent of those who had inherited their land had acquired it from their spouses.[18] Nearly one in ten (8.8%) reported acquiring the parcel via some form of squatting,[19] and a similar proportion (8.3%) received it as a result of a municipal lease. In Santa Barbara, inheritance and municipal leases were less common means of acquiring land (20.2% and 3.0%) than in Comayagua, but purchase was more common (65.6%).

There was a broad range in the duration of possession of the land. Some had held the land for fewer than 6 months, while others had had it for decades, in one case for 62 years. Over two-thirds of the parcels (66.7%) had been held for fewer than 10 years, with the average possession period being 10.5 years. The duration of possession in Comayagua tended to be somewhat lower

---

15. Although the sample did not cover the entire Department of Comayagua, it did cover significant portions of it, and hence comparisons with the entire department are appropriate.

16. See Jones et al. (1984:13-15) for the Santa Barbara comparisons.

17. An additional two cases (0.4% of the sample) of partially inherited and partially purchased parcels were encountered.

18. These inheritance figures include 18 plots that were purchased from parents.

19. Squatting is often called "*recuperando el terreno*" in Honduras.

than in Santa Barbara; whereas 44 percent in the former held their land for 5 years or less, only 34 percent in the latter had held it for this short a period. The average time of possession in Santa Barbara was 12.1 years.

The relationship between farm size and duration of possession found in Santa Barbara is very similar in form to that found in Comayagua: the larger the holding, the longer the occupancy (figure 2.B). The relationship is almost completely uniform (monotonic), except for the largest farms where the duration of possession drops off slightly. The relationship is statistically significant (F-test) at .001.

Documentation of Right over the Land

Although it is estimated that 97 percent of Honduran rural landholders do not have legal title to their property, many do have some form of documentation that supports their claim. In Comayagua, it was found that nearly half (49.7%) claimed to have some form of document. Of those, most (45.0%) had a private bill of sale; others (19.6%) had an "*escritura*" of some sort, while the remaining farmers had some other sort of documentation. For those having some document to establish rights of possession, there was a direct relationship between farm size and number of years of holding the document; the average length of holding was 9.7 years, but, as shown in figure 2.C, it ranged from a low of 6 years among the smallest farms to a high of 13-14 years among the largest farms.

Rental

Rental of land was not very common among the respondents. Only 14.6 percent of interviewees rented some land from others. Most of these rentals were for small amounts of land; 71.6 percent were for 2 *mz.* or fewer. The largest quantity of land rented by these respondents was 10 *mz.*

Renting land to others was even less common. Only 12.1 percent of those interviewed rented out any of their land. The amount rented was generally very small, 43.3 percent being 3 *mz.* or fewer, but two farmers reported renting out 15 *mz.* and an additional two reported renting out 20 *mz.*

Demographic and Socioeconomic Profile

The overall pattern that emerged from the study of Santa Barbara is that the farmers are very poor, have highly limited education, but are exceptionally stable members of their communities.

Age, Sex, and Marital Status

As in Santa Barbara, the Comayagua sample was composed of a mature group of farmers. Whereas the mean age in Santa Barbara was 46.6 years and the median age was 44.6 years, in Comayagua the mean was 45.6 years and median, 45.0

FIGURE 2.B

Years of Ownership and Farm Size

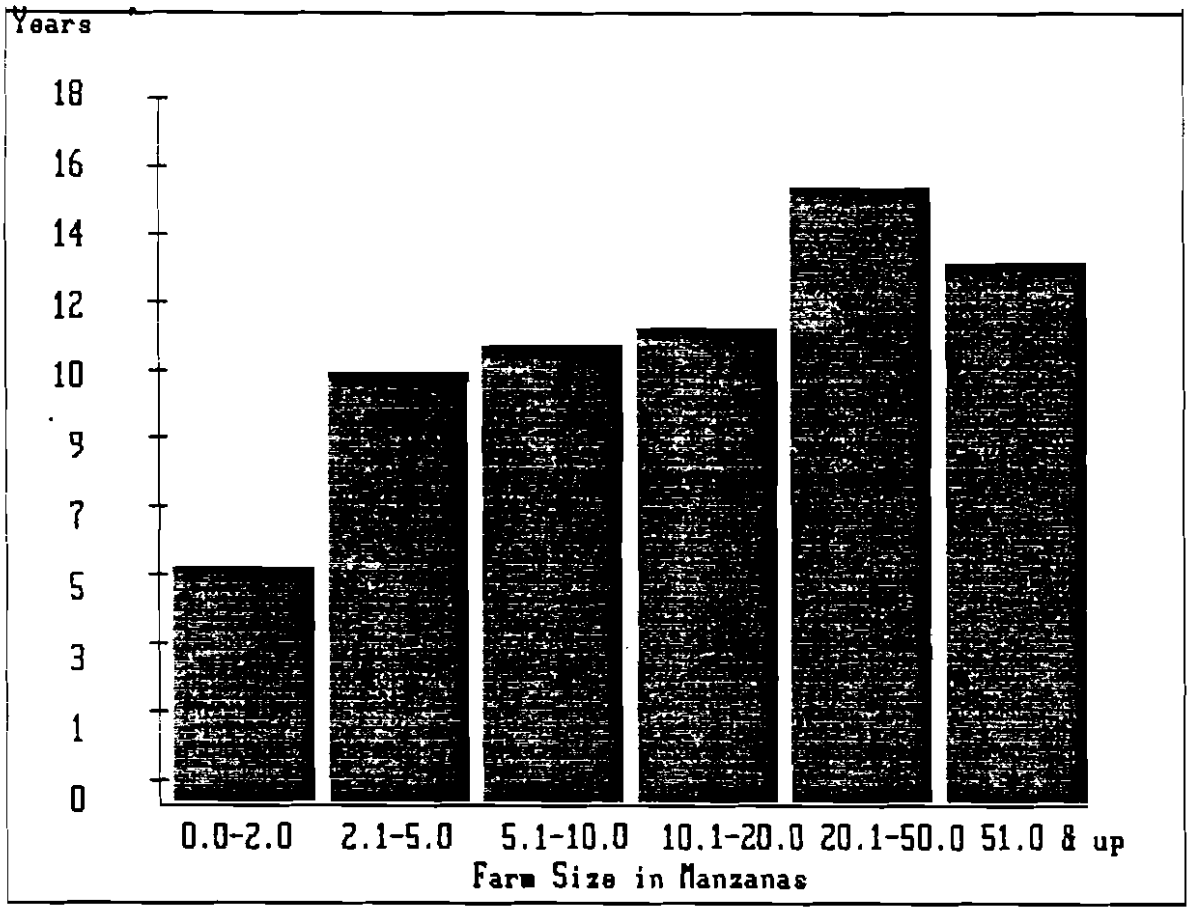
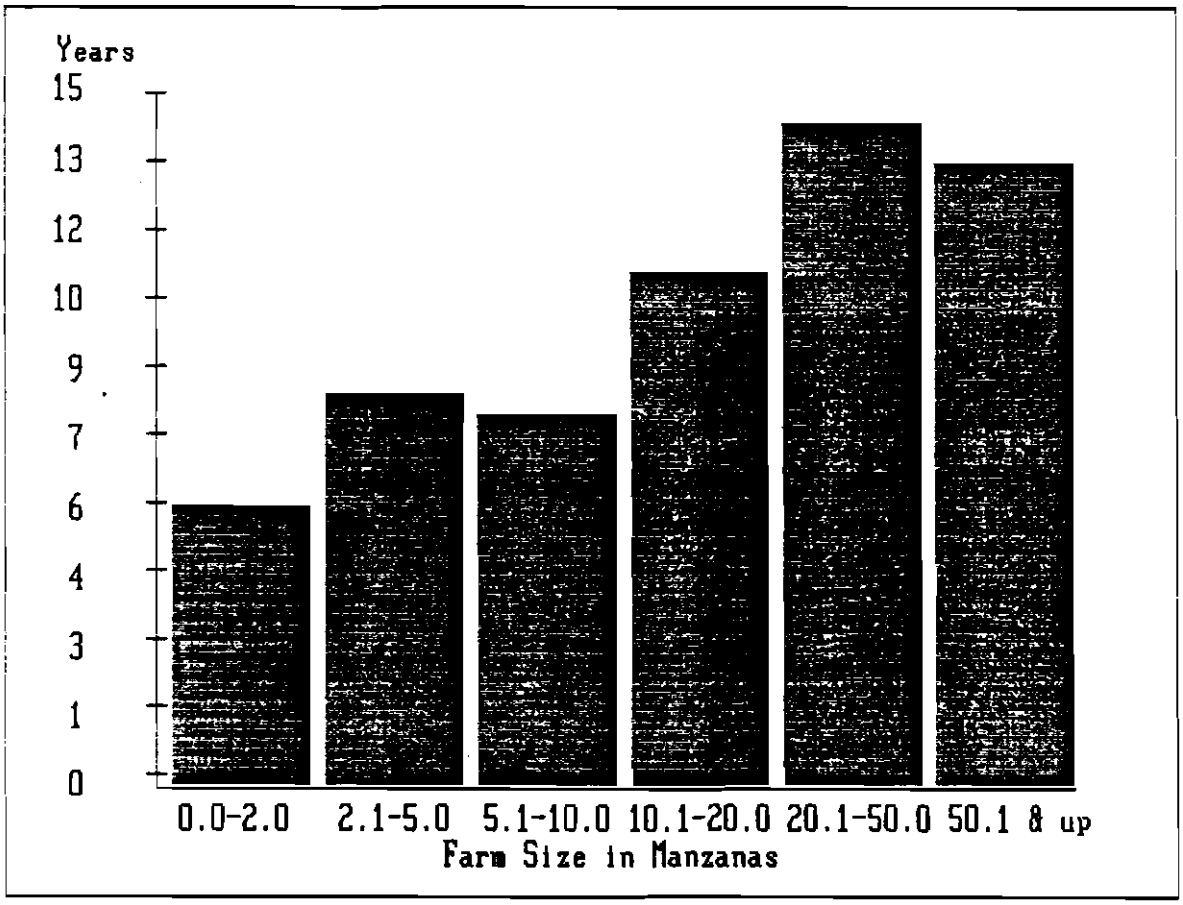


FIGURE 2.C

Farm Size and Number of Years Ownership Document Held



years. A slightly larger proportion of the Comayagua sample was very young (1.6% vs. 0.7%, were 20 years of age and younger), while about the same proportion was 80 years of age and older (1.2%). (The oldest respondent in the Comayagua was 93 years of age, and an additional respondent was 89 years' old.) The largest concentration of farmers, however, was in the 31-50 year range (43% of the sample).

The spouses of the farmers were a mature group but were somewhat younger than the respondents him/herselves. The mean age of spouses was 39.8 years and the median, 39.0.

As in Santa Barbara, age and farm size were closely linked: the larger the farm, the older the owner (figure 2.D).[20] Among farmers with the smallest holdings, ages averaged 36 years, nearly 10 years fewer than the mean for the entire sample. For each additional farm-size group, the average age of the owner increases; so that in the largest category of more than 50 *mz.*, the average age reaches 53 years, or 7 years older than the average for the sample as a whole. It seems apparent that as the farmers grow older they accumulate sufficient assets to allow them to purchase more land. Upon retirement they divide up their parcels among their heirs who begin the process of expansion over again, the limiting factor for each new generation being the availability of land as national population pressures increase.

Females comprised 17.5 percent of the Comayagua sample, nearly identical to the 15.1 percent encountered in Santa Barbara. The mean age of female beneficiaries was 46.7 years (vs. 45.4 years for men, but this difference was not statistically significant). Female beneficiaries were more likely to be widowed (23.7% of the women vs. 5.0% of the men) and less likely to be married (42.3% of the women vs. 69.0% of the men).

An even larger proportion of the Comayagua farmers were married than the proportion for Santa Barbara (63.5% vs. 53.1%). An additional 19.5 percent of the Comayagua respondents had a common-law spouse, a lower proportion than found in Santa Barbara (31.1%). When summing both formal and informal unions, the samples are nearly identical, with 85.0 percent of the Comayagua sample having spouses compared to 84.0 percent in Santa Barbara. An additional 8.3 percent of the Comayagua respondents were widows or widowers,and 0.9 percent were divorced or separated. Only 7.8 percent of the Comayagua sample were single (compared to 7.4% in Santa Barbara). Of those who had spouses, 87.8 percent were living with them at the time of the interview, a somewhat lower percentage than in Santa Barbara (93.7%).

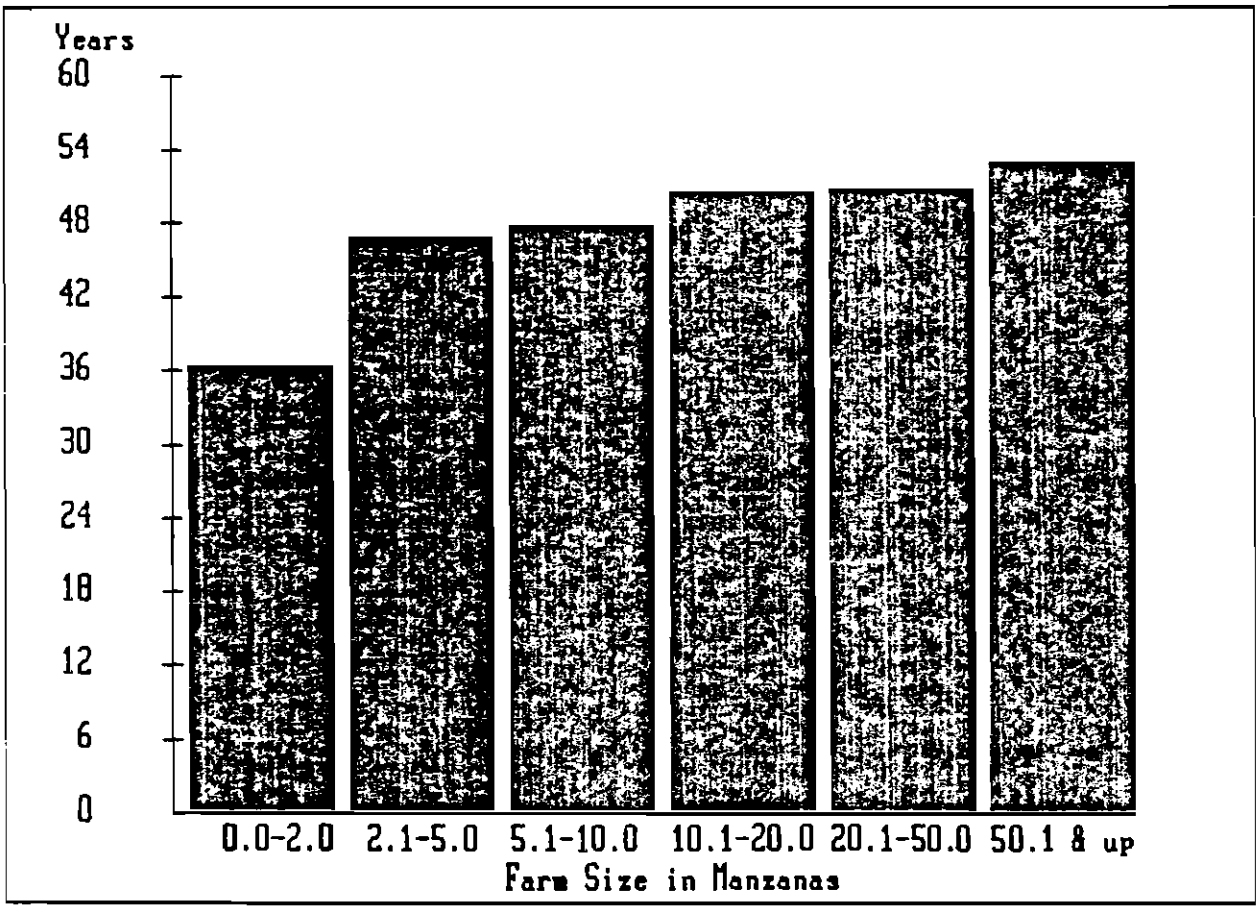
There was no clear-cut relationship between farm size and marital status, but one trend did emerge. While for the sample as a whole 63.5 percent of the respondents were married, for those in the largest farm size category (greater than 50 *mz.*) 81.8 percent were married. At the other extreme, among the smallest group of farms (those 2 *mz.* and smaller), the proportion of married beneficiaries was the lowest of any size group (53.2%). Much the opposite trend was noted among those in the common-law group, with the lowest proportion being found in the largest farm-size category (6.8%). A similar pattern was found in

---

20. The differences of means are significant at .001 (F-test).

FIGURE 2.0

Owner's Age and Farm Size



Santa Barbara, but the differences were not as great. It is also of note that the highest proportion of farms owned by bachelors was found in the smallest size group. For those small farms, 17.5 percent of the owners were bachelors as compared to 7.8 percent for the sample as a whole.

As in Santa Barbara, nearly all of the beneficiaries had at least one child (91.9%). Although no effort was made to obtain a full set of data on the number of children per respondent, the Comayagua questionnaire did include a new item that attempted to determine the number of children over the age of 10 who were living in the household. This item may be used to calculate the supply of family labor for each household. Nearly a third (30.9%) of the households had no children over the age of 10. Of those that did, the largest proportion (27.6%) had one child and about one-fifth had two children and another fifth had three. In one case there were thirteen children over the age of 10 who were living at home. The average number of children who were 10 years of age and older and were living at home was 2.1. There was a significant ($p < .001$) relationship between size of farm and number of children over the age of 10 who were living at home; larger farms had a greater number of children at home and hence a larger potential family workforce (figure 2.E).

Household size varied widely in Comayagua, from a low of 1 to a high of 23. Most households, however, ranged between 6 and 8 persons. The average size was 6.8, compared to 6.5 in Santa Barbara. Household size varied directly and significantly ($p = .003$) with the size of farm (just as it did in Santa Barbara, although the relationship was not completely monotonic): the larger the family, the larger the farm (see figure 2.F). The average household size among the smallest farms was slightly greater in Comayagua than in Santa Barbara (6.0 vs. 5.8) and was also slightly higher among the largest farms (7.8 vs. 7.6).

Migration Patterns

In Santa Barbara it was found that most (62.7) of the participants were native to the department, and most of those born elsewhere came from nearby. In Comayagua an even more stable population was encountered: 86.6 percent of the respondents were born in the department. An additional 9.6 percent were born in Olancho. The remaining 3.8 percent of the beneficiaries came from other areas of Honduras.

Among the migrants to Comayagua, most had spent many years in the area and thus presumably had time to integrate themselves into the community. It was found that the average migrant had lived in Comayagua for 22.2 years, compared to 20.2 years in Santa Barbara.

Community stability also characterized this sample, as it did the one from Santa Barbara. Respondents had lived in their communities for an average of 7.0 years, compared to 26.2 years in Santa Barbara. Only 2 percent of respondents had lived in the village in which they were located in March 1985 for less than one year, and only 17 percent had been living in that location for five or fewer years. Most had lived in the area for their entire lives, with the mean number of years for those migrating to Comayagua from another department being 16.0.

FIGURE 2.E

Farm Size and Children over the Age of 10

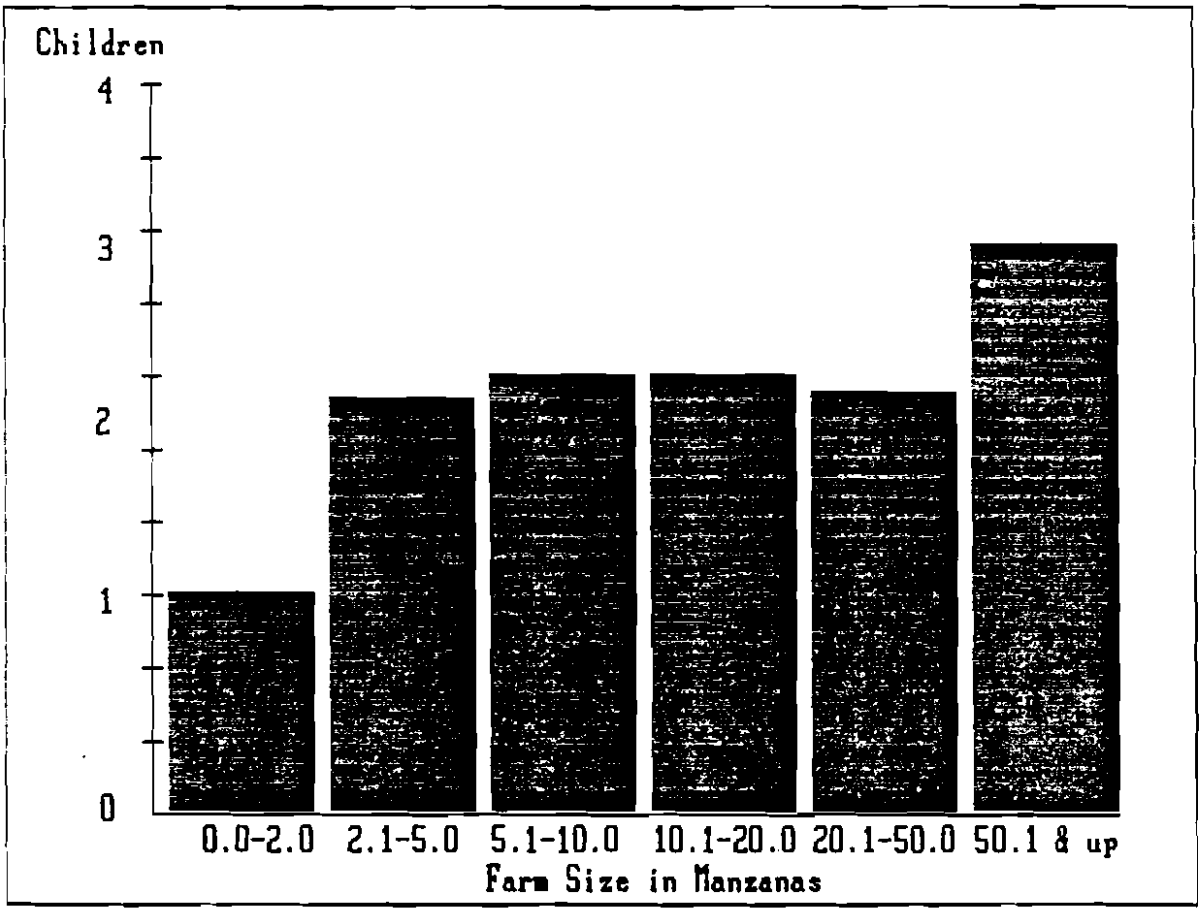
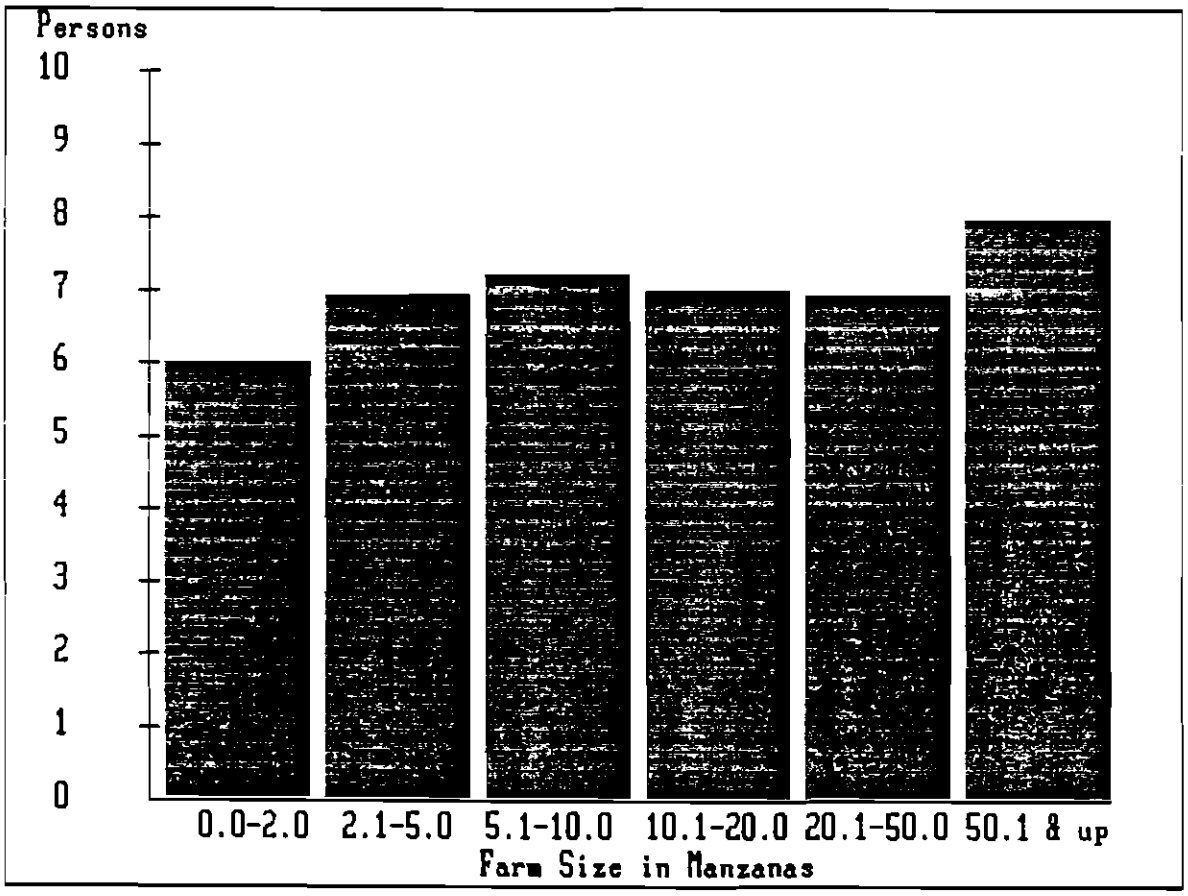


FIGURE 2.F

Household Size and Farm Size



There is a linear, significant ($p. < .001$) relationship between farm size and years of residence in the department: the longer the residence, the larger the farm (figure 2.G). This same pattern was uncovered in Santa Barbara, but the trend is more clearly marked in Comayagua. A similar pattern emerges in the relationship between farm size and community residence, although there is some slight (and not easily explainable) reversal among those with the largest farms (figure 2.H).

Education

In Santa Barbara one of the most serious limitations on development is the extremely low level of education in the area. The mean years of school attended was 1.6, and 52 percent had no formal education whatsoever. In Comayagua the situation was somewhat better. The average years of schooling was 2.1, while a bit more than one-third (35.6%) had no formal education.[21] Slightly over one-third (34.1%) had completed at least three years of school in Comayagua, compared to only slightly over one-quarter (26.4%) in Santa Barbara. But one should not exaggerate the level of education of the region. Although not asked in the 1983 study, it was found that in Comayagua 36.7 percent of the beneficiaries were illiterate. Moreover, only 11.4 percent of the Comayagua respondents had completed six years or more of schooling, an improvement on the 6.6 percent rate found in Santa Barbara but not markedly better. The overall distribution of education is shown in figure 2.I.

Informal education in the form of short courses is fairly common in much of rural Latin America. In Santa Barbara, 16.0 percent of beneficiaries reported attending such courses. In Comayagua, perhaps because it is not so remote, had modestly higher levels of participation in such courses. In total, 22.6 percent of Comayagua respondents had attended at least one such informal course.

Education and farm size were related. Among respondents with the largest farms, the level of illiteracy dropped to 6.8 percent compared to 36.7 percent for the entire sample. In other farm-size categories, however, illiteracy showed no regular pattern. Participation in informal courses showed the same pattern, with 31.8 percent of respondents with the largest farms having taken at least one such course compared to the overall level of 22.7 percent. Once again, no noticeable trend was found among the other size groupings. This was the same pattern uncovered in Santa Barbara, where formal education was also related to farm size.

Indicators of Economic Progress

In Santa Barbara, it was found that many basic comforts of life were not available to a large proportion of the beneficiaries. Comayagua, being not so remote a region, might be expected to exhibit a higher standard of living. An

---

21. There were two cases of missing data, but percentages include these missing data.

FIGURE 2.G

Department Residence and Farm Size

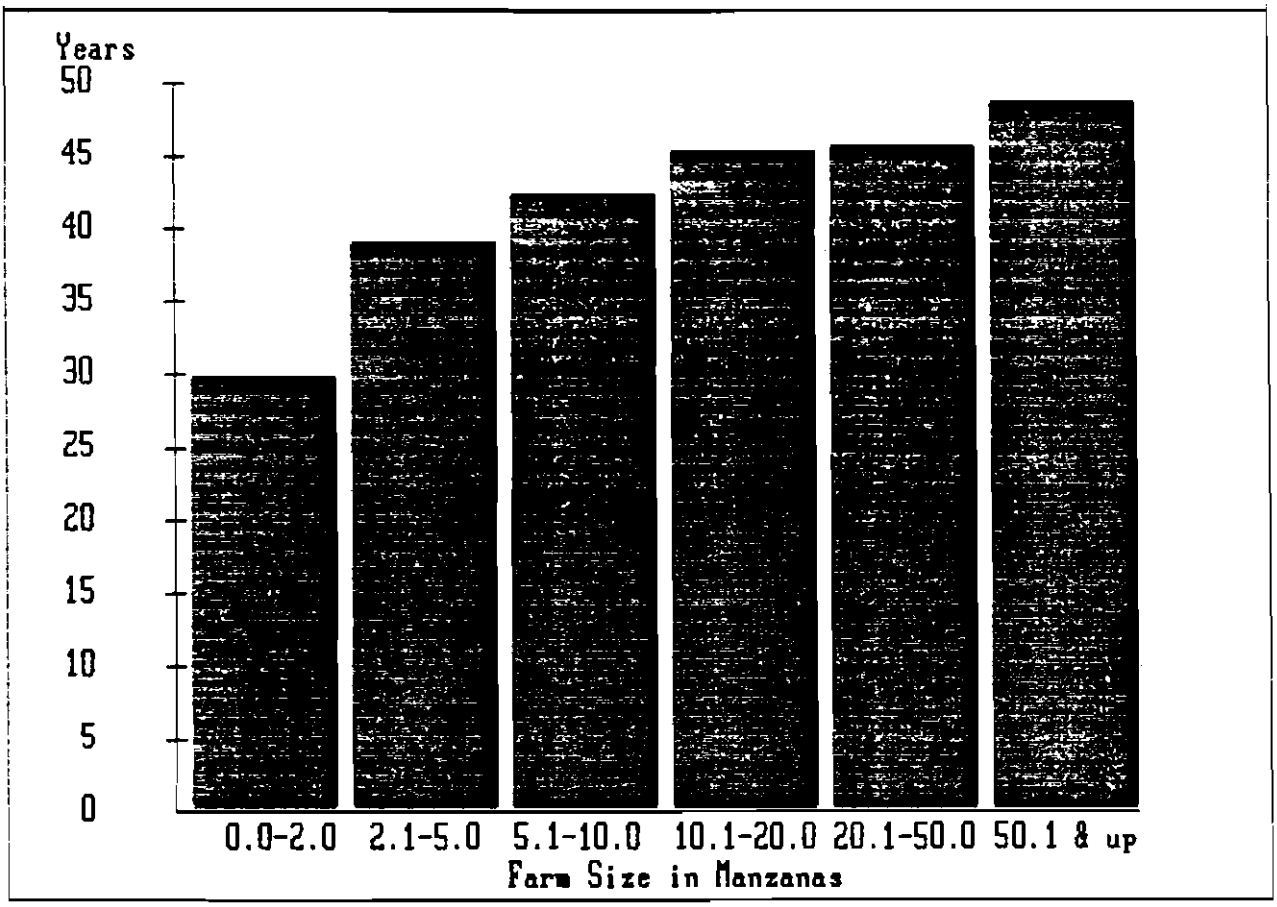


FIGURE 2.H

Community Residence and Farm Size

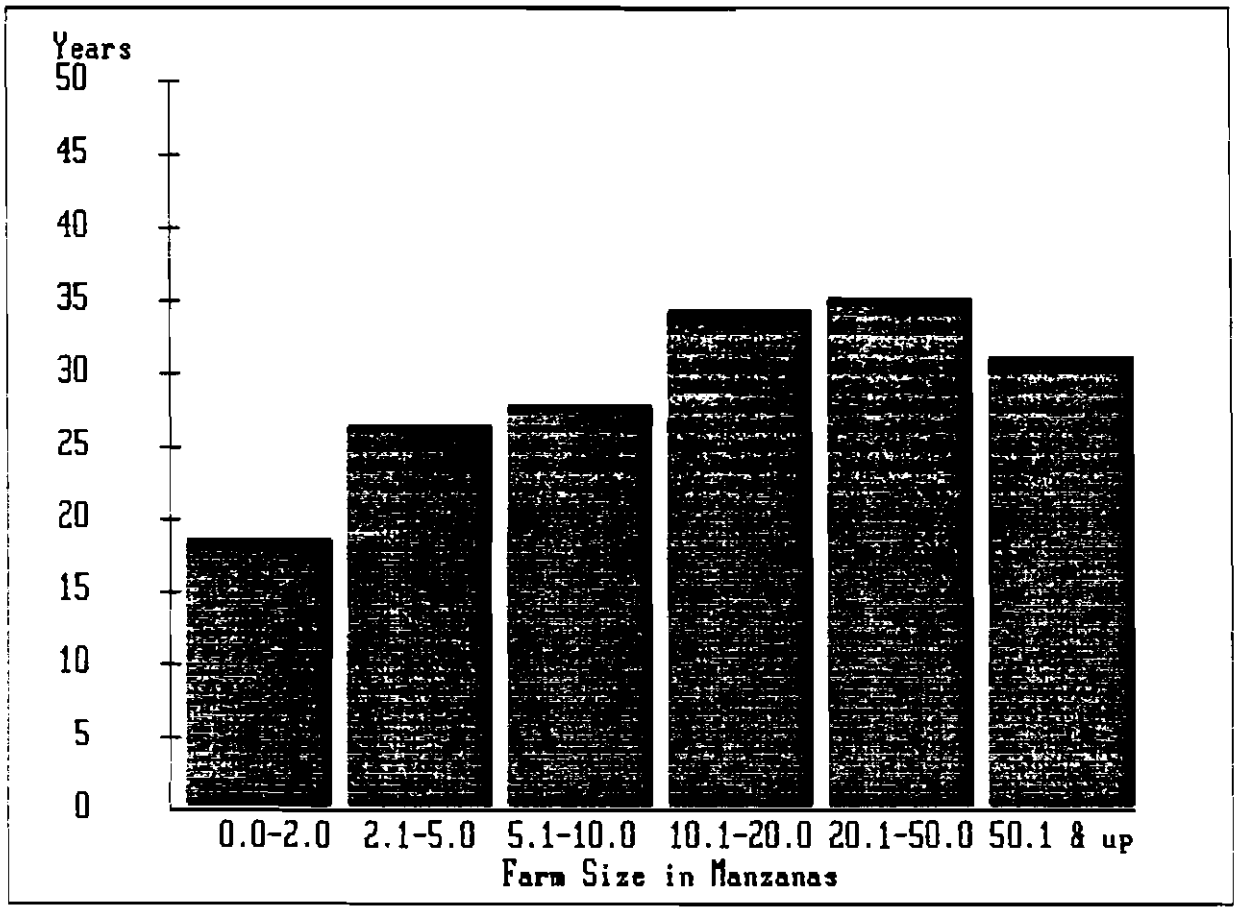
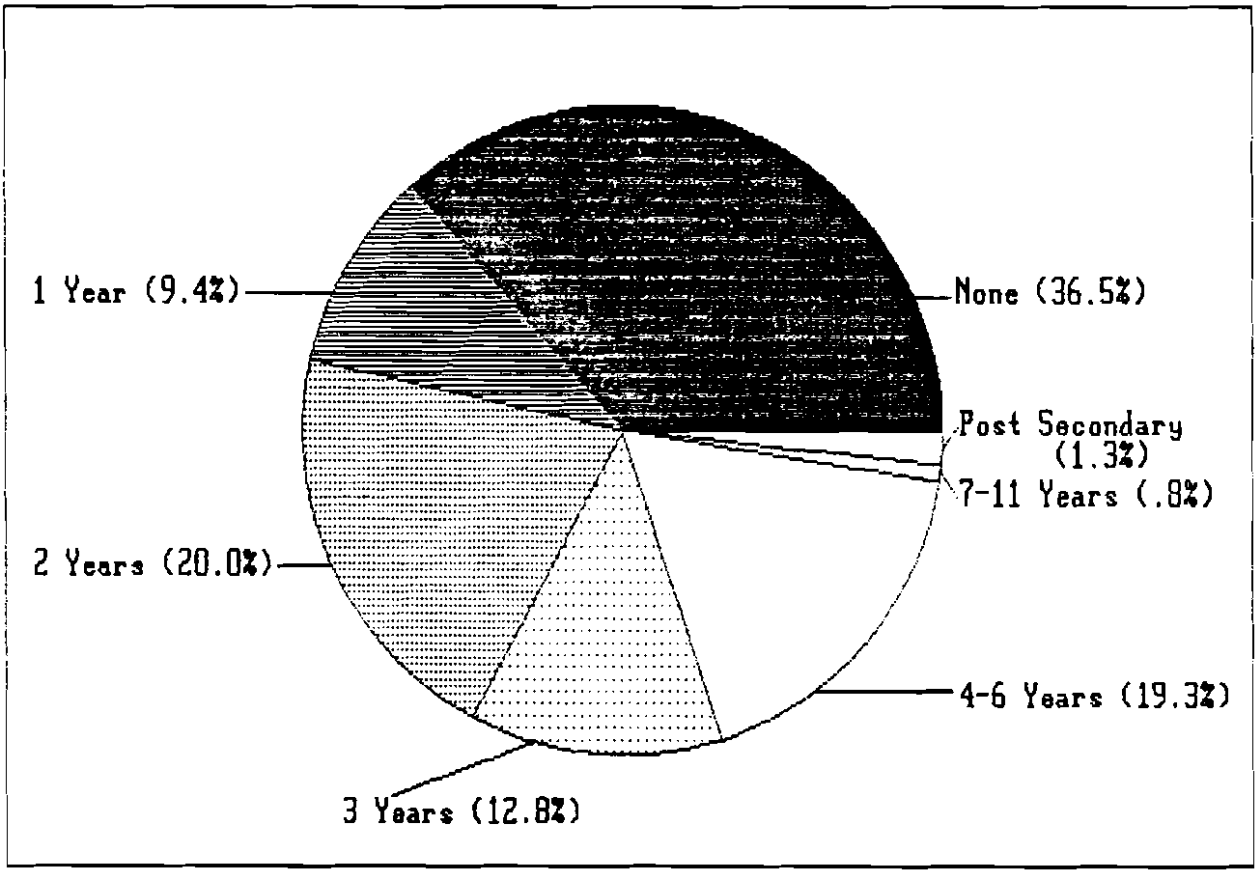


FIGURE 2.1

Proportions of Farm Owners by Years of Formal Education



indicator of deprivation in Santa Barbara proved to be the absence of any kind of toilet facility among 64.4 percent of the sample, while 20.5 percent of respondents had only a latrine (often improperly constructed for adequate sanitation). In Comayagua, the situation was almost as bad: 63.8 percent had no toilet facility, while another 29.3 percent had a latrine. Only 6.9 percent had a flush toilet.

A related indicator of poverty, one also bearing directly on health, was the availability of potable water. In Comayagua, the picture was worse than in Santa Barbara; only 32.5 percent in Comayagua had water piped into their house as compared to 56.5 percent in Santa Barbara. An additional 1.6 percent in Comayagua and 2.1 percent in Santa Barbara drew their water from a public tap. In Comayagua, 17.2 percent of the beneficiaries got their water from a well. An additional 20.6 percent drew their water directly from a nearby stream or river, an almost certain source of contamination.

A further indication of extreme poverty in Comayagua was the prevalence of dirt floors in the dwellings. Whereas 48.7 percent of the homes in Santa Barbara had dirt floors, 73.1 percent did so in Comayagua. Cement and tile floors are often a clear indication of economic progress, and, in Santa Barbara, 38.8 percent of the beneficiaries had such floors. In Comayagua, only 19 percent did so.

Poverty in Comayagua was demonstrated additionally by the condition of the dwellings. In Santa Barbara, 37.8 percent of the homes were constructed of cement, cinder block, or lumber; whereas in Comayagua, only 19 percent of the houses were so constructed. The most common construction material was wattle, called ***bahareque*** in Honduras (56.1%), followed by adobe (18.3%). Many dwellings in rural Honduras are mere shacks having no internal subdivisions. In Santa Barbara, 31.4 percent of the dwellings had no such subdivisions, whereas in Comayagua the proportion rose to 50.8 percent. Tile was the most common roof-construction material in Comayagua (49.5%), followed by galvanized steel (36.3%), asbestos sheets (9.6%), straw (3.6%), and wood (0.9%).

A further indication of the lower level of living in Comayagua was that electric lighting was found in only 7.1 percent of the homes, compared to 17.6 percent in Santa Barbara. Kerosene lamps and pine torches were the most common form of home lighting (86.6%), with a small proportion of respondents using gas lamps (5.6%) or candles (0.4%).

The questionnaire also obtained data on several appliances in the home for further measurements of levels of living. Radios, mostly powered by batteries, are very common in rural Honduras, and 60.6 percent of the respondents in Comayagua possessed one, only slightly lower than the 64.0 percent in Santa Barbara. In contrast, although still fairly rare, televisions were found in more homes in Comayagua (6.5%) than in Santa Barbara (3.7%). It is likely that the proximity to television transmitters in Comayagua when compared to many areas of Santa Barbara helps to explain this reversal of the general pattern. Almost the same proportion of respondents owned a pickup truck or automobile in Comayagua (7.2%) as in Santa Barbara (7.7). Refrigerators, however, were not so common in Comayagua (8.0%) as in Santa Barbara (11.8%). Sewing machines were also not so common in Comayagua (22.1% vs. 27.2%).

It was found in Santa Barbara that there was a close relationship between farm size and better living conditions. The same pattern is present in Comayagua. Figures 2.J, 2.K, and 2.L show the relationship of farm size to ownership of appliances and condition of housing. In each case, the relationship is statistically significant (< 001). In addition, the greatest differences were always found between those farmers who owned more than 50 *mz.* of land and those who owned fewer,[22] although even among these larger farmers many did not live in very comfortable homes or own many appliances.

Summary

In sum, the Comayagua and Santa Barbara samples have many similarities. The land tenure patterns look much alike, with the farms in Comayagua being somewhat smaller on the average. Demographically, the two samples are almost indistinguishable. Educationally, Comayagua respondents fared somewhat better than interviewees in Santa Barbara. In terms of levels of living, however, respondents in Comayagua were consistently worse off. Perhaps the smaller farm size or the mixture of crops (not so much coffee and more basic grains) will help explain this difference, since it was found in Santa Barbara that education had little direct impact on income. The following chapter, which looks at agricultural production and income, probes further into this question.

22. This finding is clearly reflected in the correlation coefficients; with the *Gamma* usually twice the magnitude of the *Tau b* or *Tau c* coefficients, strong evidence exists for a "corner correlation" pattern in the data.

FIGURE 2.J

Percentages of Sample Homes Having Electric Lights, Radios Sewing Machines, Refrigerators, and Televisions

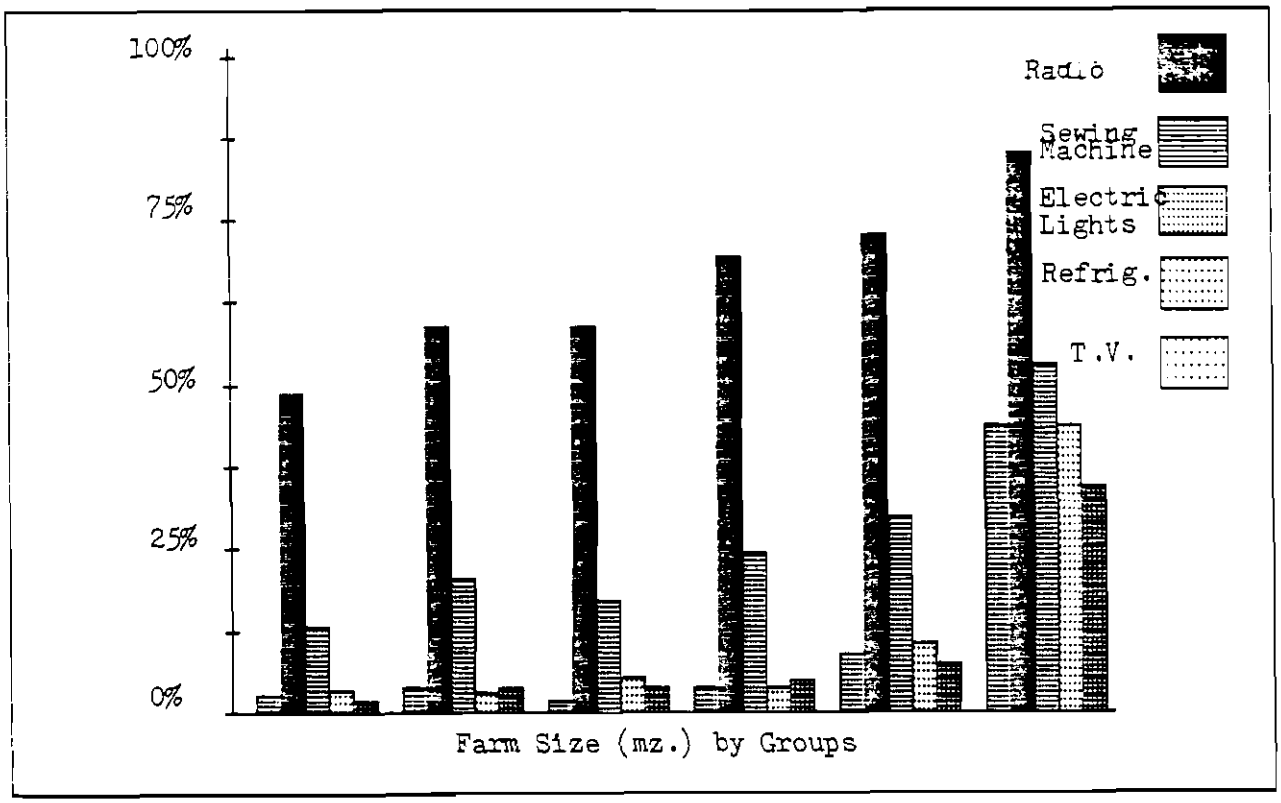


FIGURE 2.K

Percentages of Sample Homes Having Potable Water, Indoor Toilet, and/or Car/Truck

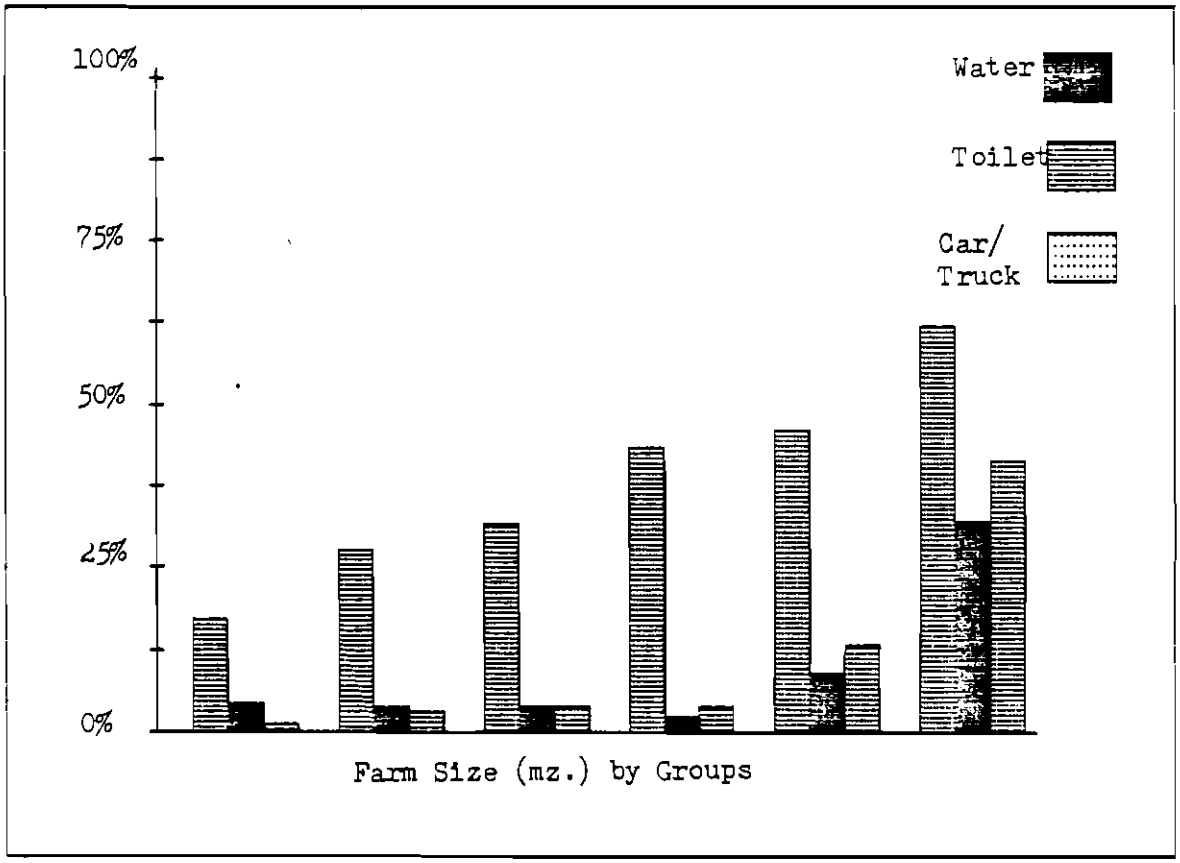
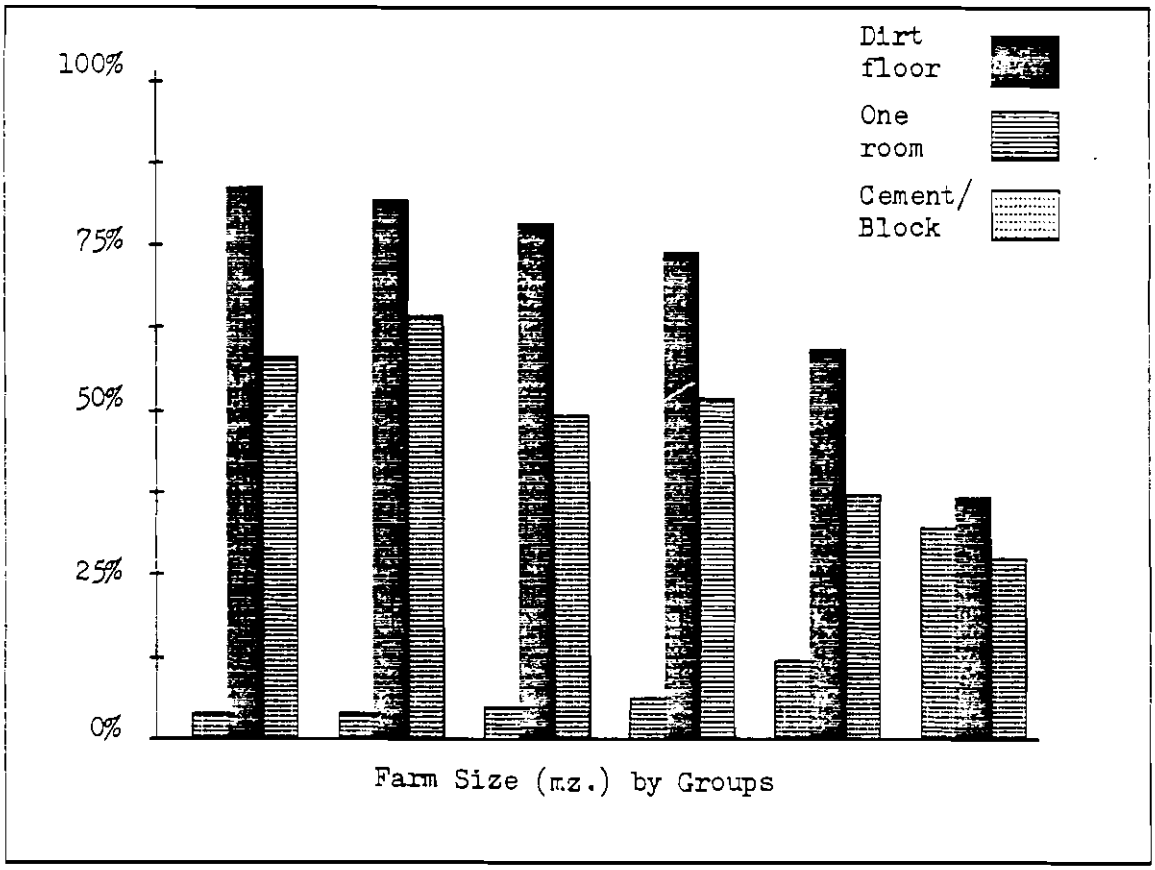


FIGURE 2.L

Percentages of Sample Homes Having Cement-Block Walls, Dirt Floors, or One Room



CHAPTER 3: AGRICULTURAL PRODUCTION AND VALUE OF PRODUCTION

A central goal of the titling program is to increase farm income. To do this, yields must to be improved in a country in which agricultural production levels have long been low by international standards.

In the Comayagua area in which this 1985 baseline study was conducted, climatic conditions in the growing season preceding the study affected agricultural production as well as the data-gathering effort. The coffee harvest was later than usual due to the favorable climatic conditions. As a result, the harvest was still in progress at the time the interviews were initiated in late February. In Santa Barbara, in contrast, the drought had limited the yields.

The corn and bean crops had been harvested earlier in the year, although there remained a few fields of corn that had been planted late. These crops also were favored with an improved growing season as compared to the situation in Santa Barbara in 1983, although the soil conditions were generally not so favorable for small-grain crops.

The lack of crops of any kind was notable in the northeastern portion of Comayagua near Minas de Oro. Much of the land in this area was in pine forest with only a few pockets of subsistence crops planted. There was no coffee in this area.

The following paragraphs describe in detail the agricultural enterprises of the sample farms in Comayagua and provide comparisons with the data from the 1983 baseline study in Santa Barbara.

Agricultural Enterprises

The major cropping enterprises in the 1985 sample were coffee, cacao, sugarcane, corn, beans, rice, pasture, and a variety of fruit trees, mostly bananas, plantains, and citrus. All of the fruit trees were interspersed with other crops, most often with coffee. Livestock production was limited to a few beef or dairy cattle, hogs, and chickens, but occasionally the number was large enough to constitute a livestock enterprise.

The pattern found in Comayagua was much like that of Santa Barbara; subsistence small-grain crops and coffee predominated. There were, however, some differences, and these will be noted in the specific cases of the following sections.

Land in Cultivation

The number of farmers with no land in cultivation was higher than in Santa Barbara (12.3 as compared to 2.1). This was due in part to the large

area of forest land in the northeastern regions of Comayagua. The amount of cultivated land in Comayagua is generally smaller than in Santa Barbara (table 3.1). This follows the same pattern as the amount of land held (see chapter 2).

In Comayagua, the greatest proportion of the farms had fewer than 2 *mz.* under cultivation (36.1%); only 2.7 percent of the farms had more than 50 *mz.* under cultivation, although 8.3 percent of the farms were of this size. The average amount of cultivated land was 7.1 *mz.* in Comayagua as compared to 10.6 *mz.* in Santa Barbara.

The field inspection showed the uncultivated land to consist primarily of very steep slopes, very broken terrain, and many areas of native pine forest. On some farms the land was reported as "*guamil*" (native brush) which allowed for only minimal pasturing and gathering of firewood.

The data were collected during the peak of the dry season and therefore almost no land was in annual crop production at the time. The production data, however, as in Santa Barbara, were on the immediately previous cropping year

TABLE 3.1a

Distribution of Sampled Farms, by Total and Cultivated Land, in Santa Barbara and Comayagua[a]

SIZE IN *MANZANAS*	PROPORTION OF INTERVIEWS ACCORDING TO TOTAL HOLDING SIZE		PROPORTION OF INTERVIEWS ACCORDING TO TOTAL CULTIVATED AREA	
	Santa Barbara (%)	Comayagua (%)	Santa Barbara (%)	Comayagua (%)
0	-	-	2.1	12.8
< 2	12.1	27.8	16.2	36.1
2-5	24.3	17.7	38.5	25.7
5-10	17.0	19.0	21.3	13.9
10-20	19.0	14.8	11.1	5.7
20-50	17.8	12.3	8.2	3.7
> 50	9.8	8.3	2.6	2.7
Total	100.0	100.0	100.0	100.0

[a] Total farm size including sampled parcel.

(i.e., 1984/85). The crop year in Comayagua was a relatively good one when compared to Santa Barbara because of the prolonged drought the latter experienced in 1983.

The proportion of farms planted to coffee in the Comayagua sample (51 per-cent) was lower than that in Santa Barbara (69%) (see table 3.1). Over one-third of the farms so planted in Comayagua (37.1%) were in the 2 *mz.* or fewer category. There were also fewer larger coffee enterprises than found in Santa Barbara.

As in Santa Barbara, pastureland was not very common and pasture sizes were quite small. Much of the land for pasture was used during only part of the year and after a crop had been harvested. Because of this, neither study attempted to calculate production per *manzana* of pasture.

Corn was the second most frequent cropping enterprise but again was found mainly in small plots. There were fewer farmers who planted corn in Comayagua when compared to Santa Barbara and more of those who did plant corn had smaller areas in production (see table 3.1b).

As in Santa Barbara, bean production was not so common as corn and coffee, with fewer than 20 percent of the farmers planting this crop. The beans were often planted together with corn and were used mostly for home consumption.

TABLE 3.1b

Distribution of Crops by Area Planted

FARM SIZE GROUPINGS	COFFEE		PASTURE		CORN		BEANS	
	Santa Barbara (%)	Coma-yagua (%)	Santa Barbara (%)	Coma-yagua (%)	Santa Barbara (%)	Coma-yagua (%)	Santa Barbara (%)	Coma-yagua (%)
0	30.6	49.0	54.8	80.3	57.3	70.3	80.5	81.7
< 2	33.1	37.1	14.1	7.0	22.3	24.8	16.2	17.4
2-5	15.8	8.8	10.7	6.2	16.2	4.2	2.9	0.9
5-10	8.8	2.9	8.6	2.7	3.7	0.5	0.4	-
10-20	1.6	1.5	4.6	1.8	0.3	0.2	-	-
20-50	0.2	0.7	2.8	1.6	0.2	-	-	-
> 50	0.2	-	1.4	0.4	-	-	-	-
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Five farmers reported cacao plantings, with a total area of 6.1 *mz.*, and only one farmer reported producing any crop. Rice also was an infrequent enterprise; 31 farmers had planted a total of 20.5 *mz.* Bananas and plantains were found on 95 farms but, as an interspersed crop, the fields contained from only a few to over a hundred plants, the latter sown over extensions of 2-10 *mz.* Additionally, 30 farms had fruit trees interspersed with the other crops; none could be described as a commercial venture. These crops were found to be held in the same relative importance as in Santa Barbara.

Utilization of Farm Production

As in Santa Barbara, every farm family in Comayagua used some portion of its crop for home consumption; on small farms, some owners consumed the entire harvest, especially of corn and beans. Additionally, most families retained some of the harvest for seeding purposes the following year. Almost every farm sold some produce as well, often noting that more was needed at home but that the exigencies of cash requirements forced them to sell.

The mean consumption of coffee was 112 lb. per household which is less than in Santa Barbara. This amounted to approximately 6 percent of total production.

A high proportion of the bananas and other fruit produced was consumed in the home. In one case, more than 400 stems of bananas were consumed at home, but this included those fed to farm animals as well.

Corn was used for home consumption in a lower quantity than in Santa Barbara (1,427 vs. 1,700 lb. per family). Corn was also used for seed by 89 of the farmers, with an average individual use of 138 lb.

Bean consumption was lower than corn's. Only 87 farmers reported saving beans for home consumption, but those who did used an average of 429 lb. There were only 44 farmers who saved beans for seed, and the average amount saved was 122 lb. These figures were lower than in Santa Barbara, due in part to the much better growing conditions in 1985 than in 1983.

There were only 25 farmers who reported using their rice for home consumption; average home use was 467 lb. per family. Rice was also saved for seed by 13 farmers, and the average amount saved was 238 lb.

One of the objectives of the titling-security project is to improve the nutrition of the beneficiaries through greater food availability. The amount of food grown for home consumption in Comayagua was greater than in Santa Barbara, but this was due mostly to the much improved growing season. The yields were higher in most of the crops, but the proportions of the crop used for home consumption were approximately the same--meaning that in Comayagua there was more food in absolute quantities. Nutritional levels also appeared to be more adequate in Comayagua, although we have no hard data to confirm this observation.

As the production per *manzana* will show in a following section, many farmers were harvesting less than could be expected, even after taking the poor soils and steep slopes into account. However, the improved rainfall did

give comparatively better yields than those found in Santa Barbara in 1983. Later sections of this report on farm practices and inputs demonstrate that on many farms it should be possible to raise production levels even further without large financial expenditures.

Production Rates

One of the principal benefits of conducting a baseline study is to help determine what kinds of services are required and to whom they should be offered. One of the most direct ways of ascertaining this need is to calculate the production of the crops per *manzana*. Obviously, some differences in soil fertility are involved, but in many cases--if services (such as technical assistance and credit) were available--that deficiency could be overcome.

The interviews collected information on the number of *manzanas* dedicated to each crop, production obtained, and how production was divided among the following: seed, consumption, and sale. These were useful data in themselves and they also served to assist the interviewer in reconciling the amounts for each purpose with total production. Most farmers had little or no difficulty in separating these amounts, and the figures tallied with total production. Some confusion arose occasionally between "saved for seed" and simply "stored" (for whatever use). In most cases, that confusion was relatively easy to resolve. A few small farmers who lived long distances from their fields and regularly carried home some amount of the harvest had trouble remembering the amounts and adding them up. The interviewers assisted with these calculations and the final tallies were reasonably accurate. A half-dozen respondents were unable to recall the total amounts sold. Coffee was cultivated by 282 farmers on 692.9 *mz.* of land. This represented both fewer farmers and a smaller area than found in Santa Barbara (349 farmers and 1,249.3 *mz.*). The coffee was in better condition in Comayagua, however, partly due to the weather and partly due to improved control over diseases and insects that were at their most destructive stage in 1983 in Santa Barbara.

Forty-two (14.9) of the farmers had no production from their trees the preceding year. These mostly were farmers with new plantings that had not come into production yet; but there were also some who had abandoned their coffee plantings due to uncontrolled insect and disease infestation. Of those reporting production, 29.4 percent had yields above 10 *quintales* (*qq.*) per *manzana*. These yields are considerably higher than those found in Santa Barbara as can be noted in table 3.2.

As seen in a previous section, corn was the second most prevalent crop, with 285 *mz.* planted by 173 farmers. There were 164 farmers who reported harvesting a crop; mean yields were 11.7 *qq./mz.* This is lower than the yield of 14.5 *qq.* reported for Santa Barbara. As can be seen in table 3.3, the yield per *manzana* ranged widely--from close to nothing to more than 50 *qq./mz.* We were unable to observe the cultivation practices because the harvest had been completed at least two months earlier, but the land was usually steep, rocky, and with thin soils.

Only 101 of the farmers had planted beans for the previous harvest and the total extension was 92.4 *mz.*, or an average of just under 1 *mz.* per farm

TABLE 3.2

Quintales[a] of Coffee Production
per *Manzana* in Santa Barbara and Comayagua

QUINTALES PER *MANZANA*	SANTA BARBARA (#)	(%)	COMAYAGUA (#)	(%)
0	14	4	42	15
< 1	66	19	32	11
1-2	63	18	22	7
2-3	42	12	13	5
3-4	44	12	21	7
4-5	20	6	15	5
5-6	21	6	15	5
6-7	12	4	5	2
7-8	12	4	14	5
8-9	6	2	10	4
9-10	16	5	10	4
> 10	33	8	83	30
Total	349	100	282	100
Mean (all growers)	4.9		10.0b	

[a] Measure equivalent to hundredweights.

b Mean for those 240 farmers with some production was 11.7 *qq./mz.*

(table 3.4). For the 96 farmers who reported obtaining a harvest, the mean yield was 9.2 *qq./mz.* which is slightly higher than that found in Santa Barbara in 1983.

Rice production (table 3.5) was not as common; only 31 farmers reported planting this crop, with a total area of 245.5 *mz.* It is not a common crop in Comayagua due to the slope of the land and climatic conditions. The average yield for the 30 farmers who reported a harvest was 14.2 *qq./mz.* The average production was slightly over 8 *qq.* per farm. This pattern is not

unlike that of Santa Barbara--although the yields were higher in Comayagua due mainly, again, to the better rainfall for the 1985 crop.

Only one farmer reported cacao production. He had 5 *mz.* planted and sold all of his produce for approximately 16 lempiras. This is not an area with an climate appropriate for growing this crop.

Bananas and plantains were grown by 95 of the sample farmers, but it is difficult to calculate total *manzanas* planted since, for the most part, they were widely interspersed among fruit and shade trees in the coffee plantations.

TABLE 3.3

Quintales of Corn Production per *Manzana* and Percentage of Sample Farms within Each Production Range, in Santa Barbara and Comayagua

QUINTALES PER *MANZANA*	SANTA BARBARA (#)	(%)	COMAYAGUA (#)	(%)
< 1	9	4	3	2
1-2	12	5	8	5
2-3	3	1	6	4
3-4	18	8	12	7
4-5	12	5	17	10
5-6	15	6	5	3
6-7	10	5	6	4
7-8	18	8	15	9
8-9	8	4	2	1
9-10	22	9	22	13
10-11	2	1	-	-
11-12	14	6	5	3
12-13	3	1	1	1
13-14	10	5	6	4
14-15	13	5	15	9
15-20	25	10	27	16
20-25	5	2	6	4
25-30	9	4	4	2
30-40	14	6	2	1
40-50	2	1	1	1
> 50	5	2	1	1
Total	294	100	164	100
Mean	14.5		11.7	

TABLE 3.4

Quintales of Bean Production per *Manzana*
and Percentage of Sample Farms within Each Production Range,
in Santa Barbara and Comayagua

QUINTALES PER *MANZANA*	SANTA BARBARA (#)	(%)	COMAYAGUA (#)	(%)
< 1	11	10	4	4
1-2	17	15	7	7
2-3	5	5	3	3
3-4	12	10	22	23
4-5	8	8	4	4
5-6	9	8	5	5
6-7	9	8	3	3
7-8	11	10	9	9
8-9	1	1	1	1
9-10	11	10	5	5
10-15	10	9	19	20
15-30	7	7	14	15
Total	111	100	96	100
Mean	7.9		9.2	

Only 44 farmers reported producing bananas or plantains, with an average production of 6.8 stems per farmer. As indicated earlier, most of the production was for home consumption. Bananas were less frequently reported in Comayagua than in Santa Barbara.

Only 30 farmers (5.4%) reported fruit plantings. Even a smaller number reported producing a crop (8 farmers or 1.4 percent). Most of the production was consumed at home, although 2 farmers did report some sale of fruit in small quantities. This is much like the pattern in Santa Barbara. Sugarcane was grown on 19.4 *mz.* by 28 farmers in the sample; production was reported for 9 plots. The mean yield reported was 19 bundles per *manzana*. Only 4 farmers reported selling cane but this accounted for almost half of the total production. Sugarcane production in Comayagua, as in Santa Barbara, was not a major enterprise.

TABLE 3.5

Quintales of Rice Production per *Manzana* and Percentage of Sample Farm within Each Production Range, in Santa Barbara and Comayagua

QUINTALES PER *MANZANA*	SANTA BARBARA (#)	(%)	COMAYAGUA (#)	(%)
< 1	2	6	-	-
1-2	3	8	-	-
2-3	1	3	1	3
3-4	1	3	1	3
4-5	3	8	2	7
5-10	14	40	9	30
10-15	5	13	6	20
15-20	4	11	6	20
20-25	1	3	2	7
25-30	2	6	1	3
> 30	-	-	2	7
Total	36	100	30	100
Mean	10.0		14.2	

The general pattern of productivity per *manzana* was that a majority of the farmers obtained low yields (by international or even regional standards) from their labors. Some portion of the low yields was caused by physical conditions: steep slopes, rocky ground, and generally infertile soils. This was particularly true in the area surrounding Minas de Oro. Much of the problem, however, stemmed from little or no use of what might be termed simple technologies: better cultivation, treating seed, and mulching the plants. As can be noted in the next chapter, the use of fertilizers, chemicals to control diseases, weeds, and insects, and improved seed was rare and was almost never listed by the low-yield farm owners. This pattern of production and practices is much like that found in Santa Barbara earlier. The exceptions to this pattern are to be found on those farms where coffee technicalization has been initiated.

The coffee yields are higher in Comayagua than in Santa Barbara, but this was unrelated to farm size. The reported higher yields for the plots under 2

mz. appear to be distorted by the lack of exact measures of field size. Sizes were usually reported in "*tareas*" (16 *tareas* = 1 *mz.*, and the yield calculations often produced doubtful results.

A further distortion that could affect yield calculations is the number of growers who have replanted portions of their coffee crop that were afflicted with disease. The new plantings are not yet in full commercial production, a factor in the lack of correlation of coffee yields with other variables. This factor will be examined further in relation to the use of improved farm practices.

Corn yields are more closely related to farm size in Comayagua than they were in Santa Barbara, although this relationship is not statistically significant. The smallest size category may suffer the same distortion factor that was found in the coffee calculation.

TABLE 3.6

Yields of Coffee, Corn, and Beans,
by Farm Size, in Santa Barbara and Comayagua
(in *quintales*)

FARM SIZE GROUPINGS	COFFEE MEAN		CORN MEAN		BEAN MEAN	
	Santa Barbara	Comayagua	Santa Barbara	Comayagua	Santa Barbara	Comayagua
< 2	4.37	16.55	10.52	14.29	10.83	10.21
2-5	4.52	11.27	13.28	10.09	4.61	4.20
5-10	5.41	8.82	11.60	10.31	5.42	8.62
10-20	4.56	10.68	12.50	11.19	12.04	9.92
20-50	4.84	6.05	11.54	11.90	7.09	12.75
> 50	6.56	12.83	30.65	16.39	5.70	7.33
Mean	4.85	11.70	14.80	11.66	7.93	9.24

In the case of beans, the pattern of yields is somewhat different from those of coffee and corn. The largest farms have generally lower yields. The relation of bean yields and farm size follows much the same pattern in Comayagua as in Santa Barbara. There is no apparent reason why the yields are lowest in the 2-5 *mz.* category.

Livestock on the Sample Farms

Few of the farms within the titling sample could be classified as having livestock enterprises. For the most part, a few head were kept to supplement family food supplies and provide some ready cash in time of need. A comparison of the amount of pastureland (table 3.1b) and the number of beef and dairy cattle (table 3.7) emphasizes the point. The total number of cattle far exceeded the carrying capacity of the pasture. As pointed out earlier, many farmers with cattle had no pasture on their farms; they relied on roadways and other community property for grazing. It must also be noted that few

TABLE 3.7

Numbers of Beef and Dairy Cattle, Hogs and Chickens, in Santa Barbara and Comayagua, by Farm Size

# ANIMALS	# BEEF FARMS		# DAIRY FARMS		# HOG FARMS		# CHICKEN FARMS	
	Santa Barbara	Comayagua	Santa Barbara	Comayagua	Santa Barbara	Comayagua	Santa Barbara	Comayagua
0	514	504	430	460	416	475	147	301
1-5	27	20	92	56	128	70	69	56
6-10	15	15	22	16	19	4	147	81
11-20	6	5	10	18	4	4	132	77
21-40	5	8	11	3	2	-	60	31
> 40	2	1	4	-	-	-	14	7
Total farms	519	553	519	553	519	553	519	553

farmers had actually seeded and cared for the pasture. A few others had removed the brush and some had reduced the amount of extraneous weeds; but most simply let the animals loose on the land as it was.

The count of animals in table 3.7 includes young as well as mature animals; thus, what would be termed breeding stock is many fewer than the totals listed (except that tiny chicks were excluded from the count). Beef cattle were slightly more common in Comayagua than in Santa Barbara although the reverse was true for all of the other types of animals.

Most of the cattle were dual purpose, beef and milk. As in Santa Barbara, the cattle were of mixed breed and usually termed "*criollo*" (native). All of the beef cattle were fattened on grass with no grain feeding operations. The milking operations were simple with no mechanical assistance. In most cases the calves were not separated from the cows so that little milk was left for sale.

It was not easy for the farmers to calculate the daily production; there were a total of 644 milk cows reported in the sample, and they produced a total of 1,189 bottles (a bottle is one-fifth gallon) per day of which 60 percent were reported sold and the remaining 40 percent were consumed at home. This level of production is less than 2 bottles per cow per day and would not come near that of a dedicated dairy enterprise on one modern farm. The contributions to food supplies must not be overlooked, however, since even these small quantities were vital to young children, who were said to consume most of the milk; the rest was usually drunk by adults with morning coffee or occasionally converted to homemade white cheese.

The incidence of swine was very low--86 percent had none at all. There was a reported total of 213 pigs, although one farmer had 16 head. Most of the swine run loose--consuming grass, kitchen scraps, and waste--but they often receive small amounts of corn as a supplement, particularly the lactating sows and newly weaned pigs. Most of the animals were of mixed breeds, an inevitable consequence of running loose and boars not being castrated. Gilts also breed early, producing small litters and growing little after that. Indeed, the vast majority of animals were very small for their age. However, the hogs were very hardy and few diseases were reported. There is room for improvement in the swine operation, but unless more corn and other grains are part of the cropping system, there is little margin for increasing the number of swine or using additional grain in their diet.

It is generally assumed that all rural households have a few chickens, but almost half (45.6%) of the sample reported none at all. Most of the chickens raised were consumed at home, but 113 were reported sold. Poultry is another important source of food for the family, in meat as well as in eggs. Both in importance as well as in method of care, the pattern in Comayagua is much the same as that found in Santa Barbara. There is room for improving poultry production with the use of disease control and improved stock, but it would have to be accompanied by more use of corn and other supplemental grains.

In summary, livestock production in Comayagua, as in Santa Barbara in 1983, is mostly a household operation. Few animals existed on the sample farms, and few farmers had much opportunity to expand their enterprises. The animals were important though, since they furnished valuable inputs to food supplies, added much needed protein, and furnished quick but small amounts of cash in emergencies. Technical assistance could help with disease control and improved breeding practices, but in order to convert the livestock to a commercial operation, it would take additional supervised credit assistance, accessible markets, and more feed grain.

Value of Production from Farming Operations

For the purpose of this study, the value of production represented the total value of all crops and animals produced, including all production from the sampled plot that was consumed, saved for seed, or sold. As has been noted in several places in this chapter, a few farmers had difficulty remembering or calculating their exact production. The vast majority, however, knew quite precisely what the numbers were. Even those who had some trouble remembering the figures were able to recall with assistance from the interviewer, especially when sorting out what was consumed, saved, and sold.

A large percentage (21.7%) of the farmers reported no agricultural production of value for the previous cropping year. This is much higher than in Santa Barbara and may be due in part to the forest land that is not used for agricultural production. Many of the farmers in the sample did not report land in cultivation (see table 3.1a). Field observation by the research team also verified the absence of agricultural land on many farms. If the poverty line were considered to be 500 lempiras per family and if income only from the sampled plot were considered, 57 percent of the sample would fall below that line as compared to 39 percent in Santa Barbara. The mean value of production was 1,483 lempiras in Comayagua as compared to 2,300 lempiras for Santa Barbara. Considering only those 433 farmers who reported production of some value, the mean agricultural income was 1,852 lempiras.

These data must be viewed in light of the simple, and sometimes primitive, levels of farming technology evident on the majority of the farms. A vigorous extension education program can substantially raise production per *manzana*. This has been most evident in the recent Coffee Improvement Project.

The effects of extension education, by itself, on corn, beans, and rice will be somewhat less dramatic--on the order of 10-percent increase in production; but in light of the values of production displayed in table 3.8, even that rise is important. More substantial improvements in these crops require the addition of credit, improved and treated seed, improved tillage, fertilizers, and insect and disease treatment.

As noted earlier, extension education could also lead to greater returns from livestock production; for most farmers, this would produce more only for food, but, with the level of poverty extant among these sample recipients, that would be a very worthwhile effort. Some farmers could also benefit from credit, especially those with sufficient land for pasture. A farmer's income could rise proportionately to the amount invested in learning how to care for the animals and animal products and to the amount of credit used to start or improve an enterprise.

The comparative effects on the utilization of improved farming techniques are dealt with in specific terms in the next chapter. The present discussion serves simply to point out the potentialities from contrasting levels of technology. These sections, together, strengthen the demonstrated need for more intensive and frequent services to these farmers.

As can be expected, farm size and value of production are related. Figure 3.A graphically shows this relationship and also highlights some

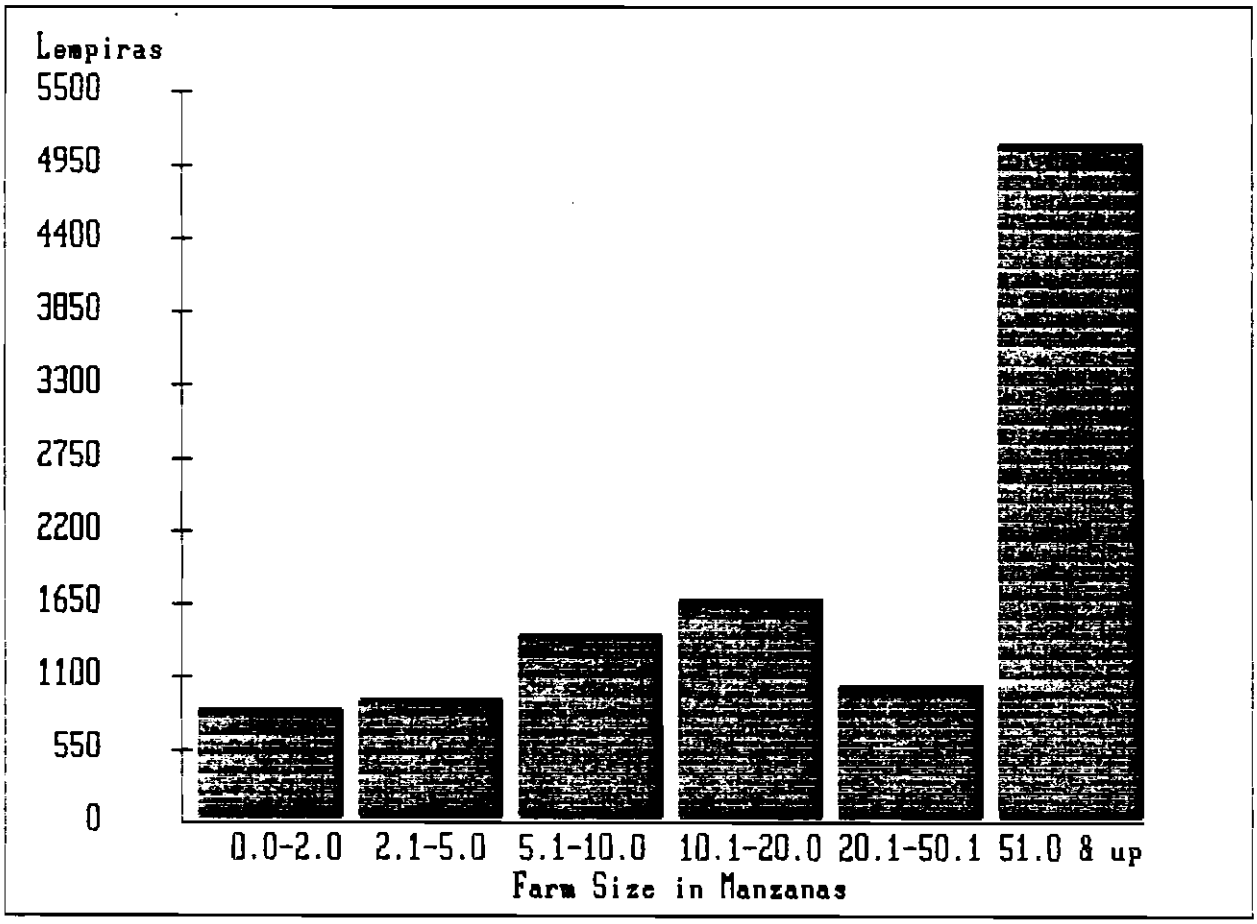
TABLE 3.8

Percentage of Farmers by Value of Production Groupings, in Santa Barbara and Comayagua

LEMPIRAS	SANTA BARBARA	COMAYAGUA
0	7.4	21.7
1-100	8.4	15.0
101-200	5.3	6.3
201-300	6.8	6.5
301-400	5.7	4.2
401-500	5.1	3.6
501-600	5.2	4.2
601-700	3.0	3.4
701-800	2.0	2.2
801-900	2.4	1.6
901-1,000	3.0	3.1
1,000-1,100	2.3	1.1
1,101-1,200	2.3	2.0
1,201-1,300	1.4	1.8
1,301-1,400	0.7	0.7
1,401-1,500	1.6	1.6
1,501-1,600	1.6	0.5
1,601-1,700	1.4	2.5
1,701-1,800	2.1	1.3
1,801-1,900	1.9	-
1,901-2,000	0.5	0.7
2,001-3,000	9.1	4.2
3,001-4,000	5.6	2.5
4,001-5,000	3.2	2.4
5,001-10,000	6.6	4.3
10,001-15,000	2.1	0.9
15,001-20,000	3.5	0.7
> 20,000	0.6	0.5
Total	100.0	100.0
Mean value of production	2,300	1,483

FIGURE 3.A

Value of Production and Farm Size



disparities. The overall pattern is statistically significant ($r = .22$; $p < .001$). There is not always a corresponding increase in income as farm size increases.

On those farms that are larger but showed no corresponding increase in value of production, often physical conditions do not allow for intensive cropping. This is true especially in the areas that are covered by sparse forestry such as was often found in the Minas de Oro region. In other cases, this finding gives further indication of the need for the application of improved agricultural practices so that better use can be made of such land.

Value of production is also related to improved practices ($r = .28$; $p < 001$), land in cultivation ($r = .21$; $p < .001$), credit ($r = .12$; $p = .002$), education ($r = .13$; $p = .002$), and technical assistance ($r = .21$; $p < .001$).

As in the case of Santa Barbara, the implications for the National Agrarian Institute land-titling program are that the small plots, under existing levels of technology, may never produce an adequate income for a family. Nonetheless, it is important to title the small plots, for they ultimately may be consolidated with other plots so that a viable farm unit might be formed. Medium-sized units do offer hope for an adequate income when improved practices are used.

Other Income

Farm families do not necessarily earn their livings entirely from the farm. In some zones of the country, especially near cities, there are opportunities for urban employment. It was observed that there were villages in which the entire population migrated during the coffee harvest season. The impact of such outside labor can be of help in improving the farm, and many cases of that were related to the interviewers. In one case, outside income enabled a farmer to buy fertilizer. It also enabled him to buy cattle and additional land so that he could later become a full-time operator on his own farm. Farmers' spouses also contributed part of their outside earnings to increasing farm size and production.

There were 126 of the 553 farmers in the titling sample who reported working off the farm during the previous year with average earnings of 1,330 lempiras. Other family members also worked off the farm, and the total of such earnings reported by the 161 families with this kind of additional income averaged 2,310 lempiras. The off-farm income was found to be significantly related to education ($r = .22$; $p < .001$) but to none of the other major variables.

Influences on Production and Income

Physical isolation is usually considered as one of the factors that influences farm production. There were some cases of production differentials in the more isolated areas in the present study, but they were most often

caused by soil and climatic conditions. Most of the areas were accessible only in the dry season, but this coincided with the harvesttime. Fortunately, many of the roads had been repaired in the coffee-growing areas as part of the national plan for coffee marketing. In sum, distance to the market was not statistically related to agricultural income nor were the yields on the three principal crops (coffee, corn, and beans). This is contrary to what was found in Santa Barbara. However, in Comayagua, the distance to the nearest store was significantly related to the value of agricultural production.

Conclusions

Some tentative conclusions, as an overview, can be stated here:

The proportion of land used for crops in Comayagua was lower than that in Santa Barbara. Many of the farms had no land in cultivation at all.

The crop yields (i.e., production per unit of land area) in Comayagua were generally higher due to a more favorable agricultural year than that found in Santa Barbara in 1983. Yet the overall production and value of production were considerably lower, with more than 20 percent of the farmers reporting no farm income at all.

Crop yields did not show a statistically significant relationship to farm size.

CHAPTER 4: ACCESS TO AGRICULTURAL INPUTS

The major objective of the Small Farmer Titling Project was to provide tenure security to augment the potential for achieving greater access to agricultural inputs. In theory, at least, once the farmers obtain title, they are eligible for production credit. Further, and in conjunction with other programs, access to technical assistance ought to be enhanced. Woven through these inputs was the anticipation that, with title security, the farmers would be more inclined to improve their farms by investing their time, land, and money. The combination should have salutary effects on farm production and thereby on income and living standards. The degree to which these occur is the subject of the longitudinal five-year study.

The present analysis of the baseline data performs two vital functions: (1) it determines the 1985 incidence of use of the inputs; (2) it examines that use for possible relationships with agricultural production.

The previous chapter analyzed agricultural production and value of production via several characteristics of the farmer, farm, and sampled plot. The present discussion carries that examination further by showing which agricultural inputs, if any, influenced production on the sampled plot, since these are elements that can be varied through the implementation or amplification of agricultural programs for the beneficiaries of the titling project.

Use of Improved Agricultural Practices

Agricultural production increases depend heavily on the appropriate use of improved agricultural practices. The information on those practices was obtained through the farmers' reports. In-depth investigation to prove their existence or appropriate utilization on the sampled plot was impossible within the budgetary constraints; informal specialist observations supplemented the farmers' statements in a general way but were not specific to each farm. Thus, the appropriateness of the utilization of the practices is not part of this analysis.

The responses of the farmers indicated a comparatively low level of use of improved agricultural practices. They reported an average use of only 2.2 practices per farm of the 14 that were included in the survey. The frequency of use of the individual practices by farm can be seen in table 4.1. The average use in Santa Barbara was lower (1.6 practices). In part, this is due to the inclusion of three additional practices in the questions used in Comayagua, but the level of individual practice use is also higher in Comayagua.

TABLE 4.1

Reported Use of Surveyed Agricultural Practices

PRACTICE	SANTA BARBARA (#)	(%)	COMAYAGUA (#)	(%)
Fertilizer	129	22.7	193	34.9
Coffee pruning	-	-	145	26.2
Herbicides	114	20.0	122	22.1
Insecticides	85	14.9	120	21.7
Improved seed	98	17.2	115	20.8
Sprayer	119	20.9	109	19.7
Fungicides	63	11.1	88	15.9
Treated seed	36	6.3	73	13.2
Corn storage	-	-	66	11.9
Veterinary products	90	15.8	54	9.8
Oxen	50	8.8	44	8.0
Granary	17	3.0	42	7.6
Water pump	-	-	14	2.5
Tractor	10	1.8	5	0.9

NOTE: Total possible responses on each item = 569 (553).

Fertilizer was the most frequently reported practice (34.9%). That was followed by coffee pruning (26.2%), herbicides (22.1%), insecticides (21.7%), improved seed (20.8%), sprayer use (19.7%), fungicides (15.9%), treated seed (13.2%), and corn storage (11.9%). The remaining practices were used by fewer than 10 percent of the farmers. Granaries and tractors were least common of all the surveyed agricultural practice items. Practice use is higher in Comayagua than in Santa Barbara on all of the items except veterinary products, oxen, and tractors. The use of sprayers is also slightly higher in Santa Barbara, although in that sample there was confusion between sprayer and "water pumps" and this may account for the slight difference.

It is crucial to point out that 41.6 percent of the respondents did not use any of the fourteen practices surveyed and that 16.1 percent used only

TABLE 4.2

Knowledge of Conservation Practices

PRACTICE	SANTA BARBARA (#)	COMAYAGUA (#)
Organic fertilizer	303	291
Terraces	52	65
Crop rotation	55	62
Tree planting	44	51

a single practice. Further investigation indicates that 11.2 percent of the farmers reported the use of two practices. Three practices were listed by 6.7 percent. The percentage of farmers using four or more practices declined as the number of practices increased.

Knowledge of conservation practices was potentially of great importance in the region since much of the land was so steep. The question was open-ended to avoid suggesting possible replies. The responses are listed in table 4.2. These responses indicate some conservation awareness among the farmers.

The utilization of the practices, however, was not as encouraging. Terraces were observed on a few farms and some farmers employed contour planting. Organic fertilizers--incorporating some crop residues into the soil and spreading manure on the fields--were also observed. On the other hand, slash-and-burn agriculture was used, especially in the old corn fields. Similar conditions were observed in both Santa Barbara and Comayagua in relation to conservation practices.

Agricultural Practices and Production

Three crops--coffee, corn, and beans--were represented by sufficient extension to allow an analysis of relationship of yields to farming practices. Of the three, only bean yields showed a significant relationship, with over four practices used in Comayagua (see table 4.3).[23] The pattern in Comayagua

23. Overall practice use was computed by summing up all practices used on a given farm, counting "1" for each practice used. As will be noted below, this index is very gross and is not sensitive to individual practices useful for a particular crop.

stands in marked contrast to that in Santa Barbara, where all three crops showed a significant positive relationship and the relationship for corn was the strongest.

The lack of a significant relationship of coffee yields to cultivation practices deserves further analysis. Additional questions concerning coffee technification were added to the baseline survey for Comayagua that were not included in the 1983 survey in Santa Barbara. There were 95 growers who indicated that they had "technicalized" (with or without AID/IHCAFE assistance).

TABLE 4.3

Yields of Coffee, Corn, and Beans as Correlated with the Surveyed Practices in Santa Barbara and Comayagua

CORRELATION	COFFEE		CORN		BEANS	
	Santa Barbara	Comayagua	Santa Barbara	Comayagua	Santa Barbara	Comayagua
Total # producing	349	240	229	164	103	99
Combined practice use[a]						
Correlation	.18	-.01	.36	-.06	.19	.20
Level of significance	.001	n.s.	.001	n.s.	.030	.027

[a] A general practice index was used in both Santa Barbara and Comayagua for comparative purposes. It combined all of the practices (see table 4.1). In contrast to Santa Barbara a general practice index does not work well in Comayagua.

NOTE: There were three additional practices used in the questionnaire in Comayagua.

The average area technicalized was slightly over 4 *mz*. These farmers reported slightly higher yields than the other coffee growers (11.9 vs. 11.7 *qq./mz.*), although the difference was not statistically significant. The most important aspect of the analysis is that they did report significantly higher use of improved practices than the other growers (4.7 vs. 1.9 improved practices). They

also reported significantly higher average use of credit (4,701 vs. 282 lempiras of credit). These inputs have not as yet produced higher coffee yields but should do so within two or three years.

There were also 28 coffee growers in the sample who reported being beneficiaries of the AID/IHCAFE coffee improvement project. The contrast between yields and inputs is even more pronounced in this group. The beneficiaries report a significantly lower yield than those not participating in the project (4.8 vs. 12.4 *qq./mz.*). At the same time, they show significantly higher practice use (4.4 vs. 2.6 improved practices). They also show significantly *higher* credit use (8,427 vs. 935 lempiras of credit). Most of the beneficiaries have smaller areas of coffee plantings and have completely replanted. The first of the new plantings was made in 1983 in this area, so the expected higher yields should begin to show next year. In other areas, the production has already reached as high as 60 *qq./mz.* The lack of relationship of coffee yields to agricultural inputs is likely to be temporary for this group.

In the case of corn and beans, the growing conditions during the year were much better in Comayagua than those found in Santa Barbara in 1983. The higher yields in Comayagua appear to be more a function of a better growing season than use of improved technology.

All of the other crops--rice, bananas, cacao, fruit, and sugarcane--were produced by so few farmers that correlation with the combined practice index is not meaningful. Most of these crops were grown with a minimum of improved practices.

Further analysis of specific practices is useful to see which of the fourteen that are included in the index are the most closely related to higher yields. Table 4.4 shows this relationship with selected practices and coffee production.

TABLE 4.4

Coffee Yields in *Quintales* per *Manzana* and Improved Practice Use Reported in Santa Barbara and Comayagua

PRACTICE	SANTA BARBARA[a] User	Nonuser	COMAYAGUA[b] User	Nonuser
Fertilizer	7.5	4.2	12.2	11.2
Herbicides	7.4	4.4	12.9	11.2
Sprayer	7.3	4.4	11.0	12.0

[a] All differences were significant at $p < .005$.

[b] All differences were nonsignificant.

The pattern of use of the individual improved practices and the corresponding higher coffee yields that was found in Santa Barbara did not follow in Comayagua. The yields followed the same pattern in all of the fourteen practices. In spite of this, the overall yields were higher in Comayagua than in Santa Barbara.

There was a strong relationship between corn yields and selected practices in Santa Barbara, but this did not follow in Comayagua. There was a slight advantage found in most of the fourteen practices but the differences were not statistically significant.

TABLE 4.5

Corn Yields in *Quintales* per *Manzana* and Improved Practice Use Reported in Santa Barbara and Comayagua[a]

PRACTICE	SANTA BARBARA User	SANTA BARBARA Nonuser	COMAYAGUA User	COMAYAGUA Nonuser
Treated seed	38.7	11.9	10.6	11.8
Fungicides	31.4	12.2	13.1	11.3
Insecticides	26.1	11.9	11.7	11.6
Sprayer	24.1	11.7	13.3	11.4
Herbicides	23.3	12.2	12.4	11.4
Fertilizer	22.9	11.9	10.8	12.0

[a] All six differences in yields in Santa Barbara were significant in a positive direction. None of the yield/practice relationships was statistically significant in Comayagua.

Further analysis confirmed that practice use in Comayagua was crop specific. In the case of coffee, fourteen practices (including some from the previous practice index and others that were related to technical assistance and farm improvements) were found to be associated with coffee production. These were combined to form a coffee-specific practice index. No relationship was found between this practice index and coffee yields, but a strong and significant relationship was found with farm size ($r = 31$; $p < .001$), credit

use ($r = .31$; $p < .001$), coffee area technicalized ($r = .27$; $p = .013$), number of new coffee plants in 1983 ($r = .49$; $p < .001$), number of coffee plants in 1984 ($r = .47$; $p < .001$), and coffee income ($r = .33$; $p < .001$).

Coffee yields were particularly low at this time for the farmers in Comayagua who were participating in the AID/IHCAFE technicalization plan. These coffee growers reported an average yield of only 4.8 *qq./mz.* compared to the other coffee growers who reported 12.4 *qq./mz.* The technicalization plan calls for complete replanting of the technicalized area which was done in Comayagua in 1983 and 1984. These plantings will not be in commercial production for at least another year. The technicalized areas are of 1 or 2 *mz.* only, so the program affects the small producer more than those with larger plantings who maintained part of their old crop in production. Within two years the increase in production on the technicalized areas should show up in a strong correlation between the use of improved practices and coffee yields.

In the case of corn production, further analysis gives indications that there were four practices that were associated specifically with that crop in Comayagua. Using the resulting corn practice index, there was a positive and significant relationship with corn yields ($r = .18$; $p = .001$). This is in contrast to the relationship of corn yields and the general practice index listed earlier which showed a negative but nonsignificant relationship with corn yields (see table 4.3).

The additional analysis suggest that the improved practices that are being used with coffee production in Comayagua have not as yet converted to increased coffee yields nor have they been applied to other crops. For example, fertilizer use is a fundamental practice in the coffee technicalization plan, but it is seldom used in corn even among those farmers who grew both crops. In the future, it is likely that the new practices that are being used in coffee production, if they give good results, will be used in the other crops as well. During the present period of transition, a crop-specific practice index is more accurate than the general practice index that was used in the earlier analysis of the 1983 data from Santa Barbara and used earlier in this chapter for comparative purposes.

Bean yields had a more positive relationship with improved practice use in Comayagua than corn yields. The relationships were generally positive although only one was significant (sprayers: 14.1 *qq./mz.* for users and 8.1 *qq./mz.* for nonusers.

In summary, there are two factors that are important in the interpretation of the relationship of improved practices and crop yields. First of all, the farmers were asked which practices they used for their farming operations in general but not for each specific crop. In the case of fertilizer, its use was most likely for coffee and most rare for corn. Corn is not a crop that is highly technicalized in Comayagua while coffee is becoming so. It has generally been considered that farmers who use an improved practice in one crop are likely to use that practice in their other crops as well. This does not seem to be the case in Comayagua. Those farmers who participated in the coffee technicalization project received credit for very specific uses such as fertilizer and spraying. These practices were supervised and monitored and, if not done correctly, no additional credit was forthcoming. This kind of technical assistance was not available for traditional crops.

The other factor is the improved weather conditions in Comayagua in comparison to Santa Barbara. For the traditional crops, such as corn and beans, adequate rainfall was probably more responsible for the higher comparative production than the use of improved cultivation practices.

Agricultural Practices, Farm Size, and Income

Farm size is closely related to the use of the agricultural practices: the larger the farm, the more practices used. Resources can engender more resources. Since many of the practices in the survey required cash expenditures, the wealth of the farmer played a role in their use. As was stated earlier, the relationship of total farm size and improved practices is statistically significant ($r = .239$; $p < .001$).

Value of production was also significantly related to the use of improved practices. That is, although yields were not related to farm size, the combination of practices and size was important. The relationship of practice use and value of production was statistically significant ($r = .28$; $p < .001$).

Agricultural Practices and Credit

Since many of the surveyed practices involve cash expenditures, it would therefore be anticipated that those with more credit could use more practices. Such was the case; the correlation was relatively strong ($r = .30$; $p < .001$). There was a significantly higher use of credit by those farmers who also used improved seed, veterinary supplies, fertilizer, insecticides, fungicides, sprayers, and tractors.

Agricultural Practices and Education

The use of improved practices and the level of education were related but the association was not strong ($r = .18$; $p < .001$). Some individual practices, however, showed somewhat stronger associations.

Short courses can offer real payoffs for farm populations, a finding supported in the present study. The overall use of improved practices and attendance at short courses were significantly related. Those who attended short courses used significantly more improved practices (3.3 vs. 1.8 practices).

Agricultural Practices and Technical Assistance

The details of technical assistance rendered to the sample farmers will be examined in a subsequent discussion, but the association between technical assistance and improved practices is worth noting at this point. Those who had received more technical assistance adopted more practices. The relationship of improved practices and agent visits was strong and statistically significant ($r = .41$; $p < .001$).

Many of the conservation practices also are communicated through technical assistance, and that appeared to be the case in this survey. Knowledge of conservation measures was also related with agent contact.

The indicators of progress in living standards, usually associated with farm size and income, are also related to agricultural practices. Those using more practices have more resources and they are much more likely to possess radios, sewing machines, toilets, improved lighting, and a more secure water supply. This was found to be true in Comayagua as it was in Santa Barbara. The present study also included a number of questions related to farm improvements and a strong correlation was found, especially among the coffee producers.

Perception of the present and the future was also positively related to use of agricultural practices. This is in contrast to the findings in Santa Barbara where no significant relationship was found.

Finally, it was also expected that there would be a relationship of practice use and recognition and resolution of community problems. While no relationship was found in Santa Barbara, there was a significant relationship found in Comayagua. The farmers who used more improved practices also were more active in resolving community problems. This was also indicated in their participation in community groups such as agricultural associations, credit cooperatives, and school committees. They were also more likely to have sold their products through a cooperative.

Agricultural Credit

One of the principal arguments in favor of the small farmer titling project is that it will facilitate access to credit. It is too early, of course, to know if this will take place. Nonetheless, the baseline information can be helpful in measuring the present level of credit usage for future consideration as well as the potential impact of that input.

There were 111 loans reported among the sample of 553 farmers in Comayagua. This is a greater proportion than the 82 loans reported among the 569 farmers in Santa Barbara (20.1% vs. 14.4%). The average value of the loan, however, was 4,424 lempiras for the two-year period or slightly more than 2,000 lempiras per year which was much lower than in Santa Barbara. Most of the farmers (82.2%) indicated that the loans were partially or completely used for immediate production costs. A smaller number (28.0%) indicated that they had used the loans, partially or completely, for capital improvements.

There were 52 farmers reporting that they had received credit counseling, and the two agencies most often mentioned were IHCAFE (26 cases) and BANADESA (15 cases). Other sources were mentioned but only in a few cases. Credit counseling was mentioned more often in Santa Barbara. This is an aspect where more attention is needed if better use of credit is to be obtained.

FIGURE 4.A

Agricultural Credit and Farm Size

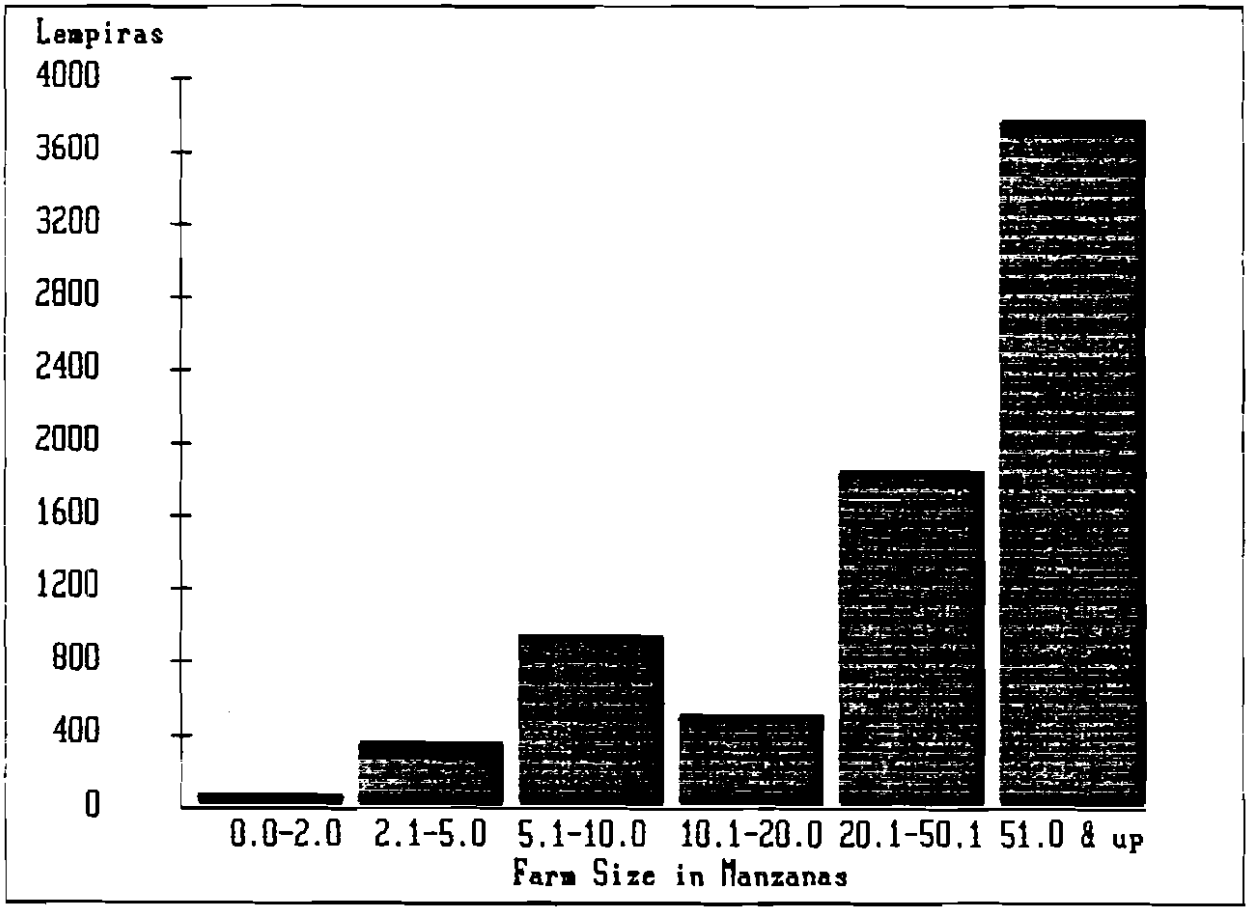


TABLE 4.6

Sources and Characteristics of Credit Obtained in Santa Barbara and Comayagua

SOURCE	NUMBER OF LOANS		AVERAGE VALUE		AVERAGE MONTHS	
	Santa Barbara	Comayagua	Santa Barbara	Comayagua	Santa Barbara	Comayagua
BANADESA	34	55	6,650	4,855	36	27
Private bank	28	15	17,074	8,855	32	36
Family	7	3	2,121	442	31	9
IHCAFE	5	14	1,466	1,334	35	45
Moneylender	5	1	11,454	1,000	16	12
Businessmen	3	4	1,000	1,120	9	5
Friends	-	15	-	429	-	7
Cooperative	-	10	-	1,449	-	11
Total	82	111	9,630	4,424		

The use of credit was also correlated with several variables: the use of improved practices ($r = .30$; $p < .001$); technical assistance ($r = .26$; $p < .001$); value of production ($r = .12$; $p = .002$); total value of production ($r = .13$; $p = .001$); farm size ($r = .57$; $p < .001$); amount of cultivated land ($r = .34$; $p < .001$); educational level ($r = .11$; $p = .004$); and participation in the AID/IHCAFE coffee improvement project ($r = .66$; $p < .001$). As can be noted, the strongest relationships with credit use are farm size (see figure 4.A) and participation in the coffee improvement project.

Access to Services

Access to services of all kinds is important to the rural resident, a theme expressed many times during the interviews. Indeed, the distance from many key services was great, and the long trip was more arduous because it was often made on foot or by horseback. The purchase of supplies for the farm and the transportation of products to market are particularly important for the farmer, and therefore distance to stores and markets is of interest in this study.

The mean travel time to market was 82 minutes which is considerably shorter than the 123 minutes reported in Santa Barbara. As in Santa Barbara, there was no correlation of distance to markets and agricultural income or agricultural production. One reason for this is that coffee was usually marketed at the farm gate by selling to buyers who travel the countryside.

The average distance to retail stores was reported as slightly over 1 hour and 37 minutes. There was a significant relationship between store distance and use of improved farm practices ($r = .13$; $p = .001$).

Schools were relatively close and the average trip took slightly over 18 minutes in Comayagua. It was, however, more difficult for those who wanted their children to attend school beyond the primary grades. Usually it was necessary to make living arrangements with a family member or friend in an urban center where secondary schooling was offered.

As in Santa Barbara, the most difficult access problem in Comayagua concerned medical assistance. The average distance to medical facilities was 1 hour and 47 minutes, but some reported as much as 8 hours. In addition to the distance, high cost was another serious problem which was verified by interviewers when medical attention was needed during their stay in the field.

The data were gathered in Comayagua during the peak of the dry season, but even then some roads were not passable. We were told that very few of the roads were usable all year long. An effort is made each year to open up the roads in the areas where coffee is produced, and some coffee export-tax funds are available for this purpose.

Technical Assistance

The provision of technical services is considered vital to a development program. The low-level technology found on the sample farms makes this input of particular importance for the success of the titling project.

A total of 154 farmers reported being visited, and 117 (76%) evaluated visits as "good."[24] The Honduran Coffee Institute was most often mentioned (65%) as the visiting agent. Private banks and natural resources were also mentioned (16% and 10%, respectively). The frequency of such visits was listed as monthly (11%), frequently (20.5%), yearly (28.5%), and rarely (39%). The pattern of visits was much the same as in Santa Barbara, although the visits were reported as being somewhat more frequent in Comayagua and were considered to be of better quality.

---

24. The farmers in the survey reported all the visits that they considered as technical assistance, including those from the National Agrarian Institute. Most of the INA technicians were involved with the delineation and verification of the properties as part of the titling process. The visits were, understandably, very important to these farmers but not directly related to crop improvements or credit delivery.

Technical assistance was also correlated with use of improved farm practices ($r = .41$; $p < .001$), coffee yields ($r = .07$; $p. < .05$), value of production ($r = .21$; $p < .001$), total income ($r = .17$; $p < .001$), farm size ($r = .18$; $p < .001$), amount of cultivated land ($r = .19$; $p < .001$), and educational level ($r = .08$; $p = .04$).

The evaluations of the visits of the several agents to the farms suggest that technical services to farmers will almost always find positive reception. There appears to be a willingness, based on their previous experience with the agents and other organizations, to receive and profit from the visits. This is an important factor for the development process at this stage in Honduras's development.

CHAPTER 5: PERCEPTIONS, PROBLEMS, AND PARTICIPATION

The People and the Economy

Perceptions of the Situation

The farmers interviewed in Santa Barbara overwhelmingly (77.0%) stated that their economic situation was worse than it had been the previous year. That finding was not surprising in light of the low rainfall in the region during the crop year ending just prior to the interviews, a factor that was partially responsible for the low yields of basic grains and other crops produced in the area. In addition, the region was suffering from a number of coffee diseases that had in some areas totally decimated the crop and in other areas greatly reduced its yield. Coffee prices had fallen precipitously from their high levels of the mid-to-late 1970s. Added to that was the overall rise in the cost of living suffered by all Hondurans as a result of the difficult macroeconomic picture both domestically and in the Central American region as a whole.

By 1985 the macroeconomic situation had not improved much, but rainfall was better in 1984 and coffee prices started to move upward in 1985. These changes alone should have helped improve perceptions about the economic situation of the respondents in the 1985 study as compared to the 1983 survey. In addition, the Comayagua sample included a smaller proportion of coffee farmers (51.0% vs. 69.4%) than did the Santa Barbara sample, and therefore the coffee diseases and the comparatively low market prices presumably affected a smaller proportion of the sample. Taking all of these factors together, it is therefore not surprising that opinions in Comayagua regarding perceptions of the current year's economic situation with that of the year before were much more positive. Only 32.7 percent of the respondents stated that things were "worse"; 33.3 percent said that they were "the same"; and another 28.9 percent said that they were "better." That last figure is over three times higher than it was in Santa Barbara (9.5%). An additional 5.1 percent of the respondents had no opinion on this question.

Further signs of optimism are revealed by examining the results of a follow-up question. The respondents were asked: "What do you think? Do you believe that a year from now your economic situation will be better, the same, or worse than it is now?" Whereas 36.7 percent of those in Santa Barbara thought that next year would be better, 46.1 percent of the Comayagua sample were optimistic about the future. Another 18.8 percent thought that things would be about the same, while only 14.1 percent thought that they would get worse, a drop from the 26.0 percent level reached in Santa Barbara. Given the speculative nature of this item, it is not surprising that 21.0 percent gave

no answer (compared to 29.5% in Santa Barbara). The respondents were also asked: "What do you think? Do you believe that in the future your children will live better or worse than they live now?" Over half (58.8%) of the Comayagua interviewees thought that their children would live better, compared to 37.3 percent in Santa Barbara. An additional 12.5 percent thought that they would live about the same, while only 7.6 percent thought that they would live worse, less than half the proportion encountered in Santa Barbara (16.0%). No opinion was rendered by 21.2 percent of the respondents on this item. It should be noted that none of the above-mentioned perceptions exhibited a consistent relationship to farm size.

Community Problems and Participation

Problems and Resolution

Three questions were asked of the respondents that attempted to determine the main problems in the communities in which they lived, whether they believed that something could be done about the problem mentioned, and if the respondent had actually done something to try to resolve the problem. This series of items performs two functions. First, it pinpoints the principal problems experienced by the respondents. Second, it serves as a measure of what has been called "problem-solving efficacy," or the belief by the individual that he/she is capable of acting effectively to resolve community problems.[25]

Nearly eight out of ten (78.1%) respondents were able to name a local problem, indicating a cognitive awareness that is the first step on the road to efficacious problem-solving. This contrasts, however, with an even higher level of awareness in Santa Barbara (91.7%).

In Comayagua, one major problem stood out above all others in the minds of the respondents: potable water. Over half (52.1%) of the beneficiaries named this as the main problem affecting their community in contrast to only 16.2 percent in Santa Barbara. The next most frequently mentioned problem was the condition of roads, named by 9.9 percent in Comayagua compared to 16.2 percent in Santa Barbara. Schools, medical services, and electrical service were the next most frequently named problems in Comayagua (6.0%, 4.5%, and 2.9%, respectively). The only other problems mentioned by a significant number of respondents were employment (1.3%) and credit (0.7%).

It is obvious from this listing that the main priority in the Comayagua area is for the installation of a potable water systems. This was a problem mentioned with approximately equal frequency by respondents with all farm sizes, from small to large. One is encouraged by the fact that the overwhelming proportion (95.2%) of those who mentioned a problem thought that it could be resolved, an opinion that did not vary significantly by farm

---

25. See Seligson 1980:63-142. This is a simplified version of the original scale.

size.[26] However, a much smaller proportion has actually attempted to do something about the problem. Of those who thought that something could be done about the problem, 47.8 percent had actually attempted action. Put in other terms, for the entire sample, 38.0 percent who named a major community problem both believed that something could be done to resolve it and had actually attempted to do something. That proportion corresponds rather closely to the one obtained in Santa Barbara (39.7%). This means that nearly two-fifths of the respondents demonstrated high levels of problem-solving efficacy, thereby providing a solid base for community development projects. Indeed, much more pessimistic assessments have often been made about the feasibility of such projects in rural Honduras. It is also of note that there was some relationship of this last item (working to resolve the problem) and farm size; among those who had farms larger than 50 *mz.*, the proportion of efficacious respondents rose significantly. These findings contrast with Santa Barbara. There, no uniform pattern was uncovered.

Participation in Organizations

In order for community action to be effectively translated into meaningful development, organization of community groups is a key requisite. The study of Santa Barbara found that participation in many such organizations was quite low. The level of participation in organizations is, in most cases, even lower in Comayagua. The proportion of both samples participating in community organizations is given in table 5.1.

As shown in the table, in every case except for agricultural association and savings-and-loan cooperative, the respondents in Comayagua were less active than in Santa Barbara. Most distressing is the low level of participation in agricultural cooperatives, since sales of farm produce to a cooperative proved to be significantly related to a higher value of production in the Santa Barbara study. Less than 2 percent of the Comayagua beneficiaries participate in agricultural cooperatives. Savings-and-loan cooperative participation was higher but still involved fewer than 5 percent of the sample. Participation in religious associations was measured in Comayagua but not in Santa Barbara. It was found that such participation was quite high when compared to other types of organization. Further research needs to be conducted, however, before any developmental implications are drawn from these findings. One first needs to know the types of activity in which these organizations are involved.

The only positive sign in the participation data relates to participation in the *patronato*, a group that often is the focus of community problem-solving in rural Honduras. Although *patronato* participation in Comayagua was lower than in Santa Barbara, it still involved over two-fifths of the beneficiaries. Nonetheless, one would expect that the greatest impact on

---

26. In Santa Barbara, the figure was 97.5%, although in Jones et al. (1984:65) the figure of 87.5% is reported. The 87.5% figure is correct but refers to the entire sample, including those who did not mention any problems and who therefore were not asked if they believed that they could solve one. The comparable figure in Comayagua is 75.8%.

TABLE 5.1

Organizational Participation: Comayagua and Santa Barbara
(%)

ORGANIZATION	COMAYAGUA	SANTA BARBARA
Agricultural cooperative	1.8	4.6
Agricultural association	7.5	6.5
Savings-and-loan cooperative	4.5	4.4
"*Patronato*"	42.7	50.1
PTA	30.6	33.1
Peasant association	3.4	7.9
Sports association	9.0	9.3
Religious association	57.3	-

improving agricultural income, the primary goal of the titling project, would be achieved through membership in agricultural cooperatives and agricultural associations. Until these organizations acquire more resources and until promotional activities are undertaken to increase their membership, it is not likely that they will have much to offer to the small farmer.

Potential for Cooperatives

Given the potential importance of cooperatives, the questionnaire probed the inclination toward joining such organizations. A promotional program designed to increase cooperative membership would not fall on deaf ears in Comayagua. As in Santa Barbara, a high proportion of the sample expressed interest in cooperatives. It was found that 61.5 percent of the Comayagua respondents would be willing to join with their neighbors in selling their products. An additional 20.4 percent said that they were not sure, while only 17.7 percent said that they would not do so. In contrast, these results are somewhat lower than in Santa Barbara, where 80.0 percent said that they would be willing to join with their neighbors in selling their products, 10.7 percent said no, and 9.3 percent said that they were unsure.[27] The respondents were

27. In Jones et al. (1984:66) the answers to the question excluded the "don't know" category. With those responses excluded, in Santa Barbara 88.2 percent would be willing to join with their neighbors, whereas in Comayagua the figure is 77.3 percent

also asked directly if they would be willing to join a cooperative if one were established in a nearby village, and 63.1 percent said yes.[28] An additional 23.9 percent said that they did not know, while only 13.0 percent would not join. In Santa Barbara, the proportion of potential joiners was even higher: 81.4 percent said "yes"; 12.3 percent were not sure; and only 6.3 percent said no.[29]

In sum, although the attitude toward cooperatives is not quite so favorable as it was in Santa Barbara, it is clear that a substantial proportion of the beneficiaries would be interested in joining one. At present, however, only 3.3 percent of the Comayagua beneficiaries were selling at least some of their products through a cooperative as compared to 11.2 percent in Santa Barbara.[30]

Farm size had little direct relationship to organizational activism except with respect to cooperatives and only when comparisons are made between those with farms larger than 50 *mz.* and all others. It was found that 20.5 percent of those with the largest farms were members of an agricultural cooperative as compared to 7.5 percent overall. The largest farmers were three times more likely to sell to a cooperative than the sample as a whole (9.1% vs. 3.3%, excluding missing data). However, additional interest in joining a cooperative among this group was *lower* than the sample as a whole (71.1% vs. 83.1%, excluding "do not know"). Yet nearly three-quarters of the largest farmers are interested in joining a cooperative.

Perception of the Titling Project

There was much lower knowledge of the titling program reported in Comayagua than in Santa Barbara. In Santa Barbara only 4.9 percent of those interviewed stated that they had not heard of it, whereas in Comayagua 35.3 percent gave this response. This may be because promotional activities had not yet been fully developed by the time of the study, or it may because the promotion in Comayagua was not as effective as it had been in Santa Barbara. It is clear, however, that up to the time of the study INA had had much less contact with the beneficiaries in Comayagua than in Santa Barbara. Only 11.4 percent of the respondents in Comayagua stated that they had had some contact with INA as compared to 74.7 percent in Santa Barbara. Of those who had been visited by INA, most (66.7%) had seen a promoter. The evaluation of the visit

---

28. If this question had been rephrased to focus on a cooperative set up in the respondent's village rather than one nearby, a higher proportion of affirmative responses may have emerged.

29. The results reported in Jones et al. (1984:66) correctly identified the "yes" responses, including "do not know."

30. It should be noted that the fact that more respondents sold to cooperatives than participated in them is not an error. Cooperatives will purchase products from nonmembers in Honduras.

on the part of the beneficiary was rated as "good" by 79.7 percent compared to 88.9 percent in Santa Barbara. Only a tiny proportion (1.7%) rated the visit as "bad." There was no overall relationship between farm size and having heard of the program, except that the owners of the largest farms were less likely not to have heard it (20.5%) than the sample as a whole.

Of those who had heard of the titling program, most (82.2%) had heard of it first via the radio, considerably higher than in Santa Barbara, where the radio was the source for 63.8 percent. The cadastre was the second most common source of information on the program (11.0%) followed by friends (4.0%) and by INA promoters (2.8%). In Santa Barbara INA promoters were the first source of information for 21.3 percent of the respondents. This difference is a result of the interviews in Comayagua being conducted before group meetings had taken place.

A reflection of the differences in promotional efforts between Santa Barbara and Comayagua is the lower level of knowledge of the benefits of the program. In Santa Barbara 91.9 percent of the respondents named at least one advantage to the titling program whereas in Comayagua only 70.2 percent did. An additional 45.9 percent of the Santa Barbara beneficiaries mentioned a second advantage to the program compared to 30.4 percent in Comayagua. The most commonly noted advantage in Santa Barbara was the sense of security produced by the title (71.0%),[31] whereas in Comayagua this was mentioned by a smaller proportion of the respondents (48.5%). However, a response with a related meaning, namely, that the title would help "legalize the situation," was noted by an additional 32.1 percent of the Comayagua beneficiaries compared to 18.4% in Santa Barbara.[32] When added together, then, the security advantage of the title was the main perceived benefit in both surveys. Access to credit was mentioned by 18.0% of the Comayagua sample compared to 44.6 percent of the one in Santa Barbara. Since the credit aspect is a main component of the promotion campaign, the lower mentioning of this benefit is, no doubt, a reflection of the more limited promotion in Comayagua. Other advantages mentioned included improving the value of the land and the increased facility in selling it, but these were noted by very few respondents.

A much smaller proportion of the respondents in Comayagua named a disadvantage of the program (26.6%) than had named an advantage. This was almost the same proportion as found in Santa Barbara (25.5%).[33] The most commonly mentioned disadvantage was having to pay taxes (9.4% of all respondents), followed by paying for the land (6.2%). A few respondents were concerned about having to pay for the title, and a few others were concerned about potential disputes with family and neighbors that might arise from the titling. Overall, however, there seemed to be a relatively low level of concern about the potential disadvantages of the titling program.

---

31. The earlier report uses a figure of 75% because it excludes those who did not mention an advantage.

32. Respondents could name up to three advantages; thus percentages may total greater than 100%.

33. The figure of "one-third" reported in Jones et al. (1984:67) is incorrect.

CHAPTER 6: TARGETING OF DEVELOPMENT ASSISTANCE

The long-term goals of the titling project go far beyond its immediate objective of providing fee-simple property titles to 70,000 farm families in Honduras. The project paper for this loan begins its discussion of the rationale of the project by quoting from a recent AID policy paper on agricultural development: "Clarity of ownership and title is critical to stimulating increased capital investment (and therefore production) at the level of the individual farmer" (USAID 1982:9). The granting of a title to small farmers in Honduras is, therefore, just the first step, a catalyst in the developmental process that should eventually see increased farm production and, by extension, improvements in the welfare of the farmers themselves.

In this report it is impossible to give any indication of the impact of titles themselves, since the findings are based entirely upon the baseline survey conducted when titles had just been granted or were in the process of being granted. The impact of titling occurs only over time and can be measured only as subsequent interviews are conducted with the beneficiaries in future years.

Despite this limitation, the report can provide some preliminary indications of the impact that titling may have *when combined with other inputs*. Previous studies of titling[34] have shown that its impact is greatly enhanced when it is combined with credit and technical assistance. In one of those studies, the authors make the case that titling by itself will have a minimal impact:

> the presence of tenure security alone will not necessarily be accompanied by higher farm production; other factors of production such as access to capital (through credit) and technology must also be present in order for farm production to rise. But if access to capital, technology and other factors will raise farm production, they will raise it even higher if they are made available in combination with tenure security. . . .
>
> a land title by itself will not significantly raise the subsistence farmer's agricultural production. Tenure security must be given an opportunity to operate through other factors of production; in this sense, tenure security (the provision of legally sanctioned titled to land) is a necessary but not a sufficient condition to agricultural development (Saenz and Knight 1971).

---

34. See Saenz and Knight 1971; also Seligson 1982:31-56.

In a study of the impact of the Costa Rican titling program, these findings were strongly confirmed. In that study it was found that: "The land titling program has provided many peasants with secure title. It does not appear, however, to have been carefully coordinated with a program of technical assistance and agricultural credit" (Seligson 1982:53).

The project paper for the present loan recognizes the importance of a package of inputs which, when combined with secure title, will have significant a impact on farm production. Indeed, a primary motivation for the loan in the first place was the need to facilitate credit to coffee farmers who found themselves unable to combat coffee rust without such assistance. The widespread growing of coffee in the Santa Barbara region was the primary consideration for its selection as the pilot area for the titling program, and the extensive plantings of coffee in parts of Comayagua no doubt played a role in its selection as a priority area. The hope is that the titling project will be reinforced by the "Small Farmer Coffee Improvement" project (AID loan #522-T-044) that is designed to channel technical assistance and credit to Honduran coffee farmers. Various other ongoing programs focused on rural development should also enhance the impact of titling.

The need to couple titling with a package of inputs in order to enhance its effectiveness suggests that the data from the baseline study can be used to examine the impact of those inputs. That is precisely what we propose to undertake in this chapter. The objective is to point to those factors that are most directly responsible for increasing the value of production among the sample of titling beneficiaries. To the extent that these findings can be generalized to other regions of Honduras, the impacts should be felt there as well. Moreover, we can compare the results obtained in Comayagua with those found in Santa Barbara in order to determine if some sort of national pattern is emerging.

The identification of the collateral factors related to increases in farm production is of considerable import for the conduct of rural development assistance during the life of the titling project. Events are moving swiftly in Central America, and there is no time to await the long-term study which will be completed some five years after the initiation of the program. If there are efforts which can be made immediately, the data from this report could be utilized to help direct those efforts.

We must begin our effort with a note of caution, however. While we do not hesitate to point to the factors which we have found to be related to increased farm production, we cannot know with any certainty if these factors will behave in the same way in the presence of title security. Previous research, our own observations, and simple logic suggest that the impact of each factor will be enhanced when accompanied by title security.[35] We do not know, of course, if such will be the case in Honduras. We do feel that it would be

---

35. Statistically this would amount to an "interactive effect" in which the impact of the independent variables (e.g., credit, technical assistance) working together is greater than the impact of each variable working on its own.

a mistake to assume that the least likely scenario will take place, namely, that these factors in the presence of title have a lowered impact on farm production. It is far wiser to assume that the impact will be positive and to program development assistance accordingly.

Factors that Increase the Value of Production

Nearly all rural development programs in Honduras--and, for that matter, in most of the Third World--focus on increasing farm production. The titling program is no exception, and it is entirely appropriate, therefore, that this chapter on the targeting of development assistance concentrate on determining which factors seem to be most critical in achieving the goal of increased farm production.

The method we have employed to measure farm production has been explained in considerable detail in chapter 3. In brief, what was done was to record the farmer's annual production on the sampled parcel of the eight most widely cultivated crops (plus pastureland) in the region and to convert this data on production to income generated from the sales of the crops or potentially generated from such sales. To this was added income derived (or potentially derived) from the sale or consumption of the four most commonly raised livestock. No account was taken of costs of production. The objective was to reduce the vast amount of production data obtained into a single figure of value of production so as to allow comparisons among the beneficiaries. For the purposes of this chapter, the value of production generated on the sampled parcel will be used as the central dependent variable, that, is the variable the values of which we are attempting to explain.

The data base compiled for the baseline studies provides numerous variables that can be employed to determine which factors influence farm production. It would make little sense, however, to attempt to examine all the variables because it is already known--from previous studies of rural agriculture in Latin America as well as from studies of titling--that there are a relatively small number of factors that are most closely associated with varying levels of farm production. Moreover, it would be wasteful of human and computer resources to embark upon an unrestricted "fishing expedition" in hopes of uncovering a serendipitous finding that would be worth the cost and effort involved. The variables not used in this analysis, however, play two very important roles in the baseline data set. First, they serve an important descriptive purpose, as we have attempted to demonstrate in the previous chapters of this report. Indeed, we believe that the baseline data provide the most comprehensive picture of agricultural, social, and economic conditions among smallholders currently available in Honduras, notwithstanding their limitation to two departments. As such, we can envision using this data base for numerous other purposes unrelated to the titling project.[36] Second, many of the variables not used directly in this chapter will become important as

36. One such report on the AID/IHCAFE coffee technicalization project is currently under preparation. See Seligson (n.d.).

comparisons are made, later in the project, between the baseline data and the reinterview data. In addition, these variables will be of considerable importance as control variables when comparisons are made with the control group.

Based upon the results of the Santa Barbara study, four main variables seemed to have important impacts on the value of production. Technically speaking, these variables are called "predictors" because knowledge of their values helps us to determine what value the dependent variable will have for any given farm. These four predictors are:

1) *Size of holding*

Nearly all studies of rural Latin America have concluded that land is the scarcest resource. Peasants who live on postage-stamp-sized plots have little chance of producing incomes above the poverty line without massive capital investments far beyond the capacity of either the public or the private sector. Moreover, previous studies of titling have suggested that those with secure title but an insufficient amount of land are not likely to receive adequate amounts of credit and technical assistance.

In this report we have repeatedly referred to the size of the farm and its relationship to many other variables in the study. Size of titled *plot* (measured in ***manzanas***) is used as an independent variable in this analysis. In the Santa Barbara study we used a variable (see variable *F6*) that, at the time of preparing the questionnaire, was meant to measure the total size of the titled parcel for which agricultural production data were obtained. We had planned to use the cadastral information for the other plots. However, as we noted in the report on Santa Barbara, the cadastral information proved to be unreliable in some instances. In addition, although the interviewers were instructed to ask about the size of the plot for which the production data were obtained, the question itself led to some ambiguities on this point. As a result, a new question (*F2A*) was inserted in the Comayagua questionnaire that specifically referred to the sampled parcel under discussion. Although the variable was closely associated with *F6*, especially when the farmer owned only one plot, this was not always the case. Hence, in this analysis we use *F2A*, the size of the titled plots, as the measure of size.

2) *Credit*

The lack of investment and production capital is probably the second most serious problem small holders face in rural Honduras. Production increases require the application of fertilizers, insecticides and fungicides. In addition, farm implements such as sprayers, hoes and shovels need to be obtained. The very limited incomes produced by smallholdings in Honduras generally do not allow the farmers to purchase these badly needed supplies and tools. Loans to purchase these imports must be repaid which will be possible only if increases in net income are obtained. In Santa Barbara we found that credit was related to increased value of production.

3) *Cooperatives*

Smallholders in rural Honduras are confronted with serious problems in marketing their products at reasonable prices. The individual producer

generally must sell his crop to middlemen who often pay prices far lower than offered on the market. Some farmers have joined together in agricultural cooperatives and have marketed their crops directly. In Santa Barbara, it was found that sales to a cooperative were related to higher values of production.

4) *Improved Agricultural Practices*

We were struck by the low level of modern agricultural practices encountered among the beneficiaries in both Santa Barbara and Comayagua. The use of improved farm practices was associated with increased value of production in Santa Barbara. In this chapter we use the overall index of improved farm practices developed previously. This index groups together many practices, only some of which are appropriate for a given crop. As we noted in our discussion of crop yields, only when a crop-specific index of practices is created is there any clear relationship to production in the Comayagua data. However, since the dependent variable is the aggregate value of all production, we feel justified in using an overall index of farm practices in this analysis. A more subtle but far more complex analysis would relate the incomes of each crop to each separate input. Such an analysis is useful when the focus in on a specific crop but far less so when overall value of production is of interest. In addition, in the Comayagua questionnaire we added a new series of items measuring capital improvements made to the farm (see items *Q10-Q24*) in order to determine the relationship these have to the titling effort. These items can also be related to value of production.

We did not limit our examination of predictors of value of production to these four factors. We also examined the following variables that have been discussed in prior chapters of the report: (1) stability of the owner in the community; (2) duration of ownership of the property; (3) technical assistance received; (4) age of the owner; (5) education of the owner; (6) accessibility of services; (7) problem-solving efficacy of the owner; (8) participation of the owner in community organizations other than agricultural cooperatives.

Methodology

In a situation like this, in which the researcher is confronted with a series of predictors and a single dependent variable, the most straightforward analytical procedure is stepwise multiple regression. Simply put, this technique searches through the list of predictors and selects the one that is most closely associated with (i.e., can explain the most variance in) the dependent variable. Then, while holding this variable constant, it selects from among the remaining variables the one that has the strongest association with the dependent variable. The procedure continues until all of the predictor variables that continue to produce a statistically significant relationship to the dependent variable are included. At that point the process is concluded and the results are reported. These results tell the researcher not only which predictors are related to the dependent variable but also which ones are more closely associated and which less so. In addition, it allows the researcher to state how much of an impact on the dependent variable a change in each independent variable is expected to have. This last outcome of the analysis is

particularly important for purposes of targeting development assistance because it provides an estimate of expected payoffs of programs that are designed to enhance the impact of the titling program. In effect, it is possible to produce reasonable cost/benefit analysis and thereby maximize the impact of each development dollar spent.

Two different approaches are taken in the regression analysis presented below. First, the assumption is made that each of the predictors of farm income that are found to be statistically significant act independently of one another. For example, the assumption is made that credit and improved farm practices have the same impact on farm income when they act alone as when they act together. This assumption is neither logical nor, as will be shown, empirically correct. Nonetheless, since the second approach is so much more complicated statistically, it is important that this simplifying assumption be made so that the individual impact of each predictor can be isolated. In the second approach, the assumption is made that the predictors have their greatest impact on farm income when they act together. For example, the assumption here is that farmers who receive credit *and* employ improved farm practices will get a larger payoff in value of production than if they had used each predictor separately. By extension, it is also reasonable to assume that other factors may play a role simultaneous with these. In this second approach, we are looking for what statisticians call "interactions." While regression analysis with interaction terms in the equations may be more faithful representations of the true relationships in the data, they are far more complex to describe than are the simple (i.e., additive) models. Moreover, the estimates of the impact which the interaction terms have on the dependent variable are not easily made and are subject to considerable error. In sum, both the simple additive model and the interaction model have their pros and cons, and for that reason both will be employed in this study.

Results

Additive Model

In Comayagua, it was found that three variables were of greatest importance in increasing the value of production: (1) use of improved farm practices, (2) availability of more land, and (3) selling to a cooperative. Other variables did have an impact on an individual basis when associated with the value of production (i.e., yielded significant simple correlations), but they tended to shrink to significance when included in an equation with these three variables.[37] The results of the regression equation are displayed in table 6.1.

---

37. In particular, the new measure of farm improvements (called "*mejoras*" in the study and represented by variables *Q10-Q24*) did significantly correlate with production value (r = .24) but was overshadowed by measurement of the improved farm-practices variable and therefore was automatically excluded by the regression analysis.

TABLE 6.1

Multiple Regression Analysis of the Predictors of Value of Production: Additive Model (final step of stepwise analysis)

VARIABLE	*BETA*	SIGNIFICANCE OF *BETA*	*BETA* WEIGHT
Improved practices	392.4	.001	.23
Plot size	88.5	.001	.20
Sales to a co-op	3,107.5	.004	.12

Multiple R = .36 R^2 = .12 (adjusted) Minimum N = 545

In practical terms, these results indicate the following. For each increase in the number of improved farm practices adopted by the respondent, there is an increase in annual value of production of 392.4 lempiras. Further, for each increase of 1 *mz.* in plot size, there is an increase of 88.5 lempiras in production value. Unfortunately, the variable measuring sales to a cooperative was not scored in such a way to allow for a similar statement of its effect on farm income,[38] but its importance should not be ignored. These impacts on the value of production are, of course, theoretical, but since overall value of production averaged only 1,483 lempiras, the potential impact of increasing the use of improved farm practices or of augmenting farm size by a few *manzanas*[39] is likely to be substantial in terms of income generated by these farms.

38. Specifically, the other variables were "interval level" measures in which one unit of land or one increase in the number of practices had a meaningful quantitative interpretation. The variable "sales to a cooperative" was simply measured by "yes" and "no."

39. By way of comparison with Santa Barbara, each improvement in farm practices would have increased the value of production by 258 lempiras and each increment of 1 *mz.* in plot size would have increased the value of production by 56.5 lempiras. It should be noted, however, that average value of production in Santa Barbara was considerably higher than in Comayagua (2,300 vs. 1,483 lempiras).

These findings are not surprising and are very consistent with those found in Santa Barbara. In that study, these same three variables were found to be related to increased agricultural incomes. However, in Santa Barbara it was found that requesting credit and stability of residence were also related to farm income. In fact, both of these variables were significantly related to farm income in Comayagua as well, but the relationship was weaker than in Santa Barbara.[40] Another difference between the two regions was that in Santa Barbara the strongest association was with size of farm, whereas in Comayagua it was with improved agricultural practices. Finally, the predictive ability of the model in Santa Barbara was greater than in Comayagua. Further examination of the two data sets is needed to determine why this proved to be the case, although preliminary evidence indicates that some extreme income values in Santa Barbara might be an explanation.

Interaction Model

Attention now turns to the more complex "interaction model." The regression model employed included all of the variables which entered into the analysis reported above as well as all of the possible interaction terms.[41] The "stepwise" procedure first entered the three variables which were included in the first equation and then the interaction terms were added, one at a time. In total, then, this regression equation included a total of 7 independent variables. What complicates matters is that, since the interaction terms are all composed of their component predictors, there are many cases of multicollinearity that tend to produce misleading results. It is to be expected that under these conditions the amount of variance explained in the dependent variable will increase. The important question to ask is whether or not the increase is statistically significant.[42] Only those interaction terms that pass this test are allowed to enter the final equation.

The results of the analysis with the interaction terms included demonstrate very clearly that, as expected, the impact of the predictors working together is considerably greater than when they work alone. The amount of variance explained by the new equation is a full 19 percent higher than in the equation without the interaction terms, yielding a total explained variance of 30.0 percent. A further indication of the importance of the interactive effect is that none of the variables from the original equations remains a significant predictor of farm income. All of the variables are significant

---

40. The association between requesting credit and value of production was .25 in Santa Barbara and .10 in Comayagua, both significant at .05 or better. The association between length of residence in the department where the respondents resided at the time of the interview was .19 in Santa Barbara and .12 in Comayagua, both significant at .05 or better.

41. These terms were created by multiplying each independent variable by every other variable to yield three two-way interactions. The three variables were then multiplied by each other to yield a three-way interaction term.

42. The appropriate test for this is the hierarchical F-test and is the one employed in this analysis.

only as interaction terms. A total of three of the interaction terms are statistically significant. The best predictor was the three-way interaction term, that is, the interaction of farm size, improved practices, and sales to a cooperative. The other two significant terms were (1) the two-way interaction of farm size and sales to a cooperative, and (2) the two-way interaction of improved practices and farm size. Because coefficients for equations employing interaction terms are apt to be unstable, we do not report them here.

The overall message from the second regression analysis is quite clear. Development assistance will have a far larger payoff when it has multiple targets. An emphasis on only one component of the problem, such as improved farm practices alone or cooperatives alone, will have far less of an impact than programs which target them both. Indeed, in light of these findings, the only reasonable approach would be to design an integrated strategy of rural development that uses the titling program as a linchpin which ties together programs of technical assistance, cooperative promotion, and land redistribution.

Our confidence in these results is bolstered because they conform to the findings of another study undertaken by AID/Honduras as part of the social feasibility analysis for their small-farmer coffee-improvement loan (AID loan #522-T-044). The findings of that study were based on a sample of coffee farms and hence do not necessarily apply to the present sample, even though coffee was the most widely cultivated crop among those interviewed here. The earlier study examined several factors related to the productivity of coffee farms. It found that (1) credit, (2) sales to a cooperative, and (3) improved farm practices were significantly[43] related to productivity and the income received from the sale of the crop. The one major finding in the coffee study that is not consistent with our own is the lack of relationship in the study between farm size and productivity. However, that study excluded[44] all farms larger than 35 hectares, and this may explain the varying results.

Applicability to Other Titling Zones

A very strict interpretation of the results of this chapter would not allow generalization to other regions of Honduras and thus would limit their

---

43. That study used analysis of variance rather than multiple regression to process the data. The techniques when used with "dummy variables" are analogous. Since our study contained key variables that were continuous (e.g., farm size), we opted for the regression approach. The data base for the coffee study was 251 farms distributed throughout all of Honduras. These farms were drawn from a larger 1976-78 study conducted as part of an AID agricultural assessment study (see USAID 1978).

44. The coffee study is unclear as to its treatment of interaction effects. There is some discussion of interaction, but the published report does not state that the interaction between, for example, credit and technical assistance was analyzed. It would be of considerable utility if the original report of that study could be examined; and if the analysis of interaction were not conducted, the data could be reanalyzed.

utility for providing guidelines for development assistance. But such an interpretation is clearly unwarranted since the interviews for the study were, after all, conducted in rural Honduras and not urban Switzerland. Many of the agriculture census data indicate that the results may be generalizable to much of rural Honduras. Yet it would be a serious error to conclude that all of rural Honduras is completely homogeneous. It is the task of this section, therefore, to highlight the most obvious findings of the study that will likely contrast with those that will be encountered as the titling program moves on to the remaining five departments that are to be covered by this project.

Two key variables suggest themselves as the most important for comparisons with other regions: (1) amount of land owned, and (2) prevalence of coffee cultivation. Why these two variables? The first is selected because of its importance in the regression analysis presented in this chapter. It was found that the size of the plot studied had a direct impact on the value of production generated from it. It is obvious, therefore, that the generalizability of the findings hinge upon the extent to which the distribution of land in the sample is similar to that found in the other zones. The second variable of interest, the prevalence of coffee cultivation, is selected because the central rationale for the titling project was based on the need to provide title to coffee farmers so that they could obtain credit to fight the coffee rust.

Obtaining accurate information on the six other titling zones so that they may be compared with the survey data is problematical. A search of the possible sources of information invariably led back to the 1974 agricultural census. When we searched the 1983 *CDSS*, we were referred to the *1978 Agriculture Sector Assessment*. When we looked there, we found that most of the studies were also based upon the 1974 census. The only "fresher" published data reported in the *Agriculture Sector Assessment* were included in the sample survey conducted by ATAC. Unfortunately, that survey is representative only of the major geographic regions of the country and is not broken down by department and therefore is of no use for present purposes. Other studies proved to have the same defect; for example, the social soundness analysis prepared for the small-farmer coffee-improvement project (see Annex G of the project paper) was based upon the same sources used in the *1978 Agricultural Sector Assessment*. It is obvious that there is a considerable need for Honduras to conduct a new census, but, in light of the serious budgetary constraints facing the government, it is unlikely that one will be available in the foreseeable future.[45] As a result, we have no other choice but to rely heavily upon the 1974 census for comparisons of land tenure patterns. Fortunately, when it comes to data on coffee, we are able to supplement the census with the more recent (1979) coffee census.

Comparative Land Tenure Patterns

In the discussion of land tenure in chapter 2, it was reported that the sample contained fewer farms in the smallest size categories (> 2 ha.) than

45. For a further discussion of this problem, see Seligson 1985.

in the Department of Comayagua or in Honduras as a whole. This was the same pattern uncovered in Santa Barbara. Hence, at least in this regard, the titling program as it has been carried out in these two areas is somewhat atypical of the larger picture. How do these titling areas compare to the other departments targeted for titling? Table 6.2 summarizes that information.

TABLE 6.2

Farms Smaller than 2 Hectares: Sample and Titling Zones
(percent)

DEPARTMENT	FARM SIZE < 1 ha.		1-1.9 ha.		TOTAL	
	Sample	Dept.	Sample	Dept.	Sample	Dept.
Comayagua	14.9	15.3	15.6	20.6	30.5	35.9
Copan		28.3		22.6		50.9
Cortes		19.7		20.7		40.4
El Paraiso		15.4		18.9		34.3
La Paz		15.0		18.2		33.2
Santa Barbara	10.0	20.0	11.8	19.7	21.8	39.7
Yoro		15.4		20.1		35.5
All Honduras		17.3		19.8		37.1

The pattern of ownership of farms in the smallest category (< 1 ha.) is fairly uniform for the seven titling departments. With the exception of Copan,these percentages range from 15.0 to 20.0 percent. The distribution of the smallest farms within these departments is very close to the national average of 17.3 percent, thus indicating that they are quite similar to Honduras as a whole. The same pattern is encountered among the farms in the 1-1.9-ha. range. In this size category, the spread is even narrower, with each of the departments hovering around the 20 percent mark. Again, this pattern is repeated at the national level. Taking these two categories together, one finds that about one-third to two-fifths of all of the farms are of this size. Again, Copan is an exception, with over half of its farms being < 2 ha.

Summarizing this discussion of comparative patterns of land distribution it can be said that (1) Comayagua and Santa Barbara are broadly representative of the remaining departments, and (2) the farms delineated in the project thus far generally underrepresent farms in the category of < 2 ha. If the pattern encountered in the pilot area is replicated elsewhere in Honduras, then one can assume that there will be general underrepresentation of farms in this smallest size category.

This finding has some clear implications for the titling program. It has been repeatedly stressed in this report that the size of farm is directly linked to many other variables under study. Owners of the smallest farms, as was shown in chapter 2, generally live under the most deprived economic circumstances. The value of production they generate from their farms is far lower than that from larger plots. Indeed, the regression analysis presented above clearly indicates the relationship between plot size and value of production. It has also been shown that the other key variables that predict farm production (i.e., credit, cooperative membership, and improved agricultural practices) are directly related to farm size. Hence, while 22.5 percent of all of the respondents in the survey with farms larger than 2 *mz.* had solicited agricultural credit at one time or another, only 6.2 percent of farmers in the 2-*mz.*-and-smaller size category had done so. Similarly, whereas 4.8 percent of the beneficiaries with farms larger than 2 *mz.* had sold some of their crops to a cooperative, none of the farmers with fewer than 2 *mz.* had done so. The use of improved agricultural practices was also significantly lower among the owners of the smallest plots.

In light of the general absence of credit, cooperative activity, and use of improved agricultural practices, it is not at all surprising that the small plots produce the lowest value of production. As a result, in order to earn enough to survive, the owners of these plots are compelled to earn income from other sources. As was made clear in an earlier section of this report, off-farm income as a proportion of total income is higher among the owners of the smaller plots and drops steadily as the size of the farm increases.[46] Indeed, this finding is identical to the one reported in the *1978 Agriculture Sector Assessment* (USAID 1978:Annex K:14):

> there is a correlation between farm size and the source of family income. As farm size increases, there is a decreasing dependence non-farm income. The farms under 1 hectare get two-thirds of household income from non-farm sources, while the largest farms get 90% of their net income from farm sources. It can be assumed, therefore, that this association could safely be generalized beyond the sample to much of rural Honduras.

In light of these findings, one would think, at least upon initial consideration, that the smallest farmers would be the highest priority target for the titling program. After all, titling is supposed to enable farmers to get access to credit and technical assistance and thereby allow them to increase their incomes.

---

46. The analysis of variance results are significant at less than .001.

Further reflection on this question reminds one of the difficulties that other titling programs are having as a result of titling *minifundios* and *microfundios*. In doing so, they not only legalize the nationwide inequality of land distribution but also tend to lock people into poverty. Consequently, if the Honduran reform is selectively avoiding giving titles to these smallholders, it may be doing them and the country a favor. However, this will be the case only if consolidation and redistribution accompany the titling program. If they do not, then the smallholders will face the worst of all possible worlds when those around them with larger plots all hold title and they do not. Those without title will be unable to compete for credit and may even become socially stigmatized for their insecure tenure status. Careful consideration needs to be paid to this important element of the program.

Coffee Cultivation

The cultivation of coffee is atypically common in the Comayagua farms studied for this project. The sample of beneficiaries revealed that the titling program is concentrating more heavily on coffee land than on other kinds of land. As is shown in table 6.3, 50.0 percent of all of the farms surveyed in Comayagua were growing at least some coffee, as compared to the census average of less than one-third.

TABLE 6.3

Percent of Farms Growing Coffee, in the Sample and in Honduras

AREA	1974	1979	SAMPLE
Santa Barbara	41.0	49.8	69.4
Comayagua	33.5	32.7	51.0
Copan	33.1	26.3	
Cortes	22.2	20.1	
El Paraiso	28.1	33.4	
La Paz	36.9	20.8	
Yoro	27.4	17.2	
Honduras	24.9	20.5	

SOURCES: 1974: *Censo Agropecuario*, vol. 6; 1979: "Censo cafetero," typescript (Tegucigalpa: IHCAFE).

A brief examination of the coffee census, which presents data from 1979, reveals that, nationwide, coffee is being grown on a *smaller* percentage of farms than in 1974. In 1974, 24.9 percent of all Honduran farms were growing at least some coffee, whereas in 1979 that figure had dropped to 20.5 percent. This decline is very surprising given the huge increase in national coffee production during this period (during which world market prices reached an all-time high). National production of coffee in 1973/74 stood at 1 million 46-kg. bags, whereas by 1980/81 it has reached nearly 1.4 million. Three possible explanations emerge from these figures. The first is that coffee production is being concentrated on fewer farms, but within those farms more land is being turned over to coffee production. It is also possible that production techniques have been intensified while land under cultivation has remained the same. The third possibility is that the coffee census includes only production that is sold on the market, whereas the national census records (at least in theory) all coffee production, no matter how limited. It is impossible to select among these alternatives without additional information, but an educated guess is that all are partially correct.[47] In any event, the 1979 data for the seven titling departments reveal that there are few major changes, with the exception of the marked drop in La Paz and a somewhat smaller decline in Yoro. Again, given the difficulty in comparing the two sources of data, one should be cautious in interpreting this finding.

The final point to be noted is the relationship between coffee cultivation and farm size. It has been noted that the titling program underrepresents the smallest farm categories. The question arises as to the impact that this might have, if any, upon the goal of the titling program to assist in the improvement of coffee cultivation (and specifically to fight the coffee rust). If, for example, coffee farms were concentrated in this smallest category (of < 2 *mz.*) then the program would have a reduced impact.

In light of the data presented here, it is clear that the farms titled in Comayagua and Santa Barbara differ in some respects from those in the remaining departments. On the two variables that seem most important for the project, size of land and coffee cultivation, it was found that: (1) the delineated farms in Comayagua and Santa Barbara systematically underrepresent the smallest group of farmers, and (2) the delineated farms in Comayagua and Santa Barbara systematically overrepresent coffee farms.

If the patterns encountered in these two areas are mirrored in the remaining titling regions, the implications of these two findings for the remainder of the project are as follows.

1) Since larger land size is associated with higher value of production, it can be expected that the titling project will benefit those who are likely to be in a position to earn relatively higher incomes.

---

47. A further factor which complicates the interpretation of these data is that the denominator for the calculations from the 1979 data was the 1974 census report of the number of farms in each department. Since the number of farms has, no doubt, increased since 1974 (given the rapid population growth over these years), it is likely that the actual proportion of farms growing coffee according to the 1979 coffee census is even lower than represented here.

2) Since larger land size is also associated with greater use of improved agricultural practices, credit, and sales to cooperatives, and since these factors are each related to higher values of production, the focus on the larger farms will prove of additional benefit to those in a position to earn relatively higher incomes.

3) Since coffee is the most profitable of all the major crops grown by the respondents, and since coffee farms produce the highest production values in the sample, the concentration on coffee farms will again tend to benefit those who are in a position to earn relatively higher incomes.

4) Small farmers, especially those who farm fewer than 2 *mz.* of land are likely to experience lower levels of benefit from this project than those who own larger farms. In the first place, many of the smaller farmers will not receive title since their farms fall below the legal limit--unless, of course, they grow coffee. In the second place, farm size is closely linked to many of the factors that increase the value of farm production.

CHAPTER 7: SUMMARY AND CONCLUSIONS

This study of Comayagua has presented an overview of the major descriptive information obtained from the second baseline survey conducted as part of the longitudinal evaluation of the Honduran small-farmer titling program. When added to the data collected for the first baseline survey and the case studies conducted by the Land Tenure Center, the data base is the richest ever collected for an impact study of land titling. The real payoff, however, from an evaluation and program-design standpoint, will not be obtained until the follow-up interviews are conducted at the end of the project, currently programmed for 1988. The follow-up surveys will attempt to reinterview each of the respondents of the 1983 and 1985 surveys, or, if the sampled parcel has changed hands, to interview the current owner of the land.

Until such data are available, however, the data contained in the baseline surveys can be of considerable utility to the GOH and to international donors. The surveys provide a wide-ranging description of the conditions found in two major regions of rural Honduras and, as such, help update the picture obtained from the out-of-date 1974 agricultural census. In addition, since the questionnaires used in these surveys are far richer than the one used in the census, considerably more detail can be obtained from these studies. Further, the ready availability of these surveys on computer systems in the United States (currently at the University of Wisconsin-Madison, University of South Florida, and University of Illinois at Chicago) makes secondary analysis of the data bases inexpensive and easily conducted. One such study, focusing on coffee farms, is already under way, and other studies are contemplated. It is to be hoped that in the not-too-distant future similar analysis will be undertaken in Honduras by INA, the university, and other agencies.[48]

The present report has attempted to parallel the previous one as closely as possible so that comparisons could be made easily. Throughout this report, similarities and differences between the two surveys have been noted. Overall, the most striking point to be made with respect to a comparison of Comayagua and Santa Barbara is that the similarities far outweigh the differences. In brief, the following represent some of the central points made in this report:

1) The treatment-group sample contained three strata, each reflecting different average farm sizes. The control group was divided into two strata: areas of private land within the treatment area (specifically, Las Minas de Oro of Comayagua), and coffee farms in neighboring Yoro

---

48. Currently, ADAI has the hardware capabilities for such analysis. The University of Honduras, however, does not have the required software and the existing hardware is saturated.

province. In total, 553 interviews were conducted in the treatment area and 202 in the control area.

2) Fieldwork proceeded more efficiently in the Comayagua survey than it had in Santa Barbara primarily as a result of the experience gained in the first study, the availability of four-wheel drive vehicles in top running condition, the more efficient use of supervisory personnel, and the employment of a clustered sample design.

3) In contrast to the Santa Barbara study, where all data entry and verification functions were performed in the U.S.A., in this study those tasks were conducted in Honduras.

4) The control group proved to be very similar to the titling group in Comayagua, the only notable differences being in the somewhat older age and the somewhat lower participation in cooperatives among those in the control group.

5) The average size of the sampled parcel was 8.0 *mz.*, and the mean farm size was 17.8 *mz.* In Santa Barbara the average farm size was larger (22.5 *mz.*). But these figures are influenced by a few large farms; the modal farm size in Comayagua was 6.5 *mz.* and in Santa Barbara was 9.0 *mz.*

6) Most respondents acquired their land through purchase, with the average duration of possession being 10.5 years.

7) As in Santa Barbara, the Comayagua respondents were a mature group of individuals. Average age in Comayagua was 45.6 years, with 85.0% being married or having common law spouses and over 90% having children. Age and farm size were closely linked: the older the owner, the larger the farm.

8) Over four-fifths of the Comayagua respondents were natives of the department, and the average time lived in the community of current residence was over 26 years. The longer the residence in the department, the larger the farm size of the respondent.

9) As in Santa Barbara, educational levels were very low, averaging only slightly over 2 years; over one-third of the respondents had no formal education at all.

10) Levels of living in Comayagua were even worse than in Santa Barbara, with two-thirds of the Comayagua respondents lacking toilet facilities and fewer than one-third having water piped into their dwellings. Whereas slightly less than half of the homes in Santa Barbara had dirt floors, nearly three-quarters of those in Comayagua did. There was a direct positive relationship between farm size and level of living.

11) The most popular crops planted among the treatment group in Comayagua were coffee, corn, and beans, but coffee was somewhat less common there than in Santa Barbara.

12) Many of the farms in Comayagua did not have any crops under cultivation, and those that did used a portion for home consumption.

13) Yields of coffee, beans, and rice were higher in Comayagua than in Santa Barbara, but corn yields were lower. Corn yields were positively associated with farm size, but coffee yields increased substantially only on the largest farms, and bean yields showed no clear relationship to farm size.

14) Very few livestock were being raised among the Comayagua respondents, a pattern also found in Santa Barbara.

15) The mean annual value of production in Comayagua was lower than in Santa Barbara (1,483 vs. 2,300 lempiras), a factor that no doubt was at least partially responsible for the lower levels of living in the former. Additional off-farm income was earned by almost one-third of the farm families studied and averaged 2,310 lempiras for those who earned such income.

16) Low levels of use of improved farm practices were reported by the respondents, although they were slightly higher than in Santa Barbara. The most common practice was fertilizer use (34.9%).

17) Improved crop-specific practices did tend to increase crop yields, although the reduced yields resulting from the replanting of coffee farms tended to complicate the picture somewhat, since the improved practices have not yet had the time to become translated into higher yields.

18) Farm size and credit use were closely related to increased use of improved farm practices. Education (formal and short-course) and technical assistance also tended to be associated with the use of these practices.

19) Credit use was somewhat higher in Comayagua than in Santa Barbara, but the average size of the loan was much smaller. Credit use was associated with improved farm practices, use of technical assistance, value of farm production, farm size, and education. Its single strongest association was with participation in the AID/IHCAFE project.

20) Many respondents lived in remote areas, distant from many farm services (such as markets) and social services (such as schools).

21) Fewer than one-quarter of the respondents had received technical assistance, although those who did reported that they were satisfied with the assistance rendered. Assistance was somewhat more common in Comayagua than in Santa Barbara. Technical assistance was also associated with increased use of improved farm practices, higher coffee yields, total income, farm size, amount of land cultivated, and education.

22) Perceptions of present and future economic conditions were far more favorable in the 1985 Comayagua sample than in the 1983 Santa Barbara

sample. The improved rainfall and progress against coffee diseases probably influenced those attitudes.

23) The most frequently noted local problem was the absence of potable water, followed by roads, schools, medical and electric service. Nearly all of the respondents thought that something could be done to resolve the problems, and nearly half had actually tried to do something.

24) Organizational activism was generally quite infrequent, especially in key organizations like cooperatives (1.8%) and agricultural associations (7.5%). Indeed, cooperative participation in Comayagua was even lower than in Santa Barbara. Participation was found to be frequent only in the "*patronato*," the PTA, and religious associations. Interest in joining cooperatives, however, was quite widespread (61.5%) although somewhat lower than in Santa Barbara (80.0%).

25) Knowledge of the titling project was much lower in Comayagua than in Santa Barbara, probably due to the absence of fully developed promotional activities by the time the interviews took place. Accordingly, a lower proportion of the respondents were able to point to advantages of the titling program, but the level was still quite high (70.2% vs. 91.9%).

26) Although the present study cannot make any evaluation of the possible impact of title since these baselines represent the "before" stage in the "before-and-after" design, it can point to the major factors that are associated with an increased value of production on the plot to be titled. It was found that each increase in the use of improved farm practices translated into an increase of 392 lempiras, and each increase of 1 *mz.* in plot size translated into an increase of 88.5 lempiras. Sales to a cooperative also increased farm income, but that variable was not scaled in such a way as to be easily translated into lempira income. These findings are similar to those in Santa Barbara, although credit and stability of residence in Comayagua did not have a strong enough impact to be included in the final analysis (i.e., the final multiple regression equation). It was further determined that the value of production was further increased when these production factors were found together rather than alone.

27) Although the results of this study can be generalized with some degree of confidence to other zones in Honduras, the samples overrepresent the coffee farms and underrepresent the smallest farms in the country. Since larger land size is associated with higher values of production, it can be expected that the titling project will benefit those who are likely to be in a position to earn relatively higher incomes. Also, since larger land size is also associated with greater use of improved agricultural practices, sales to cooperatives, and credit, and since these factors in turn are related to higher production values, the focus on the larger farms will likely prove of additional benefit to those in a position to earn relatively higher incomes. Since coffee is the most profitable

of all the major crops grown by the respondents, and since coffee farms produce the highest production value in the sample, the concentration on coffee farms will again tend to benefit those who are in a position to earn relatively higher incomes. Finally, small farmers, especially those who farm fewer than 2 *mz.* are likely to experience fewer benefits from this project than those who own larger farms. Many of the smallest farms will not be titled by this program owing to the legal limitations imposed by Honduran law (except for coffee farms). Further, farm size is closely linked to many of the factors that have been shown to increase the value of farm production.

Many other relationships are noted in the report, and many others remain to be explored in the data bases in the months to come. As those relationships are being examined and comparisons are made between the two samples, work will begin on designing the questionnaire for the reinterviews. That instrument will follow the same basic format used in Santa Barbara and in Comayagua in order to maximize comparability. However, some new items of direct interest to INA, IHCAFE, and/or USAID can be incorporated and the authors welcome suggestions. Moreover, any comments and suggestions on this report are most welcome.

BIBLIOGRAPHY

Jones, Earl; Nesman, Edgar; Seligson, Mitchell; and Vaughn, Jack

1984 *Baseline Survey of the Honduran Small Farmer Titling Project: Descriptive Analysis of the 1983 Sample.* San Francisco: Development Associates.

Kish, Leslie

1967 *Survey Sampling.* New York: Wiley.

Seligson, Mitchell A.

1980 "A Problem-Solving Approach to Measuring Political Efficacy." *Social Science Quarterly* 60:63-142.

1982 "Agrarian Reform in Costa Rica: The Impact of the Title Security Program." *Inter-American Economic Affairs* 35:31-56.

1985 "Suggestions for Developing a New Data Base for the Planning of Rural Development in Honduras." Chicago.

n.d. "A Report on the Honduran Coffee Technification Program." Chicago.

Seligson, Mitchell A.; Jones, Earl; Nesman, Edgar; Vaughn, Jack Hood; and Wise, Michael

1983 *Baseline Survey of the Honduran Small Farmer Titling Program: Design, Field Work and Univariate Distributions.* Arlington, Va.: Development Associates.

Saenz P., Carlos Joaquin, and Knight, C. Foster

1971 *Tenure Security, Land Titling and Agricultural Development in Costa Rica.* San Jose: School of Law, Ciudad Universitaria "Rodrigo Facio," University of Costa Rica, 1971.

USAID

1982 *AID Policy Paper.* Washington: United States Agency for International Development.

1978 *1978 Agriculture Sector Assessment of Honduras.* Washington: United States Agency for International Development.

APPENDIX

Baseline Questionnaire for Comayagua

Estudio de Base del Proyecto de Titulación
Febrero - Abril 1985
Tegucigalpa, D.C.

(El encuestador debe llenar esta sección del cuestionario previo a la visita)

DATOS DE IDENTIFICACION

ID	(Códigos: experimental empieza con 001; control con 701)	/ / / /	
A1.	Tarjeta número	/1/	
A2.	Area: 1. Experimental (Titulación) 2. Control 3. Control Privado	/ /	
A3.	Nombre del dueno: Primer apellido: _____	/ / / / / / / / / / / /	15
A4.	Segundo apellido: _____	/ / / / / / / / / / / /	25
A5.	Nombre: _____	/ / / / / / / / / / / /	
A6.	Sexo del dueno: 1. hombre 2. Mujer	/ /	36

UBICACION DE PARCELA

		Experimental	Control		
A7.	Departamento:	03 Comayagua	04	/ / /	
A8.	Municipio: _____			/ / /	
A9.	Mapa ___ ___ - ___ ___			/ / / / /	
A10.	Aldea: _____			/ / /	
A11.	Número de parcela: ___ ___ ___			/ / / /	
A12.	Código de ident.: ___ ___ ___ ___ ___ ___ (Depto.) (Munic.) (Aldea) (No. Parcela)			/ / / / / / / / /	58

DATOS DEL CATASTRO SOBRE PARCELA DE LA MUESTRA

(Codificador: Usar el código cero (0) para indicar que no tiene el área dedicada al cultivo especificado)

		Enteros	Décimos	
A15.	Hectáreas dedicadas a café (ce) ___ ___ ___,___	/ / / /	, / /	
A16.	Hectáreas dedicadas a maíz (mz) ___ ___ ___,___	/ / / /	, / /	
A17.	Hectáreas dedicadas a pasto (pn, zn, pc, zc) ___ ___ ___,___	/ / / /	, / /	
A18.	Hectáreas dedicadas a frijol (fl) ___ ___ ___,___	/ / / /	, / /	
A19.	Hectáreas dedicadas a bosque (bha, hp) ___ ___ ___,___	/ / / /	, / /	78
A19a.	Tarjeta número		/2/	
A20.	Hectáreas dedicadas a bananos (bn) ___ ___ ___,___	/ / / /	, / /	
A21.	Hectáreas dedicadas a matorral o guamil (mt) ___ ___ ___,___	/ / / /	, / /	
A22.	Hectáreas total de la parcela ___ ___ ___,___	/ / / /	, / /	
A22b.	Documentación para título _____		/ / /	

UBICACION DEL ENTREVISTADO

A100.	Departamento: _____	/ / /	
A101.	Municipio : _____	/ / /	
A102.	Aldea : _____	/ / /	21

hora de comienzo de la entrevista __ __:__ __

*buenos días, me llamo _____, estamos haciendo un estudio con el Catastro y el INA. Ando visitando a los campesinos de esta aldea para conocer mejor su situación y conversar sobre varios temas con el propósito de mejorar nuestra labor. Nos gustaría platicar con Vd. por una media hora sobre su finquita. Toda la información que Vd. nos da se manejará en forma confidencial, por su puesto.

*Primero quisiera saber si Vd. es (nombre del dueno, ver página 1)
(Si no es el dueno buscarlo hasta encontrarlo. Anotar aquí las senas para encontrar el dueno)

_____

_____

B1. La entrevista se llevó a cabo con:
1. El dueno. 2. El mayordomo. 3. No pudo encontrar a la persona
4. La persona negó ser dueno de la parcela 5. La persona rechazó la entrevista a pesar de ser dueno de la parcela 6. Un familiar
7. Grupo o municipal
Otro _____ / /
_____

****

MIGRACION

*C1. Cuanto tiempo tiene de vivir en esta aldea _____ (anos) / / /

*C2. Y en este departamento? __ __ (especificar anos y meses) / / /
(menos de 6 meses = 0; 6 meses hasta 12 meses = 1)

*C3. Donde nació Vd? _____ _____ / / / / / 30
(Departamento) (Municipio)

****

PRODUCCION Y MERCADEO OJO: SOLO DATOS DE LA PARCELA DE LA MUESTRA

*Ahora vamos a hablar de lo que usted sembró y cultivó el ano pasado en la parcela mencionada, o sea desde febrero de 1984 hasta febrero de 1985. Solo nos interesa sus siembros y cultivos en la parcela que está ubicada en el Municipio de _____ (ver primera página), Aldea de _____ (ver primera página). O sea, la parcela que colinda con: _____ y también con _____ y _____ (Leer toda la lista) (Anotar fracciones de mz.)

Cultivo	Cantidad Sembrada Mz.	Producción	Unidad medida	Cantidad guardada para semilla	Unidad de Medida	Cantidad consumo casero	Unidad de Medida	Cantidad vendida	Unidad de Medida	Precio unidad (Promedio)	Unidad de Medida	
	D1 / / /, / /	D2 / / / / /	D3 / /	D4 / / /	D4A / /	D5 / / / /	D5A / /	D6 / / / / /	D6A / /	D7 / / / /	D7A / / 1. Uva 2. Pergamino	54
Café												
	D8 / / /, / /	D9 / / / / /	D10 / /	D11 / / /	D11A / /	D12 / / / /	D12A / /	D13/ / / / /	D13A / /	D14/ / / /		77
	D14A Tarjeta Número /3/											
Cacao												
	D15 / / /, / /	D16/ / / / /	D17 / /	D18 / / /	D18A / /	D19 / / / /	D19A / /	D20/ / / / /	D20A / /	D21/ / / /		24
Banano												
	D22 / / /, / /	D23/ / / / /	D24 / /	D25 / / /	D25A / /	D26 / / / /	D26A / /	D27/ / / / /	D27A / /	D28/ / / /		47
Frutales												
	D29 / / /, / /	D30/9/9/9/9/	D31 /9/	D32 /9/9/	D33 /9/9/9/	D34/9/9/9/9/	D35/9/9/9/					67
	D35A Tarjeta Número /4/											
Pastos	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX											
	D36 / / /, / /	D37/ / / / /	D38 / /	D39 / / /	D39A / /	D40 / / / /	D40A / /	D41/ / / / /	D41A / /	D42/ / / /		24
Maíz												
	D43 / / /, / /	D44/ / / / /	D45 / /	D46 / / /	D46A / /	D47 / / / /	D47A / /	D48/ / / / /	D48A / /	D49/ / / /		47
Frijoles												
	D50 / / /, / /	D51/ / / / /	D52 / /	D53 / / /	D53A / /	D54 / / / /	D54A / /	D55/ / / / /	D55A / /	D56/ / / /		70
	D56A Tarjeta Número /5/											
Arroz												
	D57 / / /, / /	D58/ / / / /	D59 / /	D60 / / /	D60A / /	D61 / / / /	D61A / /	D62/ / / / /	D62A / /	D63/ / / /		24
Caña												

Código de unidad: 1. Cargas (Cgs) 2. quintales (qq) 3. bultos (canas) 4. latas, medidas, o galones 5. litros 6. Arrobas 7. Racimos-tallos 0.Inap

*Todavía hablando solo de la parcela senalada, por favor digame:

*D64. Cuántas manzanas en total cultivó este ano? __________ mz / / / /, / /

*D65. Cuántas manzanas dejó en descanso? __________ mz / / / /, / /

*D66. Cuántas manzanas tuvo en bosques? __________ mz / / / /, / /

*D67. Cuántas manzanas tiene en matorral o guamil? __________ mz / / / /, / / 40

* Cuáles de los siguientes animales cría Vd. en la parcela que hemos estado hablando? (Leer toda la lista)

Animal	Cantidad en Existencia	Número vendidos este ano	Número comprados este ano	Número comidos en casa	
	D71 / / / /	D72 / / / /	D73 / / / /	D74 / / / /	52
Ganado de engorde					
	D75 / / / /	D76 / / / /	D77 /9/9/9/	D78 / / / /	64
			Botellas leche		
Ganado de leche			diarias		
	D79 / / / /	D80 / / / /	D81 / / / /	D82 / / / /	76
	D82A Tarjeta Número /6/				
Cerdos					
	D83 / / / /	D84 / / / /	D85 / / / /	D86 / / / /	13
Gallinas					

****

TENENCIA DE LA TIERRA

*F1. Como obtuvo la parcela de la que hemos estado hablando? (No leer) 1. Heredado
2. Comprado: _____(nombre de la persona a quien compró)
3. Los dos anteriores 4. Ocupado 5. Donación otro _____ 8. NS / /

Solo Para Heredados o Comprado de sus Padres

*F1A. Heredado de sus padres o de los padres de su senora o companera?
1. padres 2. senora o companera 9. Inap / /

*F2. Hace cuanto tiempo obtuvo la parcela?____ ____(anos) / / /
(Ojo: No importa si el entrevistado distingue entre los anos en que no tuvo el título y los que lo ha tenido. Solo nos interesa aqui el número total de anos de tenencia del terreno.)

*F2A. Cuántas manzanas tiene esta parcela? _____(anotar fracciones) / / / /, / /

*F3. Tiene un documento para esta parcela? 1. Si 2. No (pasar a F5) / /

*F3A. Que clase de documento? 1.Carta de compra venta 2.Escritura
3.Otro _____ 4.Nada / / /

*F3B. Hace cuánto tiempo obtuvo este documento? _____(anos) / / / 26

*F5. Tiene Ud. otros terrenos además de este? 1. Si 2. No (pasar F6) / /

*F5A. Cuántas parcelas? _____ (0=ninguna) / /
*F5B. Cuántas manzanas tiene la otra parcela _____ (0000=nada) / / / /, / /
*F5C. Cuántas manzanas tiene la otra _____ (anotar fracciones / / / /, / / 36
*F5D. Cuántas manzanas tiene la otra _____ / / / /, / /
*F5E. Cuántas manzanas tiene la otra _____ / / / /, / /
*F5F. Cuántas manzanas tiene la otra _____ / / / /, / /
*F5G. Cuántas manzanas tiene la otra _____ / / / /, / /
*F5H. Cuántas manzanas tiene la otra _____ / / / /, / / 56

*F6. Qué cantidad de manzanas posee en total?_____mz.(anotar fracciones) / / / /, / /

*F7. Alquila Ud. terreno para cultivar de otras personas para cultivar? 1.Si 2.No / /

*F7A. Cuántas manzanas? _____ _____ _____ / / / /

*F8. Alquiló o arrendó Ud. algo de su propia tierra a otras personas este ano?
1. Si 2. No (Pasar a F10.) / /

*F9. Cuántas manzanas alquiló? ___ ___ ___ (000=Inap.) / / / /

*F10. En total, cuántas manzanas esta cultivando este ano incluyendo todas sus parcelas (propias y ajenas?) _____ (mz.) (anotar fracciones) / / / /, / /

*Cuales de las siguientes mejoras ha hecho usted en la parcela mencionada?

*F11. Cercos de alambre 1.Si 2.No / /
*F12. Pozo de agua con bomba 1.Si 2.No / /
*F13. Pozo de agua sin bomba 1.Si 2.No / /
*F14. Corrales 1.Si 2.No / /
*F15. Muros de piedra 1.Si 2.No / /
*F16. Terrazas 1.Si 2.No / /
*F17. Rompevientos 1.Si 2.No / / 79

****

*F18. Tarjeta Número /7/

COOPERACION EN LA COMUNIDAD

* Como Vd. sabe, en todas las comunidades hay problemas que afectan a todos los vecinos. Cuál cree Vd. que es el problema principal de esta comunidad? (no aceptar: "somos pobres", "costo de la vida")

*E1. Problema:(Sondeo: "Pues, algún problema que se le ocurra") 01. No hay problemas (pasar a E4.) 02. Agua potable 03. Luz eléctrica 04. Caminos 05. Escuela 06. Servicios médicos 07. Crédito 08. Empleo 68. NS (Solo anotar un problema)
Otro:_____ / / /

*E2. Cree usted que se puede hacer algo para resolverlo? 1. Si 2. No 8. NS 9. Inap. / /

*E3. Ha hecho Ud. algo para resolverlo? 1. Si 2. No 8. NS 9. Inap. / /

*En algunas comunidades hay grupos y organizaciones que ayudan en el desarrollo de esa comunidad. De las organizaciones que le voy a mencionar, me gustaría que me dijera si asiste a reuniones de ellas, si es miembro de ellas y si Vd. forma parte de la Junta Directiva?

Asiste a reuniones de:	Participación	
E4. Una cooperativa agrícola?	1. No asiste 2. Asiste 3. Miembro 4. Junta	/ /
E5. Asociación Agrícola (p.e. APROCAFE)	1. No asiste 2. Asiste 3. Miembro 4. Junta	/ /
E6. Una cooperativa de ahorro y crédito?	1. No asiste 2. Asiste 3. Miembro 4. Junta	/ /
E7. El patronato	1. No asiste 2. Asiste 3. Miembro 4. Junta	/ /
E8. Asociación de Padres de Familia	1. No asiste 2. Asiste 3. Miembro 4. Junta	/ /
E9. Asociación de Campesinos	1. No asiste 2. Asiste 3. Miembro 4. Junta	/ /
E10. Un partido político	1. No asiste 2. Asiste 3. Miembro 4. Junta	/ /
E11. (solo damas) Club de Amas de Casa	1. No asiste 2. Asiste 3. Miembro 4. Junta	/ /
E12. Asociaciones Deportivas	1. No asiste 2. Asiste 3. Miembro 4. Junta	/ /
E12A. Asociación religiosa	1. No asiste 2. Asiste 3. Miembro 4. Junta	/ /

*E13. Estaría Vd. de acuerdo en unirse con sus vecinos para vender sus productos?
1. Si 2. No 3. Ya es miembro de una organización que vende los productos de sus socios 8. NS / /

*E14. Si en un pueblo cercano se estableciera una cooperativa para la compra/venta de sus productos, piensa Vd. afiliarse con ella?
1. Si 2. No 8. NS / /

*E15. El ano pasado vendió algunos de sus productos o animales por medio de una cooperativa?
1. Si 2. No 8. NS / / 18

****

CONOCIMIENTO DEL PROYECTO DE TITULACION

*G1. ha escuchado Vd. algo sobre el Programa de Titulación de tierras?
1. Si 2. No (Pasar a G3.) / /

*G2. Como se dió cuenta por primera vez del Programa de Titulación de tierras?
1. Radio o periódico 2. Amigo 3. Promotor u otro funcionario del INA
4. Funcionarios de Catastro 5. Centro de Capacitación 6. INFOP
8. NS 9. Inap / /

*G3-G5. En su opinión, cuales son las ventajas y desventajas, o sea lo bueno y lo malo de tener un título de propiedad? (Entrevistador: no leer las alternativas, pero sondear con "otra ventaja?" hasta terminar con todas las que pueda. (Como máximo marcar tres)

Ventajas
01. Poder recibir crédito 02. Legalizar mi situación 03. Aumenta el valor de la parcela 04. Facilita la venta de la parcela
05. Más seguridad 06. Poder pasado a los hijos / / /
otra _____ / / /
_____ / / /
88. NS

*G6-G8. Hay desventajas? (Marcar hasta tres)
01. No hay 02. Hay que pagar impuestos 03. Hay que pagar por la tierra / / /
04. Hay que pagar por el título 05. Causa pleitos con vecinos / / /
06. Causa pleitos entre la familia 07. Trámite engorroso / / / 32
Otra: _____
_____
88. NS

*G9. Además de un título, usted cree que hay otros servicios necesarios para que el pequeno agricultor pueda aumentar su producción? 1. Si 2. No. (Pasar a H1.) 8. NS / /

*G10-G12. Como cuáles? (No leer alternativas, pero marcar hasta 3)
1. Crédito 2. Asistencia Técnica 3. Mercado 4. Caminos / /
5. Transporte
Otro _____ _____ / /
8. NS 9. Inap / / 36

****

CONTACTO CON EL INA

*n1. Ha tenido una visita de un empleado del INA? 1. Si 2. No (Pasar a 11) / /

*n2. Que tipo de empleado fué? (no leer lista) 1. Promotor 2. Agrónomo
otro _____ 8. NS 9. Inap. / /

*n3. En su opinión, como fué la visita? buena, regular, mala?
1. Buena 2. Regular 3. Mala 8. NS 9. Inap. / /

*n4. Ha sido vistado por algún otro empleado del INA?
1. Si 2. No (Pasar a 11) 9. Inap. / /

*n5. Qué tipo de empleado fué? (no leer lista) 1. Promotora 2. Agrónomo
Otro _____ 8. NS 9. Inap. / /

*n6. En su opinón, que le pareció la visita?
Fué bueno, regular o malo
1. Bueno 2. Regular 3. Malo 8. NS 9. Inap. / /

****

CREDITO

*11. Ha recibido Vd. algún consejo sobre crédito agrícola en los últimos dos anos? 1. Si 2. No (Pasar a 16) / /

*12-14. De que institución ha recibido estos consejos? (No leer lista, pero anotar hasta tres)
01. BANADESA 02. Otro banco 03. INA 04. MRN 05. IHCAFE / / /
06. Negociante privado / / /
Otra _____ 88. NS 99. Inap. / / /

*15. Cómo encuentra usted esta clase de consejos, bién, regular o malo?
1. bien 2. regular 3. malo 8. NS 9. Inap. / /

*16. Ha solicitado usted crédito agrícola alguna vez, solo o en grupo?
1. Solo 2. Grupo 3. Los dos 4. No (Sondeo: Ningún crédito) / / 51
(Si insiste en no reportar crédito, pasar a J1)

*Podría usted decirme cómo consiguió los fondos necesarios para cultivar su parcela durante los últimos 2 anos? (Leer lista de todas las fuentes). Se puede marcar los dos usos si realmente há usado el crédito para ambos)

(Codificador: Usar 9. para Inap.)

Fuente		Cuánto fué el Total del Préstamo Monto	Plazo de Pago(meses)	Tasa de Interés Mensual	Cuál fué el Uso principal Insumos	Equipos/tierra	
Préstamo BANADESA?	18 L.	/ / / / / / /	19 / / /	19A / / /	110 / / 1. Si 2. No	111 / / 1. Si 2. No	63
Préstamos Otro Banco	112 L.	/ / / / / / /	113 / / /	113A / / /	114 / / 1. Si 2. No	115 / / 1. Si 2. No	75
	115A Tarjeta Número /8/						
Préstamo IHCAFE	116 L.	/ / / / / / /	117 / / /	117A / / /	118 / / 1. Si 2. No	119 / / 1. Si 2. No	13
Préstamo de Comerciante	120 L.	/ / / / / / /	121 / / /	121A / / /	122 / / 1. Si 2. No	123 / / 1. Si 2. No	25
Préstamo de Prestamista	124 L.	/ / / / / / /	125 / / /	125A / / /	126 / / 1. Si 2. No	127 / / 1. Si 2. No	37
Préstamo de un familiar	128 L.	/ / / / / / /	129 / / /	129A / / /	130 / / 1. Si 2. No	131 / / 1. Si 2. No	49
Préstamo de un amigo	132 L.	/ / / / / / /	133 / / /	133A / / /	134 / / 1. Si 2. No	135 / / 1. Si 2. No	61
Préstamo de cooperativa.	136 L.	/ / / / / / /	137 / / /	137A / / /	138 / /	139 / / 1. Si 2.No	73

140. Para este(s) préstamo(s) que usó de garantía? (Anotar hasta dos) / / /
_____ / / / 77
_____

140A. Tarjeta Número /9/

*Tuvo otras formas de conseguir fondos necesarios para cultivar su parcela durante los últimos dos anos? Podría usted decirme si:

141. ha vendido productos por adelantado?	1.Si 2.No	/ /	
142. ha vendido algun animal?	1.Si 2.No	/ /	
143. ha gastado ahorros?	1.Si 2.No	/ /	
144. Cuánto ha gastado de sus ahorros?	Lempiras	/ / / / / /	
145. Otros	1.Si 2.No	/ /	9

****

USO DE INSUMOS Y EQUIPO DE PRODUCCION

*Cuál de los siguientes insumos acostumbra usar usted en su finca?
(Leer todos)

Insumo		Uso	
J1.	Semillas mejoradas o matas mejoradas	1. Si 2. No	/ /
J2.	Semillas o matas tratadas o fumigadas	1. Si 2. No	/ /
J3.	(Si tiene animales) Tratamientos veterinarios para animales	1. Si 2. No	/ /
J4.	Abonos o fertilizantes	1. Si 2. No	/ /
J5.	Insecticidas	1. Si 2. No	/ /
J6.	Herbicidas	1. Si 2. No	/ /
J7.	Fungicidas	1. Si 2. No	/ /
J8.	Bomba para fumigar	1. Si 2. No	/ /
J9.	Máquinas para bombear agua	1. Si 2. No	/ /
J10.	Granero	1. Si 2. No	/ /
J11.	Yunta de bueyes	1. Si 2. No	/ /
J12.	Un tractor	1. Si 2. No	/ /
J13.	Poda de café	1. Si 2. No	/ /
J14.	Una troja	1. Si 2. No	/ / 23

****

ASISTENCIA TECNICA

*K1. Hay agrónomos que le han visitado? 1. Si 2. No (Pasar a K7.) / /

*K2-4. De que institución eran? (anotar hasta tres)
01. Banco 02. INA 03. Rec. Nat. 04. IHCAFE / / /
05. Negociante privado; otra_____ / / /
_____ / / /
88. NS 99. Inap.

*K5. Con que frecuencia recibe estas visitas. . .
Los recibe una vez al mes, varias veces al ano, solo una vez
al ano o solo raras veces?
1. Cada mes 2. Varias veces (tres hasta seis veces) 3. Solo una vez
al ano 4. Raras veces 8. NS 9. Inap.
/ /

*K6. De acuerdo a su opinión, como encuentra usted estas visitas: buenas,
regulares o malas? 1. buenas 2. regulares 3. malas 8. NS 9. Inap. / /

(Las siguientes preguntas (K7 hasta K14) son solo para aquellos que cultivan cafe)

*K7. Ha tecnificado su cafetal? 1.Si 2.No (pasar K12) 9.Inap / /
(quitar sombra, variedades mejoradas, uso de abonos, fungicidas e insecticidas)

*K8. Cuantas manzanas ha tecnificado? _____mz. (redondear) / / / / 36

*K9. De estas manzanas tecnificadas, cuantas se hizo con ayuda del proyecto PRODEMCAFE? _____mz. (redondear) (888=Ns) ////

*K10. Cuántos anos tiene su cafetal? _____(anos) ///

*K11. En cuales meses aplica el abono a su cafetal? _____(mes) (99=no usó abono) ///
_____(mes) ///

*K12. Vende algo de su café a alguna cooperativa? 1.Si 2.No /

*K13. Afectan los vientos su cafetal? 1.Si 2.No 8.NS 9.Inap /

*K14. Vive Ud. en la parcela en la que está el cafetal? 1.Si 2.No 9.Inap /

*K15. En los últimos dos anos ha hecho usted un vivero de café? 1.Si 2.No /

*K16. Cuántas plantas de café sembró usted el ano pasado? //////

*K17. Cuántas plantas de café sembró usted el ano antepasado? ////// 59

****

PERCEPCION DE LA SITUACION ECONOMICA DE LA PERSONA

*L1. Piensa Vd. que su situacion económica actual es mejor, igual o peor que la de hace un ano? 1. mejor 2. igual 3. peor 8. NS /

*L2. Qué opina usted, cree que dentro de un ano su situación económica va a ser mejor, igual o peor que ahora? 1. mejor 2. igual 3. peor 8. NS /

*L3. Qué opina usted, cree que en el futuro sus hijos vivirán mejor o peor que como viven actualmente? (Sondeo: Si no tiene hijos: Si tuviera hijos?)
1. mejor 2. igual 3. peor 8. NS /

*L4-5 Qué haría Vd. si ganara 50 Lempiras más por semana, cómo los emplearía?
(no leer alternativas) (Como máximo marcar 2 alternativas)
01. Comprar más comida 02. Invertirla en la finca (abonos, semillas)
03. Comparar más terreno 04. Comprar muebles, cocina u otro artefacto
05. Fiestas y alcohol 06. Invertirlo en negocio 07. Ahorrarlo ///
Otro _____ ///
08. NS

*L6. Usted cree que hay técnicas que un agricultor puede usar para mejorar y conservar sus suelos en el futuro? 1. Si 2. No (Pasar a M1) 8. NS /

*L7-8. Como cuáles? (Sondear hasta dos)
1. Terrazas 2. Abono natural 3. Sembrar árboles
4. Rotación de siembras ///
Otros _____ ///
8. NS 9. Inap /// 73

****

COMPOSICION FAMILIAR Y EDUCACION

*Ahora unas preguntas sobre su familia...

*M1. Es Ud. soltero, casado? / /
1. Soltero (Pasar a M4) 2. Casado 3. Unión libre 4. Viudo (pasar a M4) 9. Inap 5. Divorciado (Pasar a M4) 6. Separado

*M2. Vive actualmente con su mujer (esposa, companera? 1. Si 2. No / /
(9=no tiene senora)

*M3. Cuántos anos tiene su senora (companera)?_____ (anos)(9.9 = no tiene senora) / / / 77

*M3A. Tarjeta Número /1/0/

*M4. Cuántos anos tiene Vd.? ___ ___ / / /

*M4A. Sabe leer y escribir? 1. Si 2. No / /

*M5. Hasta qué grado llegó en la escuela? ___ ___ (no asistió=99) / / /

*M6. Ha participado usted en algún curso o cursillo? 1. Si 2. No / /

*M7. Tiene Vd. hijos? 1. Si 2. No / /

*M7A. Cuántos hijos mayores de 10 anos viven con usted? _____ / / /

*M8. Cuántas personas en total viven en su casa? ___ ___ / / / 13

****

INGRESO

*Ahora, hablando solo de los miembros de familia que viven en su casa pero que trabajan en otro lado por algun tiempo, podría usted decirme quienes trabajan en otro lado? (0=no trabajea en otro lado)

Relación	Cuántas semanas al ano trabaja allí	Ingreso Semanal	Otros Ingresos (Anual)	
	N1 / / /	N2 / / / / /	N3 / / / / /	23
Jefe		L.	L.	
	N4 / / /	N5 / / / / /	N6 / / / / /	33
Esposa(o)		L.	L.	
	N7 / / /	N8 / / / / /	N9 / / / / /	43
Hijo		L.	L.	
	N10 / / /	N11 / / / / /	N12 / / / / /	53
hijo		L.	L.	
	N13 / / /	N14 / / / / /	N15 / / / / /	63
hijo		L.	L.	
	N16 / / /	N17 / / / / /	N18 / / / / /	73
Otros		L.	L.	

****

ACCESIBILIDAD A SERVICIOS

*P1. Por lo general, cuánto tiempo emplea para llegar al lugar donde acostumbra vender sus productos? (sondeo: el más común)
___ ___ ___ (especificar horas y minutos) / / / /

*P2. Cómo llega a ese lugar? (no leer las alternativas) 1. a pie 2. bus 3. moto 4. carro/camión propio 5. moto/carro/camión de un amigo. 6. bestia
Otro_____ / / 77

*P2A. Tarjeta Número /1/1/

*P3. Cuánto tiempo emplean sus hijos para llegar a la escuela primaria más cercana?_____ _____ _____ (especificar horas y minutos) / / / /

*P4. Cómo llegan a ese lugar? 1. a pie 2. bus 3. moto 4. carro/camión propio 5. moto/carro/camión de un amigo 6. bestia
Otro_____ / /

*P5. Cuánto tiempo emplea para llegar al médico más cercano que usted usa?
_____ _____ _____ (especificar horas y minutos) / / / /

*P6. Cómo llega a ese lugar? 1. a pie 2. bus 3. moto 4. carro/camión propio 5. moto/carro/camión de un amigo 6. bestia
Otro_____ / /

*P7. Cuánto tiempo emplea para llegar a la tienda mas cercana?
_____ _____ _____ (especificar horas y minutos) / / / /

*P8. Y cómo llega a ese lugar? 1. a pie 2. bus 3. moto 4. carro/camión propio 5. moto/carro/camión de un amigo
Otro_____ / / 14

****

NIVEL DE VIDA

*Q1. Con qué se alumbran ustedes: 1. Candil u Ocote 2. Candela 3. Lámpara de Gas o quinqué 4. Luz eléctrica / /
*Q2. Radio 1. Si 2. No / /
*Q3. Máquina de coser 1. Si 2. No / /
*Q4. Refrigeradora 1. Si 2. No / /
*Q5. Televisor 1. Si 2. No / /
*Q6. Tiene servicio? 1. Nada 2. Letrina 3. Sanitario / /
*Q7. Cómo obtiene el agua: 1. río o quebrada 2. Pozo público 3. Pozo privado 4. Llave pública 5. Agua potable en la casa / /
*Q8. Vehículo: 1.nada 2.moto 3.carro o camión / /

*Q9. Cuántos caballos o mulas tiene Ud.? _____ / / / 24

*Cuáles de las siguientes mejoras ha hecho usted en su finca?

*Q10.	Patio de concreto para asolear café	1.Si	2.No	/ /
*Q11.	Despulpadora de café	1.Si	2.No	/ /
*Q12.	Bodegas	1.Si	2.No	/ /
*Q13.	Trojas	1.Si	2.No	/ /
*Q14.	Granero	1.Si	2.No	/ /
*Q15.	Granja	1.Si	2.No	/ /
*Q16.	Encierros para animales	1.Si	2.No	/ /
*Q17.	Casa	1.Si	2.No	/ /
*Q18.	Corredor	1.Si	2.No	/ /
*Q19.	Tubería	1.Si	2.No	/ /

*Tiene usted .....?

*Q20.	Un arado de madera	1.Si	2.No	/ /
*Q21.	Un arado de hierro	1.Si	2.No	/ /
*Q22.	bomba de fumigar	1.Si	2.No	/ /
*Q23.	Máquina para bombear agua	1.Si	2.No	/ /
*Q24.	Yunta de bueyes	1.Si	2.No	/ / 39

****

Muchas gracias, estas son todas las preguntas que tengo. Nosotros estamos planeando regresar y hablar con usted en unos anos.

INFORME DEL ENTREVISTADOR

(Este parte del cuestionario la llena el encuestador sin hacer preguntas al entrevistado inmediatamente después de la entrevista.)

UP1.	Grado de cooperación 1. Bueno 2. Regular 3. Malo	/ /
UP2.	Validez de respuestas 1. Verdaderas 2. Dudosas 3. Muy dudoasas	/ /
UP3.	Techo de la vivienda: 1. Paja 2. Zinc 3. Teja 4. Asbesto	/ /
UP4.	Paredes de la vivienda: 1. Cartón u otro material temporal 2. Bahareque 3. Adobe 4. Madera cepillada 5. cemento o bloque	/ /
UP5.	Piso de la sala de la vivienda 1. Tierra 2. Madera cruda 3. ladrillo 4. Cemento 5. Mosaico	/ /
UP6.	Casa: Esta dividida en cuartos o no: 1. Dividido 2. Un solo cuarto	/ /
UP7.	Tipo de vivienda 1. Muy pobre 2. pobre 3. modesta 4 cómoda	/ /
UP8.	Duración de la entrevista en minutos ___ ___ (ver comienzo de la entrevista)	/ / /
UP9.	Firma del entrevistador_____	/ / /
UP10.	Firma del supervisor del campo_____	/ /
UP11.	Firma del codificador_____	/ /
UP12.	Firma del supervisor de codificación_____	/ /

OBSERVACIONES:

UP13.	Sustituto	1. Si 2. No	/ / 55