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FINAL REPORT

1982-83 SURVEY OF HILLSIDE FARMERS: METHODOLOGY USED FOR COLLECTION AND FRAMEWORK FOR ANALYSIS OF DATA

IRDP II

JAMAICA

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Contract: 532-0046-C-00-2003-00

December 1983

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I. INTRODUCTION

This report is intended to serve several quite distinct purposes. It describes the background for the survey of farmers which has been carried out in the Pindars and Two Meetings Watersheds of the Second Integrated Rural Development Project (II IRDP), as well as my role in that survey. It presents my own observations on the methodology which we have employed. Along similar lines, the report also describes the questionnaires and the data collected in some detail, specifying some of the strengths, weaknesses, limitations and possible future uses of particular data sets.

Since time does not allow me to participate actively in the final analysis of the data, I have also drawn up a Framework for the analysis. This section makes up the bulk of this report and is intended to help guide the staff of the Data Bank and Evaluation Division through the necessarily winding course of analysis. It includes everything from general ideas on topics to pursue to very specific hypotheses, methods of testing them, and tabular presentation of the results. Included in conjunction with this section are annexes which contain information to be used (a good deal has already been used) in computer processing and data analysis. A copy of the Interviewer's Manual (which describes the questionnaires in the most detail) and of each of the questionnaires are also included.

All sections of this report are intended to be of practical use to the staff at the Data Bank, not only for finishing the current project, but also for designing future surveys of farmers. I have concentrated on the evaluation aspect of

the survey, mainly because that was the principal objective from the outset. Due to the timing of the survey and the termination of II IRDP in February 1983, it was unfortunately never possible to feed our findings back into ongoing IRDP activities. There are, however, many possible applications of the data beyond strict evaluation. This report touches on these from time to time, and some ideas are proposed. It is sincerely hoped that information about and access to this data is made available to all possible users--whether inside or outside the Ministry of Agriculture. This would perhaps be our most important achievement, since a great deal of effort and expense has gone to assure that we have assembled a comprehensive and accurate body of farm-level agricultural production data.

II. ROLE OF THE MONITORING ADVISOR

I arrived in Jamaica on April 19, 1982, on a six-month contract, to be "responsible for the technical aspects of a continuous monitoring system for the Second Integrated Rural Development Project...."

> The monitoring system will be designated primarily to evaluate the change in agricultural production (Component IV) and net farm and off-farm income resulting from the installation of different soil conservation treatments, shift in cropping patterns, credit and other project activities provided to participating farmers as compared to non-participants.

I worked through the Data Bank and Evaulation Division of the Ministry of Agriculture, but reported directly to the Director of II IRDP up to the close of the project on February 28, 1983. After that date, I have reported directly to Mr. Lester Boyne, Director of the Data Bank and Evaluation Division. I was based in Christiana with Mr. Donald Modest, a contractor in charge of hiring and supervising the ten interviewers required for the field work.

My specific duties were to include:

- helping to determine the appropriate sample for our purposes;
- devising the necessary questionnaires to address:
  - production;
  - marketing;
  - production costs; and
  - net farm and off-farm income;
- devising the statistical tests for analysis of the data;
- working with the Computing Section of the Data Bank on data processing and analysis; and
- preparing and conducting training programs for the enumerators.

The original intent was to conduct a year-long survey of farmers in order to cover a full production cycle for all crops and so more accurately gauge farm production, income and costs. Eventually, this concept proved feasible and four repeating questionnaires have been applied on a bi-weekly basis for an entire calendar year. Eight "one-time" questionaires were also designed, largely to provide direct comparisons with the socio-economic information collected from the 1979 Baseline Survey of the Data Bank. As the scope and the time frame of the survey were extended (in segments), my contract was extended simultaneously.

III. OVERVIEW OF THE SURVEY

The months of May, June and July of 1982 were devoted to numerous but necessary pre-survey activities. These included: determination of the principal questions to be addressed; determination of sample size, stratification and selection method; advertising the enumerator positions, interviewing candidates and selecting those to be hired; designing and revising (several times) the questionnaires, including detailed codelists for each questionnaire; conducting pre-survey publicity meetings with the farmers selected for the survey in order to encourage their cooperation; conducting a test-listing exercise in the watersheds in order to determine whether the population had changed significantly since 1979; preparing and conducting a training program for enumerators; preparing an Interviewer's Manual (included here) which describes the project, the survey, interviewing techniques and the questionnaire in some detail; cutting stencils and rolling off the necessary quantities of questionnaires and Interviewer's Manuals to start the survey.

Mr. Alex McLean was assigned as the Data Bank officer directly responsible for the survey from the outset. Other persons taking an active role from the Data Bank were Mrs. Faith Innerarity, Mr. Lester Boyne, Miss Beulah Edoo (Computing Section), Mr. A.K. Sahney (Data Collection and Statistics Branch) and Mr. Vincent Lindquist (consultant).

Mr. McLean, Mrs. Innerarity and I put together the Interviewer's Manual and carried out the training program. I devised the general format for the questionnaires and drew up Q1-Q6 (Household Census, Field Census and the four repeating questionnaires: Crop Production and Marketing, Farm Labor Use, Agricultural Input Use and Income and Farm Expenditures), as well as Q8 (Livestock Inventory). Mrs. Innerarity drew up Q7 (Housing and Other Rural Amenities)

and Q9-Q12 (Farm Credit, Attitudes Toward Soil Conservation, Participation in Farm/Community Organizations, and Extension Services) by adapting questions from the 1979 Baseline Survey (plus some additional questions on extension services suggested by Mr. Ron Grosz, IRDP Extension Advisor) to our new, largely pre-coded questionnaire format.

Mr. Warren Enger, IRDP Farm Management Advisor, also played an important role in the design of the survey. He participated (with all of the above persons) in discussions concerning the purposes of and methods to be employed in the survey. Mr. Robert Mowbray, the USAID/ARDO representative, also contributed his ideas on survey design. Dr. Allen Lackey, an intermittent consultant to the Data Bank and Evaluation Division, also made several specific suggestions which were incorporated as the final revisions of the questionnaires.

Mr. Roy Walters, IRDP Project Director, organized the farmer publicity meetings, with the assistance of Assistant Directors Mr. Lennox Taylor and Mr. Lance Henry. Mr. Modest, Mrs. Innerarity, Mr. McLean, and I also participated in these meetings. Mr. Modest had primary responsibility for hiring and supervising the ten interviewers. He also supervised the test-listing operation and attended the training sessions. Once the survey began, one of Mr. Modest's principal roles was to attempt to persuade uncooperative farmers to continue with the survey. He was quite successful in this effort. Miss Levinia Hines was responsible for arrangements at our training venue, the Brooklyn Training Centre, in Christiana.

Mrs. Joy Todd and Mrs. Barbara Lee assumed responsibility for computer processing of the data subsequent to the departure of Miss Edoo. Mr. Denton Levy joined the field staff in Christiana as of March 1983 as Evaluation Assistant. His primary responsibility has been to edit the incoming repeating questionnaires

and make the necessary corrections with interviewers. He has also participated in field trips to visit farmers and has had other office and advisory duties.

Training of interviewers took place July 19-21, 1982, and involved instruction at the Brooklyn Training Centre, as well as sessions in the field. The latter covered practical matters such as estimation of acreages and slopes and identification of the various soil conservation tratments.

July 22-26 was devoted to a pre-test of all twelve of the questionnaires. I then edited these questionnaires and discussed the results of the pre-test with the interviewers. No significant changes to the questionnaires were made as a result of the pre-test. However, interviewing procedures were clarified and some codelists were adjusted.

The survey was actually begun during the last week of July. The first interview included Q1, Q2 and Q7, the first three one-time questionnaires. The first interview took longer than expected, largely because of difficulties in locating many farmers. The second interview included all of the remaining one-time questionnaires, Q8-Q12. The decision was made to administer the one-time questionnaires in two separate interviews so as to avoid antagonizing the farmers (by taking up too much of their time) from the very beginning. As anticipated, some farmers had moved from the project area, some mistakes in names and locations had been made during the listing of the population in 1979, and some farmers were uncooperative. Therefore, the lists of farmers assigned to particular interviewers had to be adjusted as the survey progressed.

Further complicating the situation (and constraining our progress to some extent) was the resignation of several interviewers. Over the course of the survey period, five interviewers, or half of our original contingent, resigned. Most of these resignations were preceded by very little notice and, therefore, caused some disruptions. Three of the resignations took place in August-

September, 1982, requiring rapid recruitment and training of replacements. Whenever possible, the resigning interviewer spent some days in the field with his/her replacement in order to minimize interruptions of the survey. The two other resignations occurred in December 1982 and February 1983. In each case, I gave individual instruction to the interviewers and had them practice administering the questionnaires before starting their regular interview schedules with their own farmers.

Since interviewers encountered different problems in beginning the survey (and to different degrees), and also due to the early resignation of three interviewers, the first and second interviews were completed at different times for different interviewers. We instructed interviewers to finish the first interview (Q1, Q2, Q7) with all of their farmers before proceeding to the second interview. However, since each interviewer was working independently with his/her assigned group of farmers, he/she was not supposed to wait for other interviewers to catch up before proceeding. It was also necessary to establish an accurate Field Census (Q2) before beginning the repeating questionnaires, since the latter were to be based on Q2. Interviewers were instructed to visit, with the farmer, each piece of land ("field") cultivated by the farmer in order to agree on field names, estimate acreage and slope and record crops accurately.

All of the one-time questionnaires were completed by the end of October 1982. Interviewers began administering the repeating questionnaires (Q3-Q6) as soon as they had completed all the other questionnaires for all of their farmers. Thus, some interviewers were able to begin the repeating questionnaires as early as mid-September 1982, while others did not begin until mid-October. It is from this initial interview date for Q3-Q6 that we have calculated one calendar year for each farmer. If a farmer's first interview on Q3-Q6 took place on

September 16, 1982, then his final interview date was scheduled for September 2, 1983. This is because the initial interview was to include all activities for the previous two weeks.

Interviewers were instructed to administer the repeating questionnaires on a bi-weekly basis, so far as this was possible. In practice, some interviewers were able to follow this practice throughout the survey period for most of their farmers, while others required three weeks or more between interviews. Since the purpose of the bi-weekly interview is to achieve greater accuracy in the data than is possible with longer gaps between interviews, we have attempted to minimize the number of interviews spaced at greater than three-week intervals. The reasons for the longer intervals which do occur include: more farmers assigned to some interviewers than others, transportation irregularities, uncooperativeness of farmers and difficulties for interviewers to establish concrete appointments with farmers. The latter problem (coupled with the interviewers near total reliance on public transportation) has been most pervasive.

During the period from October 1982 to October 1983, a routine was developed whereby blank questionnaires were run off and provided as needed to interviewers; complete questionnaires were returned by interviewers to the Christiana office and were hand-edited; appointments were made with individual interviewers (perhaps every three weeks, on the average) to go over these questionnaires together (with myself or Mr. Levy) and make the necessary corrections; individual and group remedial instruction was given to interviewers as particular problems arose; and adjustments were made to codelists and instructions as required. The need for some adjustments of codelists and some methods was anticipated from the beginning, since it is never possible to predict all possible complications in a detailed survey such as this. For example, new production/marketing unit

codes had to be made for coffee, cocoa and ginger in order to allow for local methods of estimation. Likewise, a means of recording crop bonus payments had to be devised; and so on.,

Except for the Field Census, which was still being adjusted, all one-time questionnaires were hand-edited and turned in to the Computing Section of the Data Bank by the end of October 1982. The Field Census was turned in during November. In order to facilitate computer processing and editing of the data, I began work on a detailed list of the variables, their positions, their possible values and/or value ranges and a good deal of additional inter-variable information for each questionnaire, to be used to record and computer-edit the incoming data. I also prepared some lists of tables to be produced from some of the one-time questionnaires (Q1, Q2, Q9 and Q12) and gave these to the Computing Section. Unfortunately, due to intense competition from other jobs at the Computing Section, the processing of data from the one-time questionnaires did not actually get underway until January-February 1983, and no initial output was forthcoming until March. Problems encountered in this initial output were discussed with Mrs. Todd and some of the jobs were re-submitted.

A primary purpose of many of the initial tables requested was to provide the necessary information by which we could realistically divide farmers into groups (categories), based on their participation in IRDP activities (soil conservation, credit and extension contact), as well as on the size of the farm. I have subsequently drawn up aggregate data files (one for each interviewer, one case for each farmer/household) containing the above information. These files sould provide a neat, compact input data file for later analytical computer runs, since key production and income data can also be aggregated onto these files as soon as data processing of all repeating questionnaires is completed.

The first set of repeating qustionnaires was delivered to the Data Bank in early May. All of the detailed information required to process and edit the data by computer was also delivered by this time. Mrs. Lee, Mrs. Todd and I discussed in some detail the procedures we would follow during the upcoming months of work on Q3-Q6. Since farmers were interviewed (approximately) every two weeks over four separate questionnaires, the amount of data collected from these questionnaires, for approximately 270 farmers over the course of a year, was very substantial--posing logistical problems not encountered with the one-time questionnaires. The edit specifications which I provided for Q3-Q6 (seen elsewhere in this report) were also much more complex than for the one-time questionnaires--owing to the types of numerical interrelationships of these data.

Therefore, the first error lists (produced by running a computer program containing all these edit specifications on a set of "raw" data)were not forthcoming from the Computing Section until August 26. I then corrected these error lists, based on my own knowledge of the particular cases and with aid of the particular questionnaires. I returned these corrected error lists to the Computing Section, where the staff made the necessary corrections to the data files themselves.

This process has been repeated several times since, and is working quite satisfactorily. It is a process, however, which will have to be continued intermittently for perhaps another two to three months after my departure at the end of October. It is my recommendation that Mr. Denton Levy be assigned to edit these remaining error lists since, based on his experience editing the questionnaires over the past several months, he has the most intimate knowledge of the data and the particular interviewers and farmers involved.

Mr. Levy was hired in March 1983, as it had become evident that hand-editing of questionnaires was nearly a full-time job in itself. I gradually ceded more and more responsibility for this task to him, but we worked in close collaboration from the outset. Editing of questionnaires is the least glamourous, most time-consuming and repetitive, but also perhaps the most important job performed in order to assure a high-quality data set from a survey such as this. Being relieved of much of this duty during the past few months has allowed me to spend more time on computer processing requirements, on developing a framework for the analysis, on visiting farmers and interviewers in the field, and on collecting the other sorts of information needed to complete the survey.

Included in the last category is a Soil Conservation Maintenance Checklist which I have designed in order to assess the degree to which farmers are maintaining the soil conservation treatments implemented by IRDP. This was administered recently by interviewers and was used to help group farmers. It is also informative in its own right.

I collected information on prices of inputs and crops from a variety of sources in order to include price checks in the computer edit programs of Q3-Q6. These edit specifications are included as an annex to this report. I also gradually assembled a list of conversion factors for the various production/marketing and input units encountered during the survey. Some conversions have been made by hand-editing in order to minimize the number of legitimate units in which each crop or input may be measured. However, some further conversions will have to be done via computer programs, and I have attempted to provide much of the necessary for information for this process in another annex to the Framework for Analysis. I also interviewed former IRDP officers in regard to how their units (e.g., credit, forestry, soil conservation) functioned and am conveying some of this information in this report.

Denton Levy and I visited a number of participating farmers in the field. We were accompanied each time by the interviewer responsible for these farmers. The purposes of these vists were to :

- observe the interrelationships between interviewer and farmer and note the effectiveness of the interviewing technique;
- interview the farmers for their opinions on the effects of II IRDP and on their own current farming situation; and
- visit the fields to assess the condition of soil conservation treatments and the accuracy of the Field Census.

These visits proved invaluable and formed the basis for several of the recommendations on survey methodology in the following section of this report.

IV. OBSERVATIONS AND RECOMMENDATIONS ON METHODOLOGY

As far as we know, this type of survey is new to Jamaica and so may be viewed as "experimental" in a sense. Many people expressed doubts that Jamaican farmers would submit to such demands on their privacy and time as bi-weekly interviews for over one year. Although we did encounter may obstacles along the way, the general method is definitely workable in Jamaica. We began the survey with 340 farmers and ended with 261 farmers; however, many of those "lost" were for uncontrollable reasons, such as their death or moving out of the project area. In fact, a number of farmers were never located in the first place. Therefore, the number of farmers who withdrew by choice from the survey was relatively modest. Some farmers, of course, gave less than complete information, although it is unfortunately very difficult to determine other than the most obvious cases of withholding information.

Several observations and recommendations may be made regarding particular aspects of the methodology we employed. More specific points pertaining to particular questionnaires may be found elsewhere in this report.

1. Our survey was "intensive" in the sense that we collected detailed information every two weeks for a year. It was "extensive" in that we had a large sample of farmers covering a sizeable geographic area. This may be seen as a case of trying to "have your cake and eat it, too." Our twin objectives of evaluating II IRDP and providing farm-level production data at the same time dictated

this approach. However, planners of future surveys with more limited objectives should consider reducing the size of the sample in order to be able to control more effectively the accuracy and completeness of the data. For example, we would have liked to measure fields and assess yields more accurately, but this was not feasible, given the breadth of the survey.

2. Our sample was taken from the larger sample for the Baseline Survey. This was fine for making comparisons between our findings and those of the Baseline Survey and for making statements on the population relative to farm size. However, two problems arose from this procedure:

   - The population listing from which our sample was selected had, of course, changed to some extent between 1979 and 1982. Our check-listing exercise indicated that the changes were not significant, but it would have been preferable to conduct a new population listing in 1982.
   - The stratification of the sample according to farm size limited our effectiveness in grouping farmers to make statistical tests in other variables. For example, we had only seven farmers in two of the IRDP Farm Groups and over 100 in another group. If we were primarily interested in testing for the effects of soil conservation treatments, credit, etc., we should have selected a sample of farmers which assured a more even distribution of these factors.

3. The concept of a year-long survey to gather production-related data makes sense in an environment such as Jamaica--where a great variety of crops are grown throughout the year. There

are, however, complications in sorting out the crop cycles, in that the beginning and the end of the survey cut into production cycles for many crops. Thus, we need, ideally, to be able to make statements such as "Four tons of Irish potatoes were produced from this field, with 80 man-days of labor over 1½ crop cycles (1 harvest)." Alternatively, direct comparisons may be made with other one-year surveys.

4. With a survey as large and complex as ours, it is not unreasonable to set aside three months for pre-survey work. More time will probably be required if a population listing is undertaken. We ended up taking about three months, but our initial plans called for an unrealistically early start-up date. It is important to get started on a sound fooding, which means being as realistic as possible regarding the timing of key activities.

5. If monitoring of a current project is the principal objective of a survey, then realistic provisions must be made for timely data processing. This would require either the use of micro-computers in the field or independent and continuous access to Data Bank or other computer facilities. Monitoring of ongoing activities requires more timely data processing and analysis (and probably simpler questionnaires) than we had in this survey.

6. For a survey of this size, a person should be assigned from the outset to edit questionnaires by hand. This is the position held by Denton Levy since March. This person should ideally be well-trained in agriculture in order to carry out other duties as they arise.

7. Field visits by a technical supervisor should be made very early in the survey in order to: make adjustments in procedures; see if fields and crops are accurately recorded and being visited by interviewers; judge the overall performance of each interviewer and make the necessary adjustments; determine whether interviewers' workloads are equitable and feasible.
8. Our interviewers were placed according to their locations of residence. However, many still had long distances to cover, often where public transportation was either irregular or non-existent. This, in conjunction with very irregular reimbursement of travelling claims, hurt morale of the interviewers. It also no doubt adversely affected the quality of the data they collected in some cases. Consideration should be given in future surveys to providing transportation--most likely motorbikes--to interviewers. Interviewers could cover more territory, visit farmers and their fields more regularly, and generally improve their work if they had continuous access to transportation. It may well be that the purchase of motorbikes makes economic sense when balanced out against travelling claim expenses and considering the subsequent improvement in the quality of the data collected.
9. Whenever possible, more sensitive questionnaires should be delayed until interviewers have succeeded in gaining the confidence of farmers. Our experience shows that the information on Agricicultural Credit (Q9), collected near the beginning of the survey, was somewhat incomplete. Additional information was gained when we re-checked farm loans toward the end of the survey.

10. The actual technique that interviewers employed in conducting interviews turned out to be different than expected. To increase the speed and smoothness of the interview, interviewers generally took down the required information for the repeating questionnaires in a notebook, and later transferred it to a questionnaire. This method appeared to work satisfactorily , but if this is done, supervisors must check carefully to assure that each interviewer is regularly asking the complete set of questions and uses all codelists consistently.

    Interviewers generally did a good job in adjusting to the habits of their farmers. The tendency was actually toward being "over-comfortable" with farmers, which can result in the acceptance of incomplete information and an unwillingness to "probe" sufficiently.

    Most interviews took only about ten minutes to complete and were often conducted while standing--sometimes in full sunlight. It would be preferable for an interviewer to establish a more confortable setting for each interview. This would give the farmer every opportunity to "open up," and would also allow the interviewer to be more complete. Access to personal transportation would definitely ease the time pressure on interviewers.

11. Provisions should be made from the outset of the survey for possible resignations by interviewers. The most obvious action to take is to train "extra" interviewer candidates at the initial training sessions. This would also allow supervisors to pick the best candidates, based on their performances during training. We continually attempted to address the problems expressed by interviewers as they arose in order to avoid unnecessary resignations. We

also reminded them to give as much notice as possible. Finally, we tried to allow each resigning interviewer to work for at least one week with his or her replacement.

V. OTHER POSSIBLE USES FOR THE DATA

As stated in the introduction to the Framework for Analysis, we have concentrated on the evaluation aspect of the analysis for this report. Many of the tables presented here are descriptive in nature and go well beyond a strict evaluation. However, there are many other possible uses of the data beyond what is described in this report. Each potential user of the data will have his/her own objectives and approaches. We have attempted to be as complete as possible in describing the data in order to allow each potential user relatively easy access to it. In this section we briefly present some topics and approaches which might be explored profitably with the data from this survey.

As alternative means of arriving at the same sorts of information to be presented from tables in this report (and confirming the results of those tables), regression analysis and/or analysis of variance (ANOVA) may be performed. The unit of analysis could be either the farm/household or the field--depending on the job to be performed. The unit of analysis would probably be the farm/household for most demographic variables and for other variables affecting the entire farming operation (e.g., rainfall, location). Regression analysis based on acreage data could be done at the field level, although ordinarily field-level production functions are much more difficult to estimate. The Statistical Package for the Social Sciences (SPSS) has excellent packaged computer routines for both regression analysis and ANOVA and the SPSS manual provides a complete description of these routines.

Except for field-level, agronomic type production functions (which would be in physical terms), most models to be specified and estimated (either by

ANOVA or regression analysis) would have some derivative of income as the dependent variable. Possible dependent variables include total income, farm income, nonfarm income, crop sales, gross value of crop production and net value of crop production. These variables are all defined in the "Topics for Analysis" section of the Framework for Analysis. Possible independent variables include total farm acreage, geographic area, and sex, age, education, primary occupation and overseas work experience of the farmer. It could be hypothesized that one or more of these factors (or particular combinations of them) affect farmers' efficiencies (and hence incomes). Various equations could also be specified to test the significance of each IRDP activity (soil conservation, credit, extension) in its effect on income or value of production.

Field-level production functions could be specified for particular crops. In these cases, quantity produced (in pounds, boxes, tons, etc.) would be the dependent variable. Possible independent variables include slope, tenure, treatment, cost of maintenance, acreage, and quantities of the various inputs (labor, fertilizer, insecticide, fungicide, seed, planting material and man-days of equipment or machinery use)--in different combinations. Yield functions (production per acre) could also be specified, but these are by far the most difficult to estimate accurately. Furthermore, our acreage estimates are only approximations. It would definitely be easiest to identify significant relationships at the farm/household level.

It may well be that there exist correlations among our factors for grouping farmers, i.e., farm size, watershed and sub-watershed, and IRDP Farm Group. This could be determined by simple cross-tabulation and/or correlation analysis. Watershed and sub-watershed clearly are correlated to interviewer. It is always a good idea to identify these correlations where they are shown to exist in order

to qualify certain findings and avoid making purely spurious correlations with other variables.

It would be interesting, if possible, to create food balance charts for different groups of farmers. By using the formula, production - quantity marketed = consumption + livestock feed + spoilage, we can determine the extent to which different farmers are involved in the marketing system for particular crops. If standardized consumption information is available, we can also determine food surplus and food deficit areas by subtracting consumption from production. We would ignore our own marketing information in this case and assume that the calculated difference represents the quantity available to be marketed. For these calculations, the number of persons of different age groups in the household (from the Household Census) would be used to determine consumption requirements (and hence marketable surplus) for each household.

Budgets for various crop enterprises should eventually be compiled. These would be drawn up for different groups of farmers who are believed to be operating under significantly different conditions of agricultural production. These conditions can be either natural (e.g., weather, population density, predominant soil type or slope) or technical (e.g., use of motor-driven machinery versus animal traction or hand tools). Labor requirements (by operation) may be calculated directly from our Q4 data for different crops or crop mixtures. These may then be used, with the quantities of other inputs used--all put into value terms, to create a budget for a particular quantity of crop. The technique of partial budgeting may also be employed in order to estimate production opportunity contours aimed at finding optimal crop production ratios.

Finally, several types of calendars may be graphed. A calendar of farm labor use can identify periods during the year when labor is in greatest demand--and the slack periods when additional crop enterprises could be introduced. Labor is likely to be the first constraint to production for most farmers, so identifying the crop operations which most critically limit a farmer's production capacity is an important exercise. This calendar could be done on a per-household or a per-person basis, by sex and/or age group. Cropping calendars for the more important crops (by operation) could be matched to the above aggregate farm labor calendars to clearly identify the timing and magnitude of particular crop operations. This would also help identify farmers' typical rotations of crops over the course of a year. It could also show whether "IRDP farmers" practiced multiple-cropping to a greater degree than did non-participating farmers. This was an important assumption of the Project Paper.

Calendars showing income and expenditure ebbs and flows over the course of a year could also be of interest. It may well be that farmers are more receptive (and able) to investing in new production inputs at certain times of the year than at others. Conversely, they are probably most in need of agricultural credit at other times of the year.

VI. FRAMEWORK FOR ANALYSIS

INTRODUCTION

The two basic purposes of our survey were to evaluate the effects of the II IRDP and to provide detailed information on crop production and income in this area. Although these two purposes are not entirely separable, it is useful to approach them separately.

There are two distinct approaches we may take toward the evaluation aspect. With one we compare globally many of the findings of the 1979 Baseline Survey with those of the present survey. This is particularly appropriate with regard to possible changes in the living conditions (socio-economic environment) in the region. With the second approach we compare the agricultural/economic performance of grups of farmers in our current survey who have participated to different degrees in different IRDP activities.

As an Integrated Rural Development Project, IRDP's overall purpose was to raise the standard of living in its geographical domain. As an agriculture-oriented project, its most important single objective was to raise incomes of farmers--principally through increasing (and making more efficient) crop production, but also through generating employment opportunities.

If we assume that our current sample of farmers is representative of the entire area, we may compare directly our findings on housing and other rural amenities, agricultural credit, farm/community organizations, employment, and to a lesser extent, soil conservation work and marketing channels, with the findings of the Baseline Survey. In many cases, tables may be replicated exactly

in order to facilitate comparisons. In other cases, new tabular information may be presented. Such is the case for extension services, on which no information was collected in 1979.

In a similar way, the global situation in 1982-83 with regard to crop production, acreages, yields, value of production marketed, farm and nonfarm income, and livestock transactions and holdings, may be presented. These findings may then be compared with corresponding figures from the Baseline Survey, wherever the latter are available.

The second approach we may take in our evaluation involves comparisons among groups (or categories) of farmers from our current sample. We will look once again at key variables such as total crop production, gross and net farm income, nonfarm income, and returns to resources. We can also make comparisons in some of the socio-economic variables discussed above. However, in this approach, we will be looking to see whether or not (and if so, why) farmers who participated in the principal IRDP activities are today any better off economically than those who did not (or participated to a lesser extent).

The first step in this second approach is to categorize farmers carefully, according to certain selected factors. These factors represent the principal IRDP activities. Therefore, farmers have been grouped according to their use of soil conservation treatments, acceptance of farm credit and maintenance of soil conservation treatments, where applicable. These are the IRDP activities which may be hypothesized to have affected the agricultural production and incomes of participating farmers. We thus end up with six IRDP Farm Groups for the analysis. These groups are described in the following section.

Once all farmers in the sample have been categorized, simple statistical tests (t - tests) may be performed to determine where there are significant differences between mean levels of income, crop production, etc., for the various groups of farmers. A section on the application of the t-test is also included here.

Although the Interviewer's Manual remains the best single source of information on the details of the questionnaires, some unforeseen conventions were created during the survey period. These are presented in another section of this report.

Our basic procedure in the Framework for Analysis is to list the topics for anaysis individually and then to examine each of these topics, using the same format. The two basic approaches described above are detailed under most topics--although a separate section for "Comparisons Among IRDP Farm Groups" is not always necessary. The other approach is a "Presentation of Global Findings and Comparison with the Baseline Survey Findings." Under both of these approaches we have subsections listing particular tables, some expectations before the analysis, and the main data requirements and considerations relevant to completing the tables.

IRDP FARM GROUPS

We have developed this classification in order to accomplish our stated objective of making comparisons among farmers from our current sample. These types of comparisons are advantageous for at least two reasons:

- They facilitate statistical tests of significance (t-tests) among sample means from the groups.

- They are based on observations made over the same period of time and using the same methodology. Thus, we avoid possible experimental errors caused by different weather conditions, general economic conditions, and interview frequency (for example), which are likely to occur when we make comparisons between our findings and those of the 1979 Baseline Survey.

In the end we have settled on a classification based on:

- soil conservation treatments;
- maintenance of these treatments by farmers; and
- agricultural credit.

This is not a perfect method, but appears to be a reasonable compromise, given the necessities of statistical testing. It would have been preferable, but impossible for methodological reasons, to include more detailed classifications for all three of the above factors.

It would also have been interesting to include changes in cropping patterns and contact with IRDP extension officers as additional factors in the grouping execrise. Although intensification of cropping practices and the encouragement of cultivation of certain crops (e.g., banana/coffee, citrus) were part of the IRDP program, field observations and discussions suggested strongly that IRDP field officers often did not in fact recommend cropping changes to farmers. However, this observation should be tested by means of the data itself. Further, frequency of contact with extension officers does not necessarily correlate with any particular IRDP activity, and so would be difficult to interpret.

It was deemed preferable to keep the number of IRDP Farm Groups to a minimum so as to avoid over-complicating the data analysis. This also increases the number of farmers in each group, thereby allowing us to make more reliable statistical tests. Some groups (notably groups 2 and 5) are, nevertheless, of small size in our sample. This is because the sample was originally stratified and selected according to farm size, in order to make statements with regard to both the general population and the Baseline Survey findings.

Soil Conservation Treatments

The construction of soil conservation treatments was the single largest activity of II IRDP. The engineered treatments included hillside ditches, bench terraces,

orchard terraces, waterways, diversion ditches and contour barriers. The agronomic treatments included forestry and improved pasture. Hillside ditches were by far the most common treatment, followed by bench terraces. We have elected to include only hillside ditches, bench terraces and orchard terraces for the Farm Group criterion because (1) the other types of engineered treatments are far less substantial and, in some cases, more temporary in nature and (2) the pine and other trees planted require 20 years to mature and thus could not be expected to have provided immediate benefits in the variables which we measured.

In contrast, at least some of the crops planted on ditches and terraces could be expected to have benefitted in a relatively short amount of time--six to eighteen months, according to the Project Paper. The reasons for possible higher yields on these treatments include:

- the intended accompanying use of intensified, modern cropping practices;
- better use of rainfall; and
- reduced soil loss.

Negative effects include:

- loss of at least part of a cropping season for bench terraces; and
- disturbance of productive topsoil for bench and orchard terraces.

Newly planted tree crops (e.g., coffee, citrus, cocoa) would, of course, take longer to reach maturity and so our survey could not, for the most part, be expected to demonstrate yield increases for tree crops planted on hillside ditches and and orchard terraces. Implementation of the project began in 1979, so seedlings planted during those first few months have, however, been producing for some time now. Observations in the field, furthermore, have been that seedlings were usually planted in a pre-existing field instead of forming

an entire new field. This give us more reason to believe that we should expect to measure higher land productivity--even for tree crops--on land with hillside ditches from the current survey.

It should be borne in mind that few farmers have had all of their land treated. A farmer who had only one of his fields treated with one of the three major treatments has been automatically included in the "soil conservation treatment groups" (3-6). This was done largely to minimize the number of groups. It can be justified, at least partially, on theoretical grounds in that (1) there exists no "magic minimum proportion" of treated land to total land, and (2) presumably the farmer is able to apply at least some of his newly developed skills on his untreated land.

Maintenance of Soil Conservation Treatments

Observation of numerous farmers' fields indicated that soil conservation treatments implemented by IRDP are at present in a wide-ranging state of repair. It would be unfair and analytically unsound to group together two farmers who have (1) maintained properly, and (2) totally neglected (respectively) their treatments. Therefore, we designed a checklist-questionnaire to address the question of maintenance. Interviewers were instructed to visit each field with a major engineered treatment and assess its current condition, based on a series of questions. Each field's treatment was numerically scored and a composite score was calculated for the farmer. Scores between 0 and 7 were considered "poor maintenance" and scores between 8 and 14 were considered "good maintenance." The farmers have been grouped accordingly.

We have again limited the number of possible categories (to two for maintenance) in order to avoid unnecessary analytical complications. It is also questionable how much more information could be gleaned by allowing for three maintenance categories (for example). The checklist procedure and numerical scoring method were designed to minimize the subjective influence of both interviewer and supervisor. This was impossible to avoid completely, however, as some interviewers tended to be harsher judges than others.

Overall, the procedure followed seems to have been quite effective in separating the better "maintainers" from the worse "non-maintainers," and has been less effective for the marginal cases.

Agricultural Credit

Credit is generally necessary in order to encourage farmers to adopt improved agricultural inputs and those improved practices which require additional cash outlays. IRDP officers attempted to expand the use of fertilizers, improved seed, fungicides, insecticides and other inputs. Multiple cropping (a major underlying assumption of the Project Paper) also entails a higher level of input use--including hired labor. Maintenance of soil conservation treatments alone could have been expected to require a considerable additional amount of money for hired labor.

Credit was one of the basic component activities of II IRDP. Loans were actually administered by the Peoples Cooperative Banks (PCB's) in the area. However, IRDP field officers initiated the process and assessed the farmer's needs. The determination of approval was made by IRDP Credit Officers. For purposes of grouping farmers, we have considered only loans initiated and approved by IRDP officers. Farmers in our sample, of course, also received loans from other sources during the term of the project. We have not considered these loans in the grouping process since our primary purpose is to evaluate the effects of IRDP programs.

From the information presented above, the final size IRDP Farm Groups are defined as follows:

- Group 1 - no soil conservation treatment, no credit;
- Group 2 - no soil conservation treatment, credit;
- Group 3 - soil conservation treatment, poor maintenance, no credit;
- Group 4 - soil conservation treatment, good maintenance, no credit;

- Group 5 - soil conservation treatment, poor maintenance, credit;
- Group 6 - soil conservation treatment, good maintenance, credit.

TESTS OF SIGNIFICANCE: THE T-TEST

We are including many tables under the heading "Tests of Significance...." The purpose of these tables is to report statistically significant (ie., above a given level of probability) differences in the mean levels of the variables tested (income, value of production, etc.) between two IRDP Farm Groups. A typical test would compare average farm income in Group 1 versus that in Group 2, for example. Each test is between two groups only--except when two or more groups are combined to form a larger grouping to be compared with a second such grouping.

The SPSS manual (1975) contains an excellent section (pp. 267-275) on the statistical underpinnings and the practical application of the t-test. It is recommended that SPSS be used for this procedure because it does all the necessary calculations and presents the results very clearly.

Each of our groups of farmers is representative of a larger population of farmers with similar characteristics. Each of the groups is, therefore, a sample representing a larger whole population. The t-test uses measurable characteristics of these samples in order to draw inferences about the larger populations from which the samples were drawn. Even though we have a limited number of farmers in Groups 6 and 1, for example, we have a sufficient number to make statements such as

> "Farmers who had soil conservation treatments, maintained them and received farm loans through IRDP (Group 6) had a higher off-farm income level than did non-participating farmers (Group 1)--at the five percent level of probability,"

after applying the t-test.

The two-tailed t-test assumes that we have no prior information regarding

the likely outcome of the test. It is probably most appropriate for at least most of our purposes. The test is set up as follows:

H_o: $u_1 = u_2$ (null hypothesis)

H_1: $u_1 \neq u_2$ (alternative hypothesis)

Decision Rule: If $A_1 \leq \bar{X}_1 - \bar{X}_2 \leq A_2$, conclude H_o

otherwise conclude H_1

where:

$A_1 = -t\,(1 - \alpha/2;\ n_1 + n_2 - 2)\,S_p$

$A_2 = t\,(1 - \alpha/2;\ n_1 + n_2 - 2)\,S_p$

and,

$\bar{X}_1$ and $\bar{X}_2$ are the sample means for Groups 1 and 2;

S_p is the estimate of the "pooled" standard deviation of X_1 and X_2:

$$S_p = \sqrt{\frac{\sum_i (X_{1i} - \bar{X}_1)^2 + \sum_i (X_{2i} - \bar{X}_2)^2}{n_1 + n_2 - 2}}$$

or,

$$\sqrt{\frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2}}$$

n_1 = the number of farmers in Group 1

n_2 = the number of farmers in Group 2

S_1 = the sample standard deviation for X_1

S_2 = the sample standard deviation for X_2

α = the significance level for the test.

Using the SPSS T-test procedure, it is only necessary to specify the two groups to be compared and the variables in which they are to be compared. The rest of the necessary computations are made automatically--including the two-tailed probability that the null hypothesis is true (i.e., that the groups' means are equal). One of three significance levels is generally chosen beforehand: .10 (slightly significant);.05 (significant); or .01 (highly significant). If, for example, the SPSS output showed a two-tailed probability of .068, the conclusion would be that there is a "slightly significant" difference in means. It is not a "significant" difference, because the estimated probability that the two populations have the same means in this variable is greater than five percent.

Also appearing on the output from the SPSS T-test procedure is an F-test of equivalence of the variances of the two groups' populations. This test uses the calculated sample standard deviations in computing a two-tailed probability of equivalence. If $\alpha = .05$ is chosen as the appropriate significance level, then we conclude that the variances are equal if the probability listed on the output is greater than .05. In this case, the appropriate t-value and probability are under the heading "Pooled Variance Estimate." If the variances are not equal ($p \leq .05$ for the F-test), then the appropriate t-value and probability are under "Separate Variance Estimate" on the output. In the latter case, the S_p formula given above does not apply and a more complex formula is used.

With our six IRDP Farm Groups, we have 15 possible comparisons (t-tests) to make in each "Tests of Significance" table (see below).

<u>Possible Comparisons of Individual IRDP Farm Groups</u>

6-5

6-4 5-4

6-3 5-3 4-3

6-2 5-2 4-2 3-2

6-1 5-1 4-1 3-1 2-1

However, some comparisons are more important than others and it is therefore not necessary to present all possible T-tests in all tables. The most basic test is Group 1 (non-participating farmers) versus Group 6 (highly-participating farmers). At the next level down, we may test the "credit effect," "treatment effect" and "maintenance effect" by combining the appropriate Farm Groups and making the tests as follows:

Overall effect:	Group 1 vs. Group 6
Treatment effect:	Groups 1, 2 vs. Groups 3, 4, 5, 6
Credit effect;	Groups 1, 3, 4 vs. Groups 2, 5, 6
Maintenance effect:	Groups 3, 5 vs. Groups 4, 6.

If any of these tests prove significant, we would have additional rational for proceeding to the next level to investigate the findings in further detail, comparing individual groups:

Treatment effect:	Group 1 vs. 3, 1 vs. 4, 2 vs. 5 and 2 vs. 6
Credit effect:	Group 1 vs. 2, 3 vs. 5, and 4 vs. 6
Maintenance effect:	Group 3 vs. 4 and 5 vs. 6.

The nine tests given immediately above should probably be made, regardless of the findings at the more aggregated level. This is because the particular attributes of individual groups may be obscured at the aggregate level. For example, perhaps credit only has a significant effect on income for farmers who had and maintained soil conservation treatments. It is possible, in this case, that by combining all farmers who received credit, we would get a non-significant test for credit--thus covering up the particular usefulness of credit to farmers who maintained their treatments.

COMMENTS ON THE DATA: CONVENTIONS USED IN APPLYING THE QUESTIONNAIRES

Pages 16-53 of the Interviewer's Manual describe in detail the questionnaires and the procedures followed in administering them. Most of this information is as correct at the close of the survey as it was before the survey began--when the manual was written. However, a few codes have been added and some conventions were applied during the survey period which do not appear (or were not emphasized) in the Interviewer's Manual. Thus, the following information is to be used in conjunction with the Interviewer's Manual, as well as with other sections of the Framework for Analysis in this report.

There are at least two "external factors which could have significant effects on all of the data collected from this survey.

- There was what appears to have been a serious drought in parts of the watersheds (especially Pindars) for most of 1983. The monthly rainfall figures for this year should be compared with annual averages in several locations in the project area in order to gauge the importance of the drought to crop production.

- Some interviewers were more complete in their work than others. To ascertain how important this factor is, interviewer (post) code numbers are being added to all raw data files, and preliminary computer runs can be made by interviewer (post). This is also relevant to posts where interviewers resigned and were replaced during the survey. The following interviewer/post identification numbers should be checked for quality of data: 01, 07, 08, 09, 10.

The One-Time Questionnaires (Q1, Q2, Q7-Q12)

The initial interview conducted by interviewers included the Household Census (Q1), the Field Census (Q2) and Housing and Other Rural Amenities (Q7).

The second interview comprised the remaining one-time questionnaires (Q8-Q12). The Field Census was continuously updated over the course of the survey, but the other one-time questionnaires contain information collected almost entirely in August-September of 1982.

1. Household Census (Q1)

a. Farm Labourer (col. 17): This is meant to be an average number of days per week, over the course of a year. Students who worked full-time on the farm during the summer and vacations were thus coded as 1 or 2.

b. Primary Occupation/Secondary Occupation (cols. 21-22, 23-24): "Housewife" or "domestic worker" were coded under "unskilled manual" (01).

c. Education (col. 25): "Basic school" for pre-primary school children was coded as "other" (09).

2. Field Census (Q2)

a. Only land within the IRDP project boundaries was included on the questionnaire. Thus, all farm size calculations exclude land outside these boundaries.

b. Field Names were intended to help firmly identify particular plots of land, for the convenience of interviewers and farmers in applying the repeating questionnaires. The usual criteria for naming a field included location names and crops in the field. This proved to be a useful procedure, but was less effective when a farmer had more than four or five fields.

c. For convenience, small, contiguous plots (often containing different crops) were consolidated into larger "fields" by interviewers. Thus, "Crops Currently Under Cultivation" of a single field include crops on separate plots as well as intercropped areas. Field definition and ranking the importance of particular crops were therefore somewhat subjective matters.

d. Estimated Area (cols. 16-18): Fields were not measured; farmers knew some acreages well and the other areas were estimated by interviewers. Training sessions included counting the paces of each interviewer around the circumferance of one square chain. However, in general, acreages should be regarded as approximations. Because fields were often defined to include many crops, particular crop acreages are much rougher approximations. Furthermore, many fields contained uncultivated areas--even though an attempt was made to minimize these for recording purposes.

e. Tenure (col. 21): Code 1 refers only to owned land; rent free land (other than codes 4 and 5), such as land borrowed without cost from a neighbor, was coded as "other" (6).

f. Soil Conservation Treatment (col. 21): The most common "other" (8) codes were for waterways and individual basins.

g. Crops Grown Before Treatment (cols. 29-32): For all practical purposes, crop 00 = crop 42 = crop 43 for this question.

h. Crops Currently Under Cultivation (cols. 33-40): Farmers often had more than four crops on a single field, and changed them periodically. The latest version of Q2 thus is meant to show the <u>most important</u> crops on each field <u>as of the close of the survey</u>.

i. The procedure for amending the Field Census was as follows:

1) If a new field area was brought into production, add it as the last field on the Field Census.

2) If a crop on a currently-recorded field area was harvested and not replanted, make no changes in Q2.

3) If a crop on a currently-recorded field area was harvested and replaced by a new crop, change only the "Crops Currently Under Cultivation."

3. Farm Credit (Q9)

a. Loan Source (cols. 15-16): IRDP was omitted from this list, but should be re-coded from our current available information (see Agricultural Credit under Topics for Analysis).

b. Opinion re Formal Loan Sources (col. 34): The qustion was asked of all farmers--regardless of their credit situation. Only one opinion was allowed per farmer.

c. Purpose for which Loan was Used (Cols. 30-31): More than one purpose was allowed per loan. For simplicity in analysis, however, we may impose a limit of one purpose per loan, as under Agricultural Credit.

d. Some pre-1977 loans were recorded, but may, of course, be eliminated for any particular analytical computer run.

e. Month (cols. 26-27): Farmers could not always recall the month of the first disbursement; hence, some blanks appear in these columns.

4. Attitudes Toward Soil Conservation (Q10)

a. More than one response was allowed for Reasons for Preference (col. 16), Opinion re Usefulness (col. 17) and Difficulties Involved (col. 18). Only one response was allowed for Continuation of Treatment (col. 19). Therefore, care must be taken to make these responses correspond with the correct soil conservation treatment (col. 15). As a general rule, the answers given in cols. 16-19 refer as a group to all soil conservation treatments in col. 15.

b. Continuation of Treatment (col. 19): Code 5 ("other") usually meant "will continue regardless of financing or extension services."

c. Although a farmer was required to possess some treatment in order to be asked the questions in cols. 16-18, he did not necessarily have the same treatments listed in col. 15.

5. Participation in Farm/Community Organizations (Q11)

a. Level of Participation (col. 17) and Membership Benefits (col. 18) allowed for more than one response per organization. So care must be taken to link these responses with the appropriate organization.

b. Membership Benefits (col. 18) was not pre-coded on the questionnaire.

c. Resons for Non-Participation (col. 19) does not refer to any single organization and was, in fact, only administered to those farmers not participating in any organization.

6. Extension Services (Q12)

a. Area of Greatest Need (col. 25) was not pre-coded on the questionnaire, but allowed for more than one response.

b. Reasons for Visiting (col. 18) and Type of Assistance (col. 21) allowed for more than one response per farmer.

c. This questionnaire was meant to reflect "average" conditions during IRDP's lifetime, but probably most closely reflects farmers' opinions in August-September of 1982.

d. Frequency Discussions (col. 22) should equal the lesser (more frequent) of col. 17 and col. 19.

The Repeating Questionnaires (Q3-Q6)

Since the repeating questionnaires are based on the Field Census, the points discussed under Q2 above are also relevant for Q3-Q6. These questionnaires are interrelated. Interviewers were trained to make certain cross-checks of their information in order to assure completeness and consistency in the data. The questionnaires were individually hand-edited with these same cross-checks in mind. Examples of cross-checks appear on page 18 of the Interviewer's Manual; some are also cited below.

Since interviews were often not spaced exactly two weeks apart, interviewers were instructed to phrase all questions in terms of "since our last interview. . ." rather than "during the last two weeks. . ."--as was indicated in the Interviewer's Manual.

1. Crop Production and Marketing (Q3)

a. The sume of all revenues from marketing crops during each interview (cols. 28-30) equals "crop sales" under the Income Section of Q6.

b. Sales of crops harvested from fields outside the boundaries of IRDP were recorded under "Marketing" in Q3 and under "Crop Sales" in Q6. Production was not recorded on Q3 from thee fields, but the Field Name was always "outside IRDP" and the Field No. = 0.

c. Bonus payments (or delayed payments) were common for several crops, e.g., coffee, cocoa, sugar cane, irish potatoes and pimento. Other crops required drying and processing (e.g., the pea crops, tobacco and ginger) and so an often considerable amount of time elapsed between harvesting and marketing. In these cases, interviewers were instructed to record the production information in their notebooks in order to avoid forgetting the marketing information to be gathered in subsequent interviews. Due to the timing of the survey, the August 1983 bonus payment for sugar cane was included in the data, but the December 1983 bonus was not included. Instead, the 1982 December bonus information for sugar cane was included. Likewise, the 1983 coffee and cocoa bonuses ($8 and $17 per box, respectively), scheduled for December, could not be recorded. Most sales for the 1983 ginger crop should have been recorded in our data, despite extensive delays in marketing due to the time required for drying and peeling. The same can be said for tobacco.

d. Production Unit (cols. 18-19) and Marketing Unit (cols. 23-24): "Other" (15) for ginger always means "kerosene tins of green ginger;" "other" (15) for tobacco always means "racks" (or "rails") of drying tobacco. All production/marketing units must be standardized for each crop before the results are tabulated.

A new code (16) was added exclusively for "inches of cocoa." Also, "stems" (13) and "bunches" (14) of bananas and plantain were equivalent for our purposes.

e. Crops were not weighed by interviewers. Many crops are weighed when marketed; others use standard units (e.g., boxes of citrus, coffee, cocoa, bags of irish potatoes, quarts of peas, etc.); still others had to be estimated.

f. Market Outlet (cols. 31-32): The Coffee Board and Cocoa Board were recorded both as "cooperatives (10) and "other" (12), but both codes carry the same meaning.

2. Farm Labour Use (Q4)

a. Man-days Labour (cols. 20-27): The amount of labor time attributed to different crop-operations was approximated, but is probably satisfactorily accurate, given the fact that interviews were spaced at least two weeks apart. Time spent travelling to fields was not supposed to be included. Crop operations which took less than four hours (one-half man-day) for any of the four labor categories were not recorded. Any amount of time over four hours was considered one whole man-day, except when the amount of time had to be multiplied by either the number of days worked or the number of persons working. For example, four hired workers working four hours each was recorded as two (not four) man-days.

b. If work was done simultaneously on more than one crop, interviewers were instructed to either estimate the time spent on individual crops (if possible) or to record the more important crop from the Field Census. They were repeatedly cautioned against double-counting labor times.

c. Operation (cols. 18-19): Soil conservation work of any kind was coded 22. In general, codes 01-04 were considered to take place before planting and codes 10-12 took place after planting. There were exceptions to this rule, however. Code 20 (threshing/winnowing) was expanded in meaning

to include peeling of ginger and shelling of corn. Code 15 (staking) also included the time spent cutting and transporting the stakes.

e. If harvesting (Q3) or fertilizing/spraying (Q5) was recorded on Q3 or Q5, interviewers were instructed to note under "Observations" if these operations took less than four hours.

f. For the pre-planting operations, interviewers were instructed to ask the farmer which crops he/she anticipated planting on the field--and record these crops. There remains, however, a certain amount of work recorded under "no crop" (00)--including time spent on soil conservation work.

3. Agricultural Input Use (Q5)

a. If inputs were used on more than one crop, interviewers were instructed to either separate the amounts by crop (if possible) or to record all the information under the more important crop (from Q2).

b. With the exception of all seed and planting material, this questionnaire deals only with monetized inputs. Quantities of seed and planting material were estimated and recorded even if they were supplied by the farmer himself. Yam heads were perhaps most difficult to estimate--and are recorded both in terms of pounds (1) and units (6).

c. Supplier (col. 26): "Other"(9) was used for farmer self-supply.

d. If a person was hired along with his plough to do a job, the cost of the equipment rental was generally separated from the (imputed) cost of the man's labor. The latter was calculated at $8-10 per day.

4. Income and Farm Expenditures (Q6)

a. Hired labor and equipment/machinery rental appearing on Q5 also must appear on Q6. However, the light inputs (fertilizer, fungicide, insecticide, seed and planting material) need not appear in the same quantities on both

questionnaires--since they may have been purchased at an earlier date and stored.

b. Sugar cane transport costs, which were usually deducted from a farmer's earnings at the time the crop was sold, are included under "crop transport costs" (code 12) of Farm Expenditures. In these cases, sugar cane sales revenues are in gross terms in both Q3 and Q6.

TOPICS FOR ANALYSIS

Income

1. Background

The overall goal of II IRDP was to raise the standard of living of participating farmers, and specifically to raise farmers' incomes by a factor of 2.5. Therefore, our findings on farmers' incomes provide perhaps the most fundamental means of evaluating the project. Changes in income may be based on:

- changes in agricultural production and/or
- changes in both farm and non-farm employment.

IRDP was expected to have a positive effect in each of these areas. We may first examine the income qustion directly to see if in fact increases have been achieved. Then, in succeeding sections on Agricultural Production and Employment we may look in more detail at these related issues.

2. Approaches

a. Presentation of Global Findings and Comparison with the Project Paper Expectations and Baseline Survey Findings

Comment: Unfortunately, the Baseline Survey did not deal directly with the income questions. Furthermore, the Project Paper's test criterion was an increase (X2.5) in participating farmers' incomes over time. However, our findings on income should be presented, and some comparisons with the Baseline Survey findings are possible in terms of value of production.

1) Tables

1. Q6, Q2: Income earned from actual crop sales per farm, by farm size group, over one year.

2. Q6, Q4, Q2: Same as above, but "per man-day."

3. Q6: Farm income (crop sales + livestock sales + livestock product sales) as a percentage of total income, by watershed and sub-watershed.

4. Q6, Q2: Same as above, but "by farm size group."

5. Q6, Q2: Income received from each source, per household, by farm size group, over one year. Note: sources = income source code-list from Q6, possibly combining livestock types.

6. Q6: Same as above, but "by watershed and sub-watershed."

7. Q6, Q2: Number and percent of farmers who earned off-farm (non-farm plus farm labor) income, by farm size group, in one year.

(see 67) 8. Q6, Q2: Income per man-day earned from non-farm labor, by farm size group, over one year.

(4-41,56) 9. Q3, Q2: Gross Value of Production (all crops, marketed and not marketed: total production X average price, summed over all crops) by farm size group.

(see 56) 10. Q3, Q2: Same as above, but "per farm."

11. Q6, Q2: Capital expenditure on crop production (all inputs on all crops) by farm size group.

12. Q6, Q2: Same as above, but "per farm."

13. Q3, Q6, Q2: Net value of production (gross value of production minus capital expenditures, all crops) by farm size group.

14. Q3, Q6, Q2: Same as above, but "per farm."

2) Expectations

Tables 1-8 show how farm size and location affected the composition and amount of income actually earned over the survey period. One might expect differences here due to differences in income-earning opportunities throughout the watersheds and/or because larger farmers might devote a greater share of their resources to farming than do smaller farmers.

Tables 9-14 show the relationships between farm size and value of crop production--both gross and net. This should give some indication as to whether or not larger farmers cultivate their land more intensively than smaller farmers. Some comparisons between these findings and those of the Baseline Survey are possible with these tables.

3) Data Requirements and Considerations

a) Any comparisons with findings of the Baseline Survey must account for possible differences in the time periods under consideration. The very likely improvement in accuracy by use of the bi-weekly interview (versus a single interview) should also be noted when making comparisons.

b) The figures for value of crop production in Tables 9-14 are calculated by multiplying the total production of each crop produced by a farmer by its average price over the course of the survey period, and then adding these values together. The average price for each crop has to be calculated from the Q3 data itself.

The income data in Tables 1-8 is that which was actually reported by farmers. Crop sales will, of course, be lower than value of crop production.

c) Income data is notoriously difficult to collect accurately. We should assume that we have received less than complete information on income from farmers; hence, an advantage of the value of production criterion. Overall, farmers seem to have been more willing to disclose their income from crop sales than from other (off-farm) sources.

d) The information required to complete these tables is now located in the data files for Q2, Q3, Q4 and Q6. The particular data sets required for each table are noted after the table number above. The relevant Baseline Survey table numbers are also located, where applicable, to the left of each table title above. It is recommended that all of the required information be excerpted from the relevant raw data files and included, on a farm-by-farm basis, in the aggregate data files which I have started.

e) Raising factors may be used for these tables (when necessaryt) <u>if</u> we assume that the size and composition (in terms of farm size) of the population in the IRDP area has not changed significantly since the 1979 Baseline Survey. This is a rather severe assumption, but is covenient for purposes of direct comparison. Alternatively, tables may be adjusted to a "per farm" basis of comparison.

f) The information from Q3 on value of production includes only those fields within the IRDP boundaries. Some farmers also cultivated land outside IRDP. Sales of crops from land outside IRDP were included in the Marketing section of Q3, as well as the Q6 data.

g) Information to be added to the aggregate data files to complete these tables includes:

- farm size group: calculated from cultivated acreage, already on these files, using the Baseline Survey definitions;
- total man-days spent on crop production (sum of the four categories of workers, Q4);
- actual crop sales (total)(cols. 17-20, when cols. 15-16 = 01 on Q6);
- farm income (total) (cols. 17-20, when cols. 15-16 = 01-11, Q6);
- total income (cols. 17-20, Q6);
- off-farm income (total) (cols. 17-20, when cols. 15-16 = 12 or 13, Q6);
- non-farm income (cols. 17-20, when cols. 15-16 = 13);
- non-farm man-days (cols. 23-24, Q6);
- gross value of production (all crops), calculated by:

- finding total production for each crop;
- calculating an average sale price over the survey period for each crop; and
- multiplying the two above for the value of each crop, then summing over all crops.

Note: Production units first have to be standardized for each crop, using the conversion factors attached to this report, plus standard coversion tables. "Other" crop categories can be left as such, with explanatory notes attached to tables. An average sale price for each crop is calculated by dividing the total revenues for that crop (all farms in the sample) (cols. 28-30) by the total number of units marketed (cols. 25-27) for the standardized production/marketing unit.

- capital expenditure on crop production (all crops) (cols. 27-30, when cols. 25-26 = 01-12, Q6); and
- net value of production (all crops): gross value of production minus capital expenditure.

b. Comparisons Among IRDP Farm Groups

Comment: IRDP Farm Groups are groups of farmers who have been lumped together according to their participation in key IRDP activities. The aim here is to evaluate whether or not farmers who had soil conservation treatments constructed (and maintained them) and/or received farm loans had higher incomes than non-participants in these IRDP programs, during the survey period.

As described elsewhere, the six IRDP Farm Groups have been defined as follows:

- 1 = no soil conservation treatment, no credit;
- 2 = no soil conservation treatment, credit;
- 3 = soil conservation treatment, poor maintenance, no credit;
- 4 = soil conservation treatment, good maintenance, no credit;
- 5 = soil conservation treatment, poor maintenance, credit; and
- 6 = soil conservation treatment, good maintenance, credit.

1) <u>Tables</u>

1. Income earned from actual crop sales per farm, by IRDP Farm Group, over one year.

2. Tests of significance among IRDP Farm Groups in income earned from actual crop sales per farm.

3. Income earned from actual crop sales per man-day, by IRDP Farm Group, over one year.

4. Tests of sigificance among IRDP Farm Groups in income earned from actual crop sales per man-day.

5. Farm income (crop sales + livestock sales + livestock product sales) as a percentage of total income, by IRDP Farm Group.

6. Tests of significance among IRDP Farm Groups in proportion of income from farm products.

7. Income received from each source, per household, by IRDP Farm Group, over one year.

8. Tests of significance among IRDP Farm Groups in total income and off-farm income (non-farm plus farm labor).

9. Number and percent of farmers who earned off-farm income, by IRDP Farm Group, over one year.

10. Income per man-day earned from non-farm labor, by IRDP Farm Group, over one year.

11. Gross value of production per farm (all crops, marketed and not marketed) by IRDP Farm Group.

12. Tests of significance among IRDP Farm Groups in gross value of crop production per farm.

13. Capital expenditure per farm on crop production (all inputs on all crops) by IRDP Farm Group.

14. Tests of significance among IRDP Farm Groups in capital expenditure per farm on crop production.

15. Net value of production per farm (gross value of production minus capital expenditures, all crops) by IRDP Farm Group; and

16. Tests of significance among IRDP Farm Groups in net value of crop production per farm.

2) Expectations

These tables cover the same topics as under the first approach above, except they relate income variables to IRDP Farm Groups. II IRDP was supposed to create off-farm employment (income) opportunities. This was to be accomplished both directly (by direct hire to the project) and indirectly (by stimulating investments in income-earning ventures, principally through an increase in cash flows), Tables 1-10 look at the principal components of income for the IRDP Farm Groups.

Tests of significance (t-tests) are presented based on comparisons of means income levels among these groups. One would expect the highest incomes among farmers who had soil conservation treatments constructed, maintained them and also received farm loan(s) through IRDP (Group 6). The most basic tests of significance, then, would be between farmers from Group 1 and farmers from Group 6, for all of these tables. Following this test, the key comparisons would be:

- Credit Effect: Group 1 vs. Group 2, Group 3 vs. Group 5, Group 4 vs. Group 6;

- Treatment Effect: Group 1 vs. Group 3, Group 1 vs. Group 4, Group 2 vs. Group 5, Group 2 vs. Group 6;

- Maintenance Effect: Group 3 vs. Group 4, Group 5 vs. Group 6.

The above also applies to Tables 11-16, and the same basic tests are made. One would expect "IRDP farmers" to be producing crops at a higher level than other farmers, and therefore, to have higher gross value of production. It could also be hypothesized that IRDP farmers spent more to produce their crops, cultivating more intensively and utilizing more inputs and hired labor. Presumably, if the overall IRDP program were effective, then IRDP farmers would also realize higher net value of production than non-participating farmers. This calculation will give a good indication of whether or not the IRDP program was profitable for farmers, and to what extent the treatments themselves, their maintenance and agricultural credit were responsible. If, for example, our t-tests show that (a) Group 6 farmers had significantly higher net value of production than Group 1 farmers; (b) Groups 2 and 6 were not significantly different; and (c) Group 6 was greater than Group 4; one could deduce that credit and not soil conservation treatments had a positive effect on net value of production.

3. Data Requirements and Considerations

a) Points (b), (c), (d), (f) and (g) under the preceding Data Requirements Section still apply. All of the information used to compile IRDP Farm Groups, plus the group numbers themselves are listed on the aggregate data files.

b) Points (a) and (e) do not apply under these types of comparisons. Raising factors cannot be applied since we have no listing of the population (even in 1979) by IRDP Farm Group. In any case, these comparisons and tests can only be made on a "per farm (household)" basis.

Employment

1. Background

As already mentioned, IRDP was to increase employment opportunities both directly and indirectly. Approximately 1.1 million man-days of short-term labor (600,000 in soil conservation, 300,000 in road work and other construction and 200,000 in reforestation) were to be provided directly. Longer-term employment opportunities were expected through the intensification of agricultural production. While not specifically mentioned in the Project Paper, it could also have been anticipated that other non-agricultural employment would be generated as a result of the expected overall increase in cash availability in the project area.

2. Approaches

a. Presentation of Global Findings and Comparison with the Baseline Survey Findings

Comment: Our survey was not designed to gather information necessary to test whether IRDP reached its direct employment objectives. However, we can make some comparisons with the Baseline Survey findings to have an indication of how the employment situation actually changed between 1979 and 1982-83.

1) Tables

1. Q1, Q2: Number of farmers by primary occupation by farm size group.

2. Q1: Number of farmers by watershed and sub-watershed.

3. Q1: Number of farmers by primary occupation, by secondary occupation.

4. Q1, Q2: Number of farmers by average number of days worked per week on the farm, by farm size group.

(57) 5. Q4, Q2: Man-days worked on the farm by different categories of workers, by farm size group, over one year.

6. Q4: Man-days worked on the farm by different categories of workers, by watershed and sub-watershed, over one year.

7. Q4, Q1, Q2: Man-days per adult household member (including farmer) and per cultivated acre worked on the farm, by farm size, over one year.

8. Q4, Q1: Man-days per adult household member (including farmer) and per cultivated acre worked on the farm, by watershed and sub-watershed, over one year.

(See 61b) 9. Q5, Q2: Amount paid to hired workers (and amount per man-day) on the farm, by farm size group, over one year.

10. Q5: Amount paid to hired workers (and amount per man-day) on the farm, by watershed and sub-watershed, over one year.

(See 67) 11. Q6, Q1, Q2: Man-days, man-days per adult household member (including farmer) and amount earned per man-day from non-farm paid jobs, by farms size group, over one year.

12. Q6, Q1: Man-days, man-days per adult household member (including farmer) and amount earned per man-day from non-farm paid jobs, by watershed and sub-watershed.

2) Expectations

These tables describe the current employment situation in the IRDP project area, vis-a-vis farm size and location in the watersheds. Tables 1-4 present the farmers' own views on their most important occupations and how much time they spend on the farm. Tables 5-10 deal with labor use on the farm, while Tables 11-12 are concerned with off-farm labor.

These tables will give us an indication of how fully household labor is utilized, in farming and off the farm, for persons operating farms of different sizes and in different locations. They will also show the importance of hired labor to these different farmers.

3) Data Requirements and Considerations

a) The same reservations expressed under the Income section on comparisons made with the Baseline Survey findings (point a) and the use of raising factors (point e) still apply.

b) Tables 1-4 refer to the farmer alone (no one else in the household).

c) Tables 5-6: "Different categories of workers" means "Farmer," "Household," "Hired" and "Exchange," as in Q4.

d) Tables 11-12: "non-farm paid jobs" includes only "Non-farm labor" on Q6, and so does not include paid work on other persons' farms.

e) Additional Information to be added to the aggregate data files to do these tables includes:

- primary occupation of farmer (Q1);
- secondary occupation of farmer (Q1);
- days per week on farm (farmer) (col. 17, Q1);
- man-days (total) on crop production: Farmer, Household, Hired, Exchange (Q4);
- number of household members aged 0-17 (Q1) (children);
- number of household members older than 18 (Q1) (adult); and
- amount paid to hired labor (Q5).

f) "Adult household member" in Tables 7, 8, 11, and 12 includes all persons 18 or over as listed on the Household Census (Q1).

b. Comparisons Among IRDP Garm Groups

1) Tables

1. Number of farmers by primary occupation by IRDP Farm Group.

2. Number of farmers by number of days worked per week on the farm, by IRDP Farm Group.

3. Man-days worked on the farm by different categories of workers,per farm, by IRDP Farm Group, over one year.

4. Tests of significance among IRDP Farm Groups in man-days worked per farm on the farm.

5. Man-days per adult household member and per cultivated acre worked on the farm, by IRDP Farm Group, over one year.

6. Tests of significance among IRDP Farm Groups in man-days per adult and man-days per cultivated acre.

7. Amount paid to hired workers (and amount paid per man-day) per farm, on the farm, by IRDP Farm Group, over one year.

8. Tests of significance among IRDP Farm Groups in amount paid to hired workers (and amount per man-day).

9. Man-days per farm, man-days per adult household members, and amount earned per man-day from non-farm paid jobs, by IRDP Farm Group, over one year.

10. Tests of significance among IRDP Farm Groups in man-days per farm, man-days per adult and amount earned per man-day from non-farm paid jobs.

2) Expectations

These tables consider the same questions of farm and non-farm employment as above--but relate these variables to IRDP Farm Groups. From these tables, we should get an idea of the effect of IRDP on labor use intensity, the balance

between farm and non-farm employment and the use of hired labor. One might hypothesize that farmers working closely with IRDP would work more on crop production (per person and per acre) than other farmers. One would also expect IRDP farmers to use more hired labor. The expectations regarding non-farm labor are not obvious since the employment effects of the project were not to be limited to farmers participating in IRDP activities.

3) Data Requirements and Considerations

a) As under all other sections, comparisons among IRDP Farm Groups, including tests of significance, are always made on either a "per farm (household)" basis or on some other standard unit (i.e., "adult," "acre").

b) Points b-f under the corresponding Income section above still apply here.

Crop Production, Acreage and Returns to Resources

1. Background

Even though II IRDP was an integrated, many-faceted project, there is no question that its core programs were those intended to increase agricultural (chiefly crop) production. This was to be accomplished by implementing soil conservation treatments, intensifying crop production, providing better extension service, providing credit, improving the coordination of farmers' organizations and ameliorating the supporting infrastructure (roads and markets).

The Project Paper stated that no major changes in crop mix were anticipated; i.e., the crops grown would remain the same--although certain intercropped mixtures and rotations would get greater emphasis. The key elements of the program, then, for increasing production (from the agronomic point of view) were the soil conservation treatments themselves and the intensification of cropping practices.

2. Approaches

a. Presentation of Global Findings and Comparison with the Baseline Survey Findings

Comment: The Baseline Survey presented its tables on crop production by individual crop (Tables 4-41). We present ours in a more consolidated fashion, but comparisons are still possible. Crop codes are also somewhat different, but our "other crop" categories can accomodate all crops listed on the Baseline Survey. Our production figures should be much more accurate than those of the Baseline Survey. Our acreage estimates can only be considered rough approximations--when dealing on a crop-by-crop basis--but can be compared with the even rougher estimates of the Baseline Survey. Of course, yield estimates and comparisons are constrained in the same way as acreages.

1) Tables

(4-41, 56a) 1. Q3, Q2: Total production and production per farm, by crop, by farm size group, over one year.

(4-41, 56a) 2. Q2: Total acreage and acreage per farm, by crop, by farm size group.

(4-41, 56a) 3. Q3, Q2: Average yields per acre, by crop, by farm size group.

(4-41, 56a) 4. Q3, Q2: Total production and production per farm, by crop, by watershed and sub-watershed, over one year.

(4-41, 56a) 5. Q2: Total acreage and acreage per farm, by crop, by watershed and sub-watershed.

(4-41, 56a) 6. Q3, Q2: Average yields per acre, by crop, by watershed and sub-watershed.

(1) 7. Q2: Land utilization (in acres), total and per farm, by farm size group.

(1) 8. Q2: Land utilization (in acres) total and per farm, by watershed and sub-watershed.

(4-41, 56a) 9. Q3, Q2: Gross value of production by crop, total and per farm, by farm size group, over one year.

(4-41, 56a) 10. Q3, Q2: Gross value of production by crop, total and per farm, by watershed and sub-watershed.

(4-41, 56a) 11. Q3, Q2: Gross value of production per acre for the principal crop mixtures, by farm size group, over one year.

(4-41, 56a) 12. Q2, Q3: Gross value of production per acre for the principal crop mixtures, by watershed and sub-watershed, over one year.

13. Q4, Q2: Man-days per farm spent on each crop, by farm size group, over one year.

14. Q4, Q2: Man-days per farm spent on each crop, by watershed and sub-watershed, over one year.

15. Q4, Q2: Man-days per acre spent on each crop, by farm size group, over one year.

16. Q4, Q2: Man-days per acre spent on each crop, by watershed and sub-watershed, over one year.

17. Q3, Q4, Q2: Gross value of production per man-day, by crop, by farm size group, over one year.

18. Q3, Q4: Gross value of production per man-day, by crop, by watershed and sub-watershed, over one year.

19. Q3, Q6, Q2: Net value of production by crop, total and per farm, by farm size group, over one year.

20. Q3, Q6: Net value of production by crop, total and per farm, by watershed and sub-watershed, over one year.

2) Expectations

By comparing our findings with those of the Baseline Survey, we can see (at least roughly) changes in total production, acreages cultivated, yields per acre and gross value of production for each crop. With Table 7, we also see changes in the amount of land intercropped versus in sole stands, and in cultivation versus in fallow/ruinate/pasture. These will give an indication of whether land is now being used more completely than before IRDP. All the information in the section is presented both in relation to farm size groups and location. Comparisons with the Baseline Survey are, as usual, according to farm size.

The tables on the value of production per farm, per acre and per man-day should give good indications of cropping intensity. Our production data were collected over a full year, so more than one cropping season

is included for short-season crops. Therefore, production, production per acre and per farm depend, in our data, on the number of plantings made during the year. Multiple-cropping (and even continuous cropping--without fallow periods) was an explicit and important assumption of the Project Paper. It was, in fact, one of the key reasons to expect crop production to increase at all. Higher production would verify that an increase in cropping intensity had been accomplished--probably due to better cultural practices as well as an increase in multiple cropping.

The Baseline Survey did not collect information on labor use per crop, so direct comparisons with our labor use findings are not possible. Man-days per farm and per acre are, however, another index of cropping intensity.

3) Data Requirements and Considerations

a) Points (a) and (e) in the corresponding section under Income still apply here.

b) A new data file should probably be created for these and other computer runs--separate from the aggregate data files referred to elsewhere. The Field Census (Q2) would be a good base for such a new file, and additional information would be merged with it, as required. This file would provide the basis for any computer programs seeking to provide information by crop or by field. Variables to be added to Q2 would include:

- production (pounds) for each crop harvested;
- farm size group;
- man-days spent on each crop; and
- amount spent on all inputs (Q5) by crop.

If arranged in this way, column numbers in the file should refer consistently to a single crop, rather than following the "Crop 1, Crop 2, Crop 3, Crop 4" sequence on the forms. For example:

	Input 3	YELLOW YAM															OTHER YAM															
. . . . .		Production					Man-Days					$ Inputs					Production					Man-Days					$ Inputs				
. . . . .	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	.

c) Acreages on Q2 should only be reported uder qualification, as follows:

- Fields were not measured, but acreages were estimated by interviewers in conjunction with the farmers.

- Fields were often defined by interviewers so that they included several more or less separate blocks of different crops. Therefore, the acreage reported overstates the actual amount planted in Crop 1, and the areas of each section of the field cannot be deduced from the data.

- Many fields contained uncultivated sections, most of which should be considered as fallow. That is, they were probably being "rested," to be returned to cultivation at a later date. Only fields where Crop 1 was given as fallow (42) or ruinate (43) were <u>not</u> considered cultivated land.

d) Gross value of production is calculated as under point (g) in the corresponding section under Income--except that values are not summed over all crops.

e) Amount spent on all inputs by crop must be taken from the Q5 data. This corresponds to the aggregate "capital expenditure on crop production" under Income.

e) Net value of production is calculated as under point (g) under Income, but by crop.

f) We have, of necessity, "broken into" the cropping seasons of various crops, both at the beginning and at the end of the survey. Some farmers will ,therefore, appear better than others if, by chance, they happened to reap a crop just after the survey began or just before it ended. Since this appears to be a totally random variable, it should not affect the validity of our comparisons--as long as we make calculations over sufficiently large groups of farmers (or fields).

g) Our best acreage approximation by crop is probably to attribute acreage to Crop 1 (on Q2)--except where a mixture is required, in which case Crop 1/Crop2 would be used.

h) Yield calculations would be based on the acreage calculations in (g) above--despite the problems with this procedure noted above.

b. Comparisons Among IRDP Farm Groups

Comment: The same basic tables are listed below as were presented in the previous section. However, statistical tests for individual crops among IRDP Farm Groups would be of questionable value--given the number of crops produced and the difficulties in interpreting the results. Conclusions should be possible on particular crops after inspection of the findings. Furthermore, adding physical quantities of different crops does not make sense; nor does calculating average yields over more than one crop. We can, however, test for significant differences over all crops in the following variables: gross value of production

per acre, man-days per farm, man-days per acre and gross value of production per man-day.

The estimation of crop production functions, using regression analysis, would probably be the best place to start on examination of the key determinants of individual crop production. This is discussed under possible future uses of the data.

1) Tables

1. Production per farm, by crop, by IRDP Farm Group, over one year.

2. Acreage per farm, by crop, by IRDP Farm Group.

3. Average yields per acre, by crop, by IRDP Farm Group.

4. Land utilization (in acres) per farm, by IRDP Farm Group.

5. Gross value of production per farm, by crop, by IRDP Farm Group, over one year.

6. Gross value of production per acre for the principal crop mixtures, by IRDP Farm Group, over one year.

7. Tests of significance among IRDP Farm Groups in gross value of production per acre (all crops).

8. Man-days per farm spent on each crop, by IRDP Farm Group, over one year.

9. Tests of significance among IRDP Farm Groups in man-days per farm spent on all crops over one year.

10. Man-days per acre spent on each crop, by IRDP Farm Group, over one year.

11. Tests of significance among IRDP Farm Groups in man-days per acre spent on all crops, over one year.

12. Gross value of production per man-day, by crop, by IRDP Farm Group, over one year.

13. Tests of significance among IRDP Farm Groups in gross value of production per man-day (all crops), over one year.

14. Net value of production per farm, by crop, by IRDP Farm Group, over one year.

2) Expectations

These are key tables in assessing the impact of IRDP on crop production. One would expect higher production levels of the most important crops among IRDP farmers. However, if IRDP officers sufficiently emphasized certain crops (e.g., banana, coffee, citrus, irish potatoes and yams), then IRDP farmers might have lower acreage and production of other crops. Possible correlations between IRDP Farm Groups and farm size should also be watched carefully here, to avoid misinterpreting spurious correlations.

One would also expect IRDP farmers to exhibit more intensive cropping (seen in man-days per farm, man-days per acre and land utilization) and higher returns to resources (seen in value of production per farm, per acre and per man-day). Value of production per man-day could be a particularly interesting measure from the point of view of farmers' decision-making. Labor appears to be the scarcest resource for most farmers and so farmers may seek to maximize their returns to labor.

3) Data Requirements and Considerations

a) Other than the tests of significance, these tables may be completed by using the expanded Field Census data file referred to in the preceding section. However, the tests of significance, conducted as they are at the farm (rather than field) level, must utilize the aggregate data files referred to under the other sections of this report. No new variables need to be added to the aggregate data files in order to complete the necessary computer runs for the tests of significance.

b) Only IRDP Farm Group numbers need to be added to the expanded Field Census data file.

c) Points (b) to (h) above still apply here.

Marketing

1. Background

IRDP was involved in supporting and encouraging the establishment of external marketing organizations, among these the Christiana Potato Growers Cooperative Association (CPGCA) and the Agricultural Marketing Corporation (AMC). It only got into marketing itself by attempting to establish collection stations through the recently formed Development Committees (DC's).

The successful operation of markets to handle increasing crop production is, however, necessary in order for farmers to actually realize any gains. The following tables give at least an indication of the level of success of the IRDP program.

2. Approaches

a. Presentation of Global Findings and Comparison with the Baseline Survey Findings

Comment: The Baseline Survey dealt principally with farmer attitudes toward marketing, but it did include information on quantities marketed through different outlets. In the latter area, we may make comparisons with our survey findings. For consistency, and to look for possible differences in different watershed locations, we present many of the findings in relation to location as well as farm size.

1) Tables

(82) 1. Q3, Q2: Quantity and sale value of each crop marketed, by farm size group, over one year.

2. Q3: Quantity and sale value of each crop marketed, by watershed and sub-watershed, over one year.

(56b) 3. Q3, Q2: Percentage of production marketed, by crop, by farm size group.

4. Q3: Percentage of production marketed, by crop, by watershed and sub-watershed.

(82a) 5. Q3: Quantity of each crop marketed through the different market outlets.

(81) 6. Q3: Number of farmers marketing crops through each market outlet.

7. Q3: Average price received for each crop from each market outlet.

8. Q12, Q2: Percentage of farmers citing marketing as their main problem, by farm size group.

9. Q12: Percentage of farmers citing marketing as their main problem, by watershed and sub-watershed.

10. Q12, Q2: Percentage of farmers having been assisted by IRDP extension officers in the area of marketing, by farm size group.

11. Q12: Percentage of farmers having been assisted by IRDP extension officers in the area of marketing, by watershed and sub-watershed.

2) Expectations

We are looking here for possible disequilibria in the marketing of crops (and marketing services provided by IRDP) across farm size groups and/or locations. It would be expected, for example, that farmers in the Two Meetings Watershed market a higher proportion of their production than farmers in the Pindars River Watershed--due partly to easier market access. Tables 10 and 11 show whether IRDP marketing advice was evenly distributed.

We are also interested in the volume of sales going through each market outlet and the prices received for crops through different markets (Tables 5-7).

3) Data Requirements and Considerations

a) Tables 2, 4, 5, 6 and 7 may be produced from the Q3 raw data file alone.

b) Tables 1 and 3 merely need to have "farm size group" merged with the Q3 raw data file.

c) Tables 9 and 11 may be produced from Q12 raw data file alone.

d) Tables 8 and 12 need "farm size group" merged with Q12.

e) Points (a) and (e) under the corresponding Income section still apply here.

f) For Table 8, "Area of Greatest Need" in Q12 was not pre-coded, and needs to be coded yet.

b. Comparisons Among IRDP Farm Groups

1) Tables

1. Quantity and sale value of each crop marketed, by IRDP Farm Group, over one year.

2. Percentage of production marketed, by crop, by IRDP Farm Group.

3. Percentage of farmers citing marketing as their main problem, by IRDP Farm Group.

4. Percentage of farmers having been assisted by IRDP officers in the area of marketing, by IRDP Farm Group.

2) Expectations

Here we look at whether crop marketing varied by IRDP Farm Group. One would assume a correlation between ease in Marketing and Participation in other IRDP activities, but this must be verified by the data.

3) Data Requirements and Considerations

a) Point (f) above still applies here.

b) Tables 1 and 2 require only that "IRDP Farm Group" by merged with the Q3 raw data.

c) Tables 3 and 4 require that "IRDP Farm Group" be merged with the Q12 data.

Livestock

1. Background

II IRDP did not have a livestock component per se, although IRDP officers did sometimes give assistance and advice in livestock health and rearing. We are mainly interested in livestock as a store of wealth. As such, it provides further evidence on the effectiveness of IRDP in generating disposable income for investment.

2. Approaches

a. Presentation of Global Findings and Comparison with the Baseline Survey Findings

Comment: The Baseline Survey presented its results on livestock, in terms of disposal, in individual tables (42-55a) and two composite tables (83, 85). Our comparisons will be strictly in terms of value of livestock and livestock products sold. Other information is presented for descriptive purposes, in relation to farm size and location.

1) Tables

(42-55a, 83, 85)

1. Q6, Q2: Value of livestock and livestock products disposed, by type, by farm size group, over one year.

2. Q6: Value of livestock and livestock products disposed, by type, by watershed and sub-watershed, over one year.

3. Q6, Q2: Purchases of livestock and livestock feed, by farm size group, over one year.

4. Q6: Purchases of livestock and livestock feed, by watershed and sub-watershed, over one year.

(42-55a, 83, 85)

5. Q8, Q2: Livestock holdings (number and current market value of each type) by farm size group.

6. Q8: Livestock holdings (number and current market value of each type) by watershed and sub-watershed.

7. Q8, Q2: Gain in value per farm of livestock acquired between 1978 and August 1982, by farm size group.

8. Q8: Gain in value per farm of livestock acquired between 1978 and August 1982, by watershed and sub-watershed.

2) Expectations

Livestock represnts a form of savings immediately available to everyone with some money to invest. Livestock holdings, purchases, sales

and gains in value should, therefore, provide a convenient measure of cash availability. Tables 7 and 8 can be thought of as gross return on livestock investment--as yet unrealized. Current market value (as well as market value at birth) required some subjective approximations.

3) Data Requirements and Considerations

a) Tables 2 and 4 require only the Q6 raw data set. Table 2 uses the Income side of the questionnaire, while Table 4 uses the Farm Expenditure side. The differences between income and expenditure might also be interesting.

b) Tables 1 and 3 require that farm size be added to the Q6 data file.

c) Tables 6 and 8 use only the Q8 raw data file, while Tables 5 and 7 require the addition of "farm size group."

d) "Gain in value of livestock. . ." in Tables 7 and 8 is calculated as follows:

- limit columns 18-19 $\geq$ 78;
- for each livestock type, subtract columns 20-23 from columns 24-27;
- multiply this difference by columns 16-17 ("Number") to arrive at the farmer's gain in value of one livestock type.

e) Tables 5 and 6: for "current market value," multiply columns 24-27 by columns 16-17 and sum with other livestock of the same type.

f) Points (a) and (e) under the corresponding section under Income still apply.

g) Note that livestock purchases (Tables 3 and 4) cannot be differentiated by type.

b. Comparisons Among IRDP Farm Groups

1) Tables

1. Value of livestock and livestock products disposed per farm, by type, by IRDP Farm Group, over one year.

2. Tests of Significance among IRDP Farm Groups in total value of livestock and livestock products disposed per farm over one year.

3. Purchases of livestock and livestock feed per farm, by IRDP Farm Group, over one year.

4. Tests of Significance among IRDP Farm Groups in purchases of livestock and livestock feed per farm, over one year.

5. Livestock holdings (number and current market value of each type) per farm, by IRDP Farm Group.

6. Tests of Significance among IRDP Farm Groups in current market value of livestock holdings per farm.

7. Gain in value per farm of all livestock acquired between 1978 and August 1982, by IRDP Farm Group.

8. Tests of Significance among IRDP Farm Group in gain in value per farm of all livestock acquired between 1978 and August 1982.

2) Expectations

These tables will show the extent to which involvement in IRDP activities was associated with higher investment levels in livestock. One would expect some positive correlation if IRDP programs were, in fact, successful in raising participating farmers' incomes.

3) Data Requirements and Considerations

a) All tests of significance in this section involve aggregate livestock holdings, etc.--not by type.

b) The aggregate data files are used to make these tests, by adding the following variables:

- total value of all livestock and livestock products disposed (Q6).
- total purchases of livestock and livestock feed (Q6).
- current marketing value of total livestock holdings (Q8).
- gain in value of all livestock acquired between 1978 and August 1982.

c) Tables 1 and 3 require the addition of "IRDP Farm Group" to the Q6 raw data file.

d) Tables 5 and 7 require the addition of "IRDP Farm Group" to the Q8 raw data file.

e) Points (d), (e), and (g) above still apply here.

Soil Conservation

1. Background

Soil conservation was at the heart of II IRDP's program. The major treatments implemented by IRDP, which required some engineering

and heavy earth-moving, were bench terraces, orchard terraces and hillside ditches. More temporary structures included contour barriers, diversion ditches, individual basins (for permanent and semi-permanent crops), and waterways. Sometimes more than one treatment was constructed on the same field--for instance hillside ditches with individual basins. Waterways were always supposed to be built in conjunction with all three of the major treatments, but were also at times constructed by themselves. Forestry and improved pasture were the two agronomic treatments undertaken by the project.

In other sections, we look at the possible effects of the treatments on crop production and income. In this section, we describe the distribution of treaments, farmers' opinions on their effectiveness, and possible correlations with extension frequency and credit. We are not including a separate section for "Comparisons Among IRDP Farm Groups" since these comparisons are not as relevant as others.

2. Approaches

a. Presentation of Global Findings and Comparison with the Baseline Survey Findings

1) Tables

(72) 1. Q2: Number of farmers using soil conservation treatments, and acreage treated, by type of treatment, by farm size group.

2. Q2: Number of farmers using soil conservation treatments, and acreage treated, by type of treatment, by watershed and sub-watershed.

(73) 3. Q2: Number of farmers using soil conservation treatments, and acreage treated, by type of treatment, by tenure of land.

(72) 4. Q2: Number of farmers using IRDP soil conservation treatments, and acreage treated, by type of treatment, by farm size group.

5. Q2: Number of farmers using IRDP soil conservation treatments, and acreage treated, by type of treatment, by watershed and sub-watershed.

(73) 6. Q2: Number of farmers using IRDP soil conservation treatments, and acreage treated, by type of treatment, by tenure of land.

7. Q2: Proportion of cultivated acreage containing soil conservation treatments, by farm size group.

8. Q2: Proportion of cultivated acreage containing soil conservation treatments, by watershed and sub-watershed.

9. Q2: Proportion of cultivated acreage containing soil conservation treatments, by tenure of land.

10. Q10: Farmer opinions on the usefulness of each type of treatment.

11. Q10: Reasons for farmers' preference of each type of soil conservation treatment.

12. Q10: Farmers' willingness to continue soil conservation treatments after the close of II IRDP, by type of treatment.

13. Q2: Amount per acre ($J) spent on maintenance of each IRDP soil conservation treatment, by

year in which treatment was constructed.

14. Q2: Acreage of each IRDP soil conservation treatment, by crop.

15. Q10, Q12: Frequency of discussions with IRDP extension officers for farmers with and without IRDP soil conservation treatments.

16. Q10, Q9: Number of farmers and amount of credit received through IRDP (to September 1982) by farmers with and without IRDP soil conservation treatments.

2) Expectations

We would certainly expect to see substantial increases in the number of farmers using soil conservation treatments and in the acreage treated since IRDP came into effect. The Baseline Survey provides benchmarks for these comparisons, in relation to farm size (Table 72) and land tenure (Table73). We are also producing these tables by location, for another look at the distribution of IRDP's work. The differences between Tables 4, 5, 6 and Tables 1, 2, and 3, respectively, amount to the existing treatments constructed without the aid of II IRDP. Tables 7, 8 and 9 give an indication of the intensity of the IRDP soil conservation program with respect to different categories of farmers. These proportions might also reflect differences in land quality and slope--as well as intensity of resource utilization by farmers.

Tables 10, 11 and 12 contain farmers' opinions on the various treatments; these questions were asked only of those farmers who had a treatment at the time the questionnaire (Q10) was administered (August-September 1982).

Table 13 provides approximate maintenance costs per acre per year for each treatment. Table 14 gives the crops grown on each treatment. Tables 16 and 17 look for possible (likely) correlations between IRDP's activities.

3) Data Requirements and Considerations

a) Points (a) and (e) under the corresponding Income section apply here--although we are dealing only with one-time questionnaires here, so interview frequency is not a problem.

b) Tables 1-9, 13 and 14 require only the Q2 raw data set, which was updated to October 1983.

c) Tables 10-12 require only the Q10 raw data set; Q10 was administered in August-September of 1982.

d) Tables 15 and 16 may be done using the aggregate data files; all this information has already been recorded on these files.

e) Tables 10 and 11 must allow for more than one response for each type of treatment. Therefore, totals are not included, and only percentages (which are not additive) and not count numbers are to be reported. The treatment type was not recorded on each data case for Q10, so sub-files must be used to ensure that each response is correctly associated with a specific type of treatment.

f) Only one response was allowed per questionnaire for Table 12, so count numbers, percentages and totals may all be reported. Count number totals will not equal the number of farmers in the survey, however, since only farmers with treatments were questioned, and those questioned often gave opinions on more than one treatment. In the latter case, a farmer's willingness to continue treatments beyond the project's close (a single response) must be associated with each treatment he specifies.

g) All acreages in these tables will be somewhat overstated due to the fact that sometimes an entire field's area (as defined on the Field Census) was not in fact treated.

h) Tables 7-9: The proportions here are calculated at the farm level, summing across all types of treatments and all cultivated acreage. Thus, each farmer has his own single proportion. "Cultivated acreage" includes all fields listed on the Field Census <u>except</u> those for which Crop 1 is fallow (42) or ruinate (43).

i) Table 13 relies on the memory of the farmer over the time since the treatment was completed, and so should be viewed as only a rough approximation. The base date for this table should be considered August-September 1982, since little updating of maintenance costs was done after that time.

j) The "crop" in Table 14 is "Crop 1" in the Field Census. This is, of course, an over-simplification, but crop mixtures cannot be considered easily.

k) Tables 4-6, 13, 14, 15 and 16 refer only to land <u>treated by IRDP</u> (col. 22 = 1, Q2).

Agricultural Credit

1. Background

Agricultural credit was another important activity of II IRDP. The maintenance of newly-implemented soil conservation treatments and the intensification of cropping practices recommended by IRDP officers required cash beyond the farmer's normal expenses. A variety of loan sources were available to farmers through normal channels throughout the life of the project. IRDP, nevertheless, became involved in the process, particularly to facilitate loans to their primary clientele--small farmers--who traditionally have a harder time securing loans than larger farmers.

IRDP field officers evaluated a farmer's needs and helped him/her submit a loan application, which was eventually either approved or not approved by IRDP Credit Officers. Loans initiated in this way by IRDP officers were actually administered by the Peoples Cooperative Banks (PCB's). During this time period, the PCB's were also granting loans, independent of IRDP. In the following tables, "IRDP loans" are therefore distinguished from "PCB loans" in order to assess the true impact of the project with regard to credit. In fact, toward the end of the survey period, interviewers were given lists of loans to verify with farmers as to amount of loan and participation of IRDP officers.

As in the preceding section on Soil Conservation, we are primarily interested in this section in describing the participation of farmers in an agricultural credit program, and in making comparisons with the findings of the Baseline Survey wherever possible. Thus, there is no separate section for "Comparisons Among IRDP Farm Groups."

We are basing our tables on our information covering a three-year period, September 1979 to August 1982, because:

a. All Baseline Survey tables were based on the period September 1978 to August 1979. Thus, it is convenient to compare a three-year period with an immediately preceding one-year period.

b. Our data on credit was collected in August-September 1982.

c. September 1979 to September 1982 effectively covers most of the period when IRDP's farm loan program was in full force. Before September 1979, the program was just getting underway, and after September 1982, the project was already beginning to wind down.

2. Approaches

a. Presentation of Global Findings and Comparison with the Baseline Survey Findings

I) Tables

(76) 1. Q9, Q2: Number of farmers receiving farm loans (September 1979 to August 1982) by loan source, by farm size group.

2. Q9, Q2: Amount of farm loan money channeled through the different loan sources (September 1979 to August 1982), by farm size group.

3. Q9: Number of farmers receiving farm loans September 1979 to August 1982) by loan source, by watershed and sub-watershed.

4. Q9: Amount of farm loan money channeled through the different loan sources (September 1979 to August 1982), by watershed and sub-watershed.

(77) 5. Q9, Q2: Number of farmers receiving farm loans (September 1979 to August 1982) by principal purpose of loan, by farm size group.

6. Q9: Number of farmers receiving farm loans (September 1979 to August 1982) by principal purpose of loan, by watershed and sub-watershed.

(77a) 7. Q9: Number of farmers receiving farm loans (September 1979 to August 1982) by principal purpose of loan, by amount of loan.

(75) 8. Q9, Q2: Number of farmers by opinion on formal loan sources, by farm size group.

(79) 9. Q9: Number of farmers who applied for loans (September 1979 to August 1982) by formal loan source, by length of time between loan approval and first disbursement (in weeks).

(78) 10. Q9, Q1: Amount of farm loan money (September 1979 to August 1982) by age group of farmer, by farm size group.

11. Q9: Number of farmers who applied for loans (September 1979 to August 1982) by formal loan sources, by length of time between loan application and approval (in weeks).

12. Q9, Q2: Number of farmers and amount of farm loan money received through IRDP (from inception of project to September 1982) by farmers who had and did not have IRDP soil conservation treatments.

13. Q9, Q12: Number of farmers and amount of farm loan money received through IRDP (from inception of project to September 1982), by frequency of discussions with IRDP extension officers.

2) Expectations

We would expect the availability of credit to have improved during IRDP's lifetime, if only through the work of the project officers themselves. The Baseline Survey has a number of tables which we can use for comparison with

our own data to see whether, in fact, this is true. We also look at the composition of agricultural credit, the recipients, and the purposes for which loans were acquired. Tables 9 and 11 give an idea of how efficiently different donors processed loan applications. Table 10 exposes any relationship between a farmer's age and his/her access to credit. Tables 12 and 13 seek to show the extent to which IRDP officers helped get loans for farmers with whom they worked in other ways--versus those with whom they did not work.

3) Data Requirements and Considerations

a) Tables 1-7 and 9-11 are to be based on a three-year period, September 1979 to August 1982. This information was collected mainly in August-September 1982, and so relies on farmers' memories over the previous three years. Comparisons are to be made with the findings of the Baseline Survey from the proceding one-year period. All of our figures may, of course, be put on a one-year basis, if desired, by dividing by three.

b) To conform to point (a), all cases used to compile Tables 1-7 and 9-11 must fit into the range 0979 to 0882 in columns 26-29 in Q9. Other cases are rejected for these runs.

c) Tables 12 and 13 have no early date limit, but loans after 0982 are to be rejected; only "IRDP loans" are included.

d) Since we had no code for "IRDP" in columns 15-16 of Q9, we must re-code those loans we now know to be through IRDP, as "loan source = 14." The number and value of all IRDP loans are already recorded on the aggregate data files. These files must, then, be used to edit the Q9 raw data file: changing "PCB" (02), "other" (13), etc. to "IRDP" (14), where appropriate.

e) Table 7: "amount of loan" may be put into ranges as in Table 77a of the Baseline Survey.

f) Tables 5-7: "principal purpose" is found in cols. 30-31 in Q9, following the codelist for "Agricultural Credit Use." Although more than one response was often recorded for this question, it is preferable to eliminate all but the first (top row) purpose named for each invididual loan. In this way, the number of loans and amount disbursed in Tables 5-7 will not be artificially exaggerated; i.e., only one "purpose" will be allowed per loan.

g) Table 10: "age group of farmer": use the same age groups as in Table 78 of the Baseline Survey.

h) Some farmers reported more than one loan and/or loan source. Therefore, "Number of Farmers" really means "number of loans" in all the applicable tables--except in Tables 12 and 13.

i) Tables 9 and 11: "formal loans" include all loan sources <u>except</u> friends (11) and relatives (12).

j) Tables 3, 4, 6, 7, 9 and 11 utilize only the Q9 raw data set; Tables 1, 2, 5 and 8 need only the addition of "Farm Size Group" to the Q9 data. Table 10 requires the addition of the farmer's age group, calculated from the Q1 data.

k) Tables 12 and 13 may be based on information already appearing in the aggregate data files.

Housing and Other Rural Amenities

1. Background

The specific goal of II IRDP, according to the Project Paper, included ". . . providing improved roads, housing, electricity, water." Under the "Farm House" program, IRDP did construct new houses with improved facilities. This section deals specifically with housing, electricity and water. IRDP may pre-

sumably have helped improve amenities indirectly as well--by generating greater amounts of income available for improving facilities.

Most of the following tables have counterparts in the Baseline Survey. Household size--number of persons living in the household, including the farmer--is more relevant here than is farm size, for most purposes. Only the global approach is necessary for the analysis; however, some questions are related in this section to location and IRDP Farm Group.

2. Approaches

a. Presentation of Global Findings and Comparison with the Baseline Survey Findings

1) Tables

(96) 1. Q7, Q1: Number of farmers using each type of dwelling, by household size group.

2. Q7: Number of farmers using each type of dwelling, by watershed and sub-watershed.

(97) 3. Q7, Q2: Number of farmers by age group of dwelling, by farm size group.

(98) 4. Q7, Q1: Number of farmers by tenure of dwelling, by household size group.

(99) 5. Q7, Q1: Number of farmers by number of rooms in the dwelling, by household size group.

(101) 6. Q7: Number of farmers by type of toilet, by tenure of dwelling.

(102) 7. Q7: Number of farmers by access to toilet, by tenure of dwelling.

(See 103) 8. Q7: Number of farmers by general condition of dwelling, by tenure of dwelling.

(103) 9. Q7, Q3: Number of farmers by general condition of dwelling, by gross value of crop production.

10. Q7: Number of farmers by general condition of dwelling, by watershed and sub-watershed.

11. Q7, ADF: Number of farmers by general condition of dwelling, by IRDP Farm Group.

(94) 12. Q7, Q1: Number of farmers by main source of domestic water supply, by household size group.

13. Q7: Number of farmers by main source of domestic water supply, by watershed and sub-watershed.

14. Q7, ADF: Number of farmers by main source of domestic water supply, by IRDP Farm Group.

(95) 15. Q7, Q1, Q2: Number of farmers having access to electricity, by household size group, by farm size group.

16. Q7, Q1: Number of farmers having access to electricity, by household size group, by watershed and sub-watershed.

17. Q7, Q1, ADF: Number of farmers having access to electricity, by household size group, by IRDP Farm Group.

2) Expectations

We would expect to see some general improvement during the life of II IRDP in housing quality and access to electricity and running water. These tables will show whether or not these improvements have taken place and which farmers have been most affected. Many of these tables have been set up in relation to household size to facilitate direct comparisons with the Baseline Survey findings. We also include location and IRDP Farm Group in some tables since these factors may affect access to good housing and utilities.

3) Data Requirements and Considerations

a) Tables 2, 6, 7, 8, 10 and 13 require only the Q7 raw data set; Tables 1, 4, 5, 12 and 16 additionally require "household size group," taken from Q1.

b) Household size groups may be formed in the same way as in the Baseline Survey (Tables 94, 95, etc.) and should be used consistently--in place of "number of dependents." It appears perhaps that there is no difference in meaning in these two terms in the Baseline Survey. However, for our purposes, "household size" means the number of persons living in the household (according to our Household Census, Q1), including the farmer. This number is simply the maximum "Individual ID" (cols. 15-16) in Q1 for each household.

c) Table 3 requires "farm size group," from Q2 or the aggregate data files, to be added to the Q7 data; Table 15 requires both "farm size group" and "household size group," from Q1.

d) Tables 11 and 14 require "IRDP Farm Group" to be added to the Q7 data from the aggregate data files; Table 17 requires additionally "household size group," from Q1.

e) Table 9 requires "gross value of crop production" to be added to the Q7 data. This variable is to be calculated according to the instructions in the Crop Production section, and should, in any case, be added to the aggregate data files.

f) A very few farmers indicated that they had more than one dwelling on the Q7 questionnaire. This was usually because one house was being constructed next to the older second house. Therefore, "Number of Farmers" actually refers to "Number of Dwellings"--although the difference between the two figures should be very small.

g) Table 6: "type of toilet" refers to column 23 on Q7.

h) Table 7: "access to toilet" refers to column 24 on Q7.

i) Tables 15-17: "access to electricity" refers to codes 2 (JPS) and 3 (Delco) in column 26 of Q7; code 1 (non-electrical) need not be reported in these tables, since it represents all remaining farmers.

Farm/Community Organizations

1. Background

IRDP was supposed to help improve the credit, input delivery and marketing systems in the project area, partly by strengthening the organizations which were already in place to help farmers. The methods to be used were to include "technical assistance training and promotion" (Project Paper, p. 15). Thus, IRDP officers cooperated, at least to some extent, with officers of the Jamaica Agricultural Society (JAS), the various producer groups and others. Particularly strong bonds were forged with the Christiana Potato Growers Cooperative Association (CPGCA) and the PC banks. Additionally, Development Committees (DC's) were established as a result if II IRDP--to address the spectrum of farmers' needs by encouraging their direct participation.

The Baseline Survey looked at participation in farm/community organizations in relation to sex and age of the farmer and size of the farm. Some of the folowing tables address the same questions; other tables relate to location and IRDP Farm Groups.

a. Presentation of Global Findings and Comparison with the Baseline Survey Findings

1) Tables

1. Q11: Number of farmers participating in farm/community organizations by regularity of attendance at meetings.

2. Q11: Percentage of farmers participating in different activities, by farm/community organization.

3. Q11: Percentage of farmers citing different membership benefits, by farm/community organization.

(See 68) 4. Q11, Q1: Number of farmers by farm/community organization, by sex and age group of farmer.

(69) 5. Q11, Q2: Number of farmers by farm/community organization by farm size group.

6. Q11: Number of farmers by farm/community organization, by watershed and sub-watershed.

7. Q11, ADF: Number of farmers by farm/community organization, by IRDP Farm Group.

(See 70) 8. Q11, Q1: Number of farmers not participating in farm/community organization, by principal reason for non-participation, by sex and age group.

(71) 9. Q11, Q2: Number of farmers not participating in farm/community organization, by principal reason for non-participation, by farm size group.

10. Q11: Number of farmers not participating in farm/community organization, by principal reason for non-participation, by watershed and sub-watershed.

11. Q11, ADF: Number of farmers not participating in farm/community organization, by principal reason for non-participation, by IRDP Farm Group.

2) Expectations

Tables 4, 5, 8 and 9 should show whether farmers participated to a greater degree in farm/community organizations after the appearance of II IRDP--and if so, which sex and age groups participated more actively in which organizations. The sex of the farmer is added to these tables--which are otherwise in the same format as the Baseline Survey tables--as another possible factor affecting participation. Since the Development Committees were instituted after the Baseline Survey was conducted, we should also be able to determine whether the DC's affected participation in other organizations.

Tables 1-3 should indicate the depth of participation by farmers in each organization, and the benefits from each, as perceived by farmers. Tables 6, 7, 10 and 11 show the effects of location and participation in IRDP activities on

the level of participation in each farm/community organization. Location was clearly a factor for some organizations; for example, the CPGCA functioned mainly within the Two Meetings Watershed.

3) Data Requirements and Considerations

a) Tables 1-3, 6 and 10 require only the Q11 raw data set; Tables 4 and 8 additionally require "sex and age group" of the farmer, taken from Q1; Tales 5 and 9 require "farm size group," from Q2 or the aggregate data files, in addition to the Q11 data; Tables 7 and 11 require "IRDP Farm Group," from the aggregate data files, in addition to the Q11 data.

b) Table 1: Only one response was allowed on Q11 for "Attendance at Meetings" (col. 16), so count numbers of farmers, as well as percentages are additive.

c) Tables 2 and 3: more than one response was allowed per organization for "Level of Participation" (col. 17) and "Membership Benefits" (col.18) on Q11, so count numbers are not additive and only percentages (also not additive) should be presented.

d) Table 3: "Membership Benefits" (col. 18) was not pre-coded on Q11 and so needs to be coded before the analysis. A limited number of responses should be allowed, by grouping similar responses together.

e) Tables 4 and 8: "sex and age groups" may be derived from the Q1 (Household Census) data by combining "sex" with the various age groups presented in the Baseline Survey tables (e.g., Tables 68 and 70). The result will be 12 distinct sex/age groups.

f) Farmers often reported membership in more than one farm/community organization. Therefore, all "Number of Farmer" tabulations actually represent "Number of Farm/Community Organizations"--and so should not be related directly to the number of farmers in our sample.

Extension Services

1. Background

As in any large agricultural development project, the people actually carrying out most project activities for II IRDP were extension officers--most of whom were at the sub-watershed level. Each sub-watershed had its own extension officers, in charge of implementing IRDP's credit, soil conservation, home economics and other programs. They were aided by field assistants at each sub-watershed office.

The questions which make up the questionnaire Q12 were submitted by IRDP's Extension Advisor. They concern the frequency of contact between extension officers and farmers, and also the farmers' views on the effectiveness of these exchanges. This questionnaire was administered in August-September of 1982. Interviewers were instructed to ask the questions so as to approximate "average" frequencies over the lifetime of the project. However, the responses probably reflect most closely the farmers' views at the time the questions were asked.

No questions regarding extension services were asked in the Baseline Survey, so no comparisons may be made with our findings. Extension frequency has already been related to credit and soil conservation in previous sections of this report.

2. Approaches

a. Presentation of Global Findings and Comparison with the Baseline Survey Findings

1) Tables

1. Q12, Q2: Number of farmers, by acquaintance with IRDP extension officer, by farm size group.

2. Q12: Number of farmers, by acquaintance with IRDP extension officer, by watershed and sub-watershed.

3. Q12, ADF: Number of farmers, by acquaintance with IRDP extension officer, by IRDP Farm Group.

4. Q12: Number of farmers, by frequency of visits <u>to</u> IRDP extension office, by principal reason for visit.

5. Q12: Number of farmers, by frequency of visits <u>from</u> IRDP extension officer, by main type of assistance received.

6. Q12: Number of farmers, by frequency of discussions with IRDP extension officer, by level of satisfaction with extension services.

7. Q12, Q2: Number of farmers, by frequency of discussions with IRDP extension officer, by farm size group.

8. Q12: Number of farmers, by frequency of discussions with IRDP extension officer, by watershed and sub-watershed.

9. Q12, ADF: Number of farmers, by frequency of discussions with IRDP extension officer, by IRDP Farm Group.

10. Q12: Number of farmers, by frequency of discussions with IRDP extension officer, by desired frequency of discussions.

11. Q12: Number of farmers, by type of assistance received from IRDP extension officer, by level of satisfaction with extension services.

12. Q12, Q2: Number of farmers, by area of greatest need for extension services, by farm size group.

13. Q12: Number of farmers, by area of greatest need for extension services, by watershed and sub-watershed.

14. Q12, Q1: Number of farmers, by usefulness of written materials, by age group of farmer.

15. Q12, Q1: Number of farmers, by usefulness of practical demonstrations, by age group of farmer.

16. Q12, Q3, Q2: Gross value of crop production by frequency of discussions with IRDP extension officer, by farm size group.

17. Q12, Q3: Gross value of crop production by frequency of discussions with IRDP extension officer, by watershed and sub-watershed.

18. Q12, Q3, ADF: Gross value of crop production by frequency of discussions with IRDP extension officer, by IRDP Farm Group.

2) Expectations

Since we have no comparisons to make with the Baseline Survey, our only expectations concern possible differences in the effectiveness of IRDP's extension program among different groups of farmers. One might expect, for example, more frequent contact between farmer and extension officer in the Two Meetings Watershed; or between farmers with IRDP-implemented soil conservation treatments and their extension officers; or, between larger farmers and their extension officers.

Tables 4, 5, 6, 11, 14, and 15 give the frequencies of particular extension services and farmers' views on the effectiveness of each type of service. Tables 14 and 15 relate to farmers' age groups, as age may be a factor in the effectiveness or oral versus written presentations. Tables 16-18 show if, in fact, frequency of discussions with an extension officer was a factor for different groups of farmers in determining the gross value of crop production.

3) Data Requirements and Considerations

a) Tables 2, 4-6, 8, 10, 11 and 13 require only the Q12 raw data set; Tables 1, 7 and 12 additionally require "farm size group," from Q2 or the aggregate data files; Tables 3 and 9 require "IRDP Farm Group" to be added to the Q12 data; Tables 14 and 15 require "age group of farmer," from Q1, to be added to the Q12 data; Tables 16-18 should be based on the aggregate data files--as soon as gross value of crop production is added to these files.

b) Tables 4 and 5: Columns 18 and 21 on Q12 may have more than one response, so count "numbers of farmers" in these tables should not be related to the number of farmers in our sample. Also, there is no need to report the results ("no reason") for farmers who said they had no contact with extension officers.

c) "Frequency of discussions with IRDP extension officer" (Tables 6-10 and 16-18) is in col. 22 of Q12, but has also already been recorded on the aggregate data files.

d) Table 11: "type of assistance received," although recorded in col. 21 as a multiple-response question, should probably be limited to one response for this table--the first (top) response for each farmer.

e) Tables 12-13: "Area of greatest need for extension services" (col. 25 of Q12) was not pre-coded on the questionnaire. Farmers were allowed to give more than one answer to this question, but consideration should be given to coding and recording only the first response of each farmer--in order to allow the total "number of farmers" to match the actual number of farmers in the survey.

f) Tables 16-18 need only "gross value of crop production" to be added to the aggregate data files.

ANNEX A - INTERVIEWER'S MANUAL

INTERVIEWER'S MANUAL

PART I

ORIGIN OF THE INTEGRATED RURAL DEVELOPMENT PROJECT

The Integrated Rural Development Project evolved from a UNDP/FAO Study of the watershed areas in Jamaica between 1967 and 1975. During this time UNDP/FAO personnel identified 33 major watersheds in Jamaica containing about 400,000 acres. Five of these were later designated as first priority for rehabilitation based on degree of soil erosion, potential for agricultural development and downstream potential for irrigation, water supply and hydroelectric power.

The Pindars River and Two Meetings Watersheds were at the top of the list since Pindars River is associated with long-term plans for irrigating the Clarendon Plains. This includes a proposed dam at Lucky Valley, while the Two Meetings Watershed is the source of municipal water for the important rural townships of Christiana and Spaldings. They both show good potential for agricultural development.

In 1977, the Government of Jamaica and the United States Aid for International Development (US/AID) signed an agreement to jointly fund the IRDP.

DESCRIPTION OF PROJECT AREA

(a) Location, Size, Boundaries

(i) Pindars River Watershed

The Pindars River watershed forms one of the important headwaters of the Rio Minho and is situated above Lucky Valley where a storage dam is proposed for irrigation and water supply in the lower Clarendon Plains. Approximately 85% of the watershed which has a total area of 19,195 acres is long and narrow. Maximum length is 11.30 miles from Reckford to Juan de Bolas, and maximum width from Kellits to Prospect is 4.30 miles. The watershed is oriented Northwest to Southeast.

Beginning at Rockford, the watershed's northern boundary runs along Mason River to McNie, turning slightly southwest to Stacyville and then again in the southwestern direction to Kellits. From Kellits, the eastern boundary goes mainly along the road to Crofts Hill and turns to a secondary road to Lookout and then goes on the main road to Top Hill and Lemon Hall.

The southern boundary starts almost 2 miles south of Top Hill at Juan de Bolas, then goes westerly to Lucky Valley through Kentish, Ginger Ridge and Diamond.

From Lucky Valley going northwesterly, the boundary runs along Crawle River, Prospect, Colonel's Ridge, Bull Head and finally meets Rockford to the north.

(ii) Two Meetings Watershed

Two Meetings is situated east of Christiana and embodies a portion of four parishes - Manchester, Clarendon, St. Ann and Trelawny. The watershed is the headwaters of the Cave River where the branch of the Yankee River meets the Cave River at the Two Meetings bridge.

The whole watershed has a total acreage of 9,996 acres and is almost square in shape with Moravia at its centre. The whole watershed is sloped towards the east. From the lowest point at Two Meetings bridge the boundary runs north to John Reid and turns westerly along the road to Cascade. From Cascade the boundary goes southerly to White Sands and westerly along the natural divide up to Coleyville. The watershed's western boundary from Coleyville to Sedburgh through Christiana is entirely along the main road. From Sedburgh the boundary goes easterly to Spaldings then turns northerly to the bridge at Two Meetings through Baillieston and the east part of Alston.

Sub-Watersheds

The Pindars River Watershed is divided into twelve (12) sub-watersheds and the Two Meetings Watershed is divided into eight (8) sub-watersheds.

(b) Topography.

(i) Pindars River Watershed

The major portion of the Pindars River Watershed is hilly and rugged like most of the upland in the shale and conglomerate regions. A small amount of flat land is to be found mainly in Lucky Valley, in parts of Morants, and on the northwestern section of the watershed around Reckford. The slopes are gentler in the western portion of the watershed and steeper in the central sections. The highest point is in the southwestern section along which runs the Bull Head Mountain at 2,782 feet and lowest point is at Oakes at 530 feet elevation.

There are three (3) main tributaries in the watershed; the Crawle River, Juan de Bolas River and Black River. Pindars River is the main stream.

(ii) Two Meetings

The entire Two Meetings watershed is hilly and rugged. The steeper slopes are to be found around Silent Hill, Lorrimers, Highgate Hall, Moravia, Santa Hill, George North and Bullocks.

The highest point in this watershed is at the northwestern corner close to dump: 3,200 feet. There are several hills along the north boundary of the watershed along the Silent Hill Road; Cascade, Lorrimers and John Reid, which exceed 3,000 feet in elevation. The lowest point is at Two Meetings, where the Cave River meets the Yankee River at 1,950 feet elevation.

There are five major tributaries in the watershed, i.e. Cave River, Patoo Gully, Yankee River, Mammee Gully and Black River.

(c) Population

In 1970 the total population of the Pindars River Watershed was stated to be 11,400 persons and for Two Meetings Watershed it was 13,000 persons. Together the population of the two watersheds was 1.3% of the national figure while occupying 1.0% of total land area. The population density in Pindars River and Two Meetings in 1970 was 380 and 833 persons per square mile, respectively.

PURPOSE OF THE SURVEY

You may expect to be questioned by farmers as to the purpose or purposes of the present survey. You should in any case have a clear idea in your own mind about what type of information we are attempting to collect and why. There are two general purposes of this survey:

1) To provide sufficiently detailed farm-level data to allow conclusions to be drawn regarding the effects to date of II IRDP on agricultural production, marketing and incomes of farmers within the project area. Our analysis will therefore involve comparisons of farmers who have participated to different degrees in II IRDP activities in order to evaluate the effectiveness of those activities.

2) To provide information on farming systems in use in the project area in order to better plan for future activities as well as activities of other projects. We will be seeking estimates on the costs of production for some of the more important crops. We will also be following the seasonal use of labour and flow of cash (income and farm expenditures) within farm households. All this information should be useful in making agricultural programmes more realistic in terms of farmer objectives and constraints.

Finally, with the results of this survey we will seek to make comparisons with a not dissimilar previous survey conducted in 1979.

Before Making Contact and Beginning the Interview

1. Before you make contact with the farmer, there are three steps that are important to follow:-

(a) Review your Interviewer's Training Manual

This includes the general interviewing procedures and the question by question instructions in this manual.

(b) Review the Questionnaire

Before you begin interviewing, practice using the questionnaires to build up your confidence. A successful interview requires an interviewer who fully understands the questionnaires and can use them easily and correctly. Stumbling through the questionnaires (losing your place, shuffling papers, etc.) can disturb the respondent.

(c) Organize your Material

Be sure you know what materials you need before you go out to interview, and make sure you have them before going into the field.

2. You should take the following materials with you

(a) Interviewer's Manual
(b) Questionnaires to last for the period which you will be in the field
(c) Letter of introduction
(d) Pencils and Pencil sharpeners
(e) Interview Record sheet
(f) Assignment Sheet
(g) Prepared introduction
(h) Notebook

How to Use Your Interviewer's Manual on the Job

Please note that your interviewer's manual should be thoroughly studied before you are ready to go into the field. However, if during an interview you discover that certain questions or terms were difficult for you to explain to the farmer, consult your interviewer's manual to make certain you understand those questions clearly before going to the next farmer.

Your Assignment Sheet

This will be partially filled out and handed to you by your supervisor. You cannot start your interview without it, since it is a record of the Name, address, identification number and total acreage of all the farmers you must interview.

Example Assignment Sheet

Project Area ..... Sub-watershed No. .....

Name of Supervisor .....

Name of Interviewer ..... Date .....

Sub-watershed Number

This ranges from P_1 to P_{12} for the Pindars area, suggesting that there are twelve sub-watersheds in this area and T_1 to T_8 in the Two Meetings area, suggesting that there are eight sub-watersheds in Two Meetings area.

Assignment of Farmers, Interviewing Schedule, Supervision

Each of you have been assigned thirty (30) farmers who have been randomly selected for the survey. We have attempted as far as it is possible to assign to each interviewer farmers from the sample selected who live in closest proximity to you. You will be required to interview these 30 farmers over a one-year period.

Your assignment of farmers to be interviewed over the entire course of the survey will remain the same throughout the year. You are expected to pre-schedule interviews for each month to ensure that the date and time selected are convenient to both yourself and the farmer.

Interview Record Sheet

Prior to the first day of each calendar month each interviewer will be given an Interview Record Sheet which contains a list of his 30 farmers and a schedule of interview dates. Interview dates will be marked on the 'calendar' with a single mark ☐. After having completed the interview on schedule, the interviewer crosses the original mark, forming ☒.

If, for whatever reason, the interview was not completed on schedule, the ☒ should be placed over the actual date. The completed Interview Record Sheet will be collected by supervisors at the end of each month.

It is important that interviewers stick to their regular interview schedule. This is necessary both to gain the confidence of farmers and to allow supervisors to pick up completed questionnaire forms regularly. Interviewers must adjust the hours for the interviews so that they are convenient for particular farmers. Supervisors will be making both regular and spot visits to the field. The completed repeating questionnaire forms will be collected and blank forms will be distributed at these times. Each time any materials are either collected or distributed this information will be recorded.

Once the repeating questionnaires are put into use, each interview will cover the two-week period since the previous interview. Be sure that the dates are always understood by the farmer before beginning each interview session, and re-phrase your questions slightly if the time since the last interview was not exactly two weeks. Questionnaires are designed to accommodate two interviews on each form (front and back). If there is insufficient space on one form, however, a second form may be used. Supervisors will pick up completed questionnaires twice a month; once after 15 farmers have been interviewed the second time that month, and again at the end of the month. This will facilitate editing of the forms and their transferal to the Data Bank computing facility.

HOW TO BEGIN THE INTERVIEW

A. Introducing Yourself to the Respondent (Farmer)

The respondent in this survey will be the farmer, that is the farmer who will be supplying you with the data required to complete the questionnaire. In the event that he has incomplete information, other members of the household should be questioned. The information to be collected must cover all members of the farmer's household and all pieces of land farmed by the household.

The first step in the first interview is to introduce yourself to the respondent. If you have a prepared introduction, you will feel more comfortable when encountering your potential respondent. Your introduction should include the following:-

(a) Your name

(b) The fact that you are conducting an agricultural survey for the Ministry of Agriculture.

(c) Statement on the purpose of the Survey

Prepared Introduction

Each interviewer should develop his/her own introduction with which he/she will be comfortable and which seems more natural to his/her personality. Please bear in mind that an introduction is crucial since it is the first stage for the balance of the interview. A sample introduction is often the best and we suggest that you use something similar to the following:-

I am Mr/Ms ..... from the Ministry of Agriculture. We are taking an agricultural survey in this area. We realize that other surveys might have been conducted in this area over the past few months, but we hope that you will understand that the information we are collecting is of great importance to the Ministry of Agriculture. This information will give the government a good picture of the living conditions of people in this area, including the presence of or lack of economic opportunities available in the area so that the government will be better able to make plans to improve their living conditions.

If after your introduction the farmer does not appear to be ready to answer the questions, tell him that you have a letter of introduction from the Ministry of Agriculture. If you have no doubt about his readiness to cooperate, begin your interview immediately by saying something like 'Now Mr. ..... I have some questions I would like to ask you', then ask the first question on the first questionnaire.

Letter of Introduction

Each interviewer will be given a letter of introduction from the Ministry of Agriculture which will state the following:-

TO WHOM IT MAY CONCERN

This certifies that Mr/Mrs. ..... is a temporary employee of the Ministry of Agriculture. He/she is assisting with the survey of farmers on the IInd Integrated Rural Development Project in Pindars River and Two Meetings Area.

Your co-operation in providing the required information to these officers will be greatly appreciated.

Derrick Dyer
Permanent Secretary
Ministry of Agriculture

Lester Boyne
Director
Data Bank & Evaluation Division

How to Use the Letter of Introduction

The letter of introduction should be used if after introducing yourself to the farmer using the introduction you have prepared the farmer does not seem convinced that you are in fact who you say you are. In that case tell the farmer that you have a letter of introduction signed by the Permanent Secretary, Mr. Dyer of the Ministry of Agriculture, you would like him to read. Before handing the letter to the farmer, ask him if he would like you to read it for him/her. Do as he/she says.

Reluctant Farmers

You will find that most farmers will accept your introduction as the reason for taking the survey. However, there will be a few who will want more information about the survey and you should be prepared to answer their questions. There may be a few others who are reluctant to be interviewed because they do not want to be bothered, or because they do not believe the survey has any real value or because they believe there is some ulterior purpose, e.g., Income Tax, Land Reform.

These are types of situations where your ability to confidently explain the survey will be very important. If you are able to explain confidently why the survey is being taken, the respondent will have no reason for doubting the legitimacy and usefulness of the survey. Do not say that the interview will take only a few minutes.

If the farmer states that he has no time right now for an interview, find out when you can call back. Do not insist that the farmer give you the interview immediately in situations like this because you may antagonize the farmers and lose the interview entirely. However, unless the farmer tells you he does not have the time right now, assume that he has and start the interview. At the end of each interview, fix a date and time for the next interview with the farmer.

Your Own Manner

1. Your greatest asset in conducting an interview efficiently is to combine a friendly attitude with a business-like manner. If a farmer's conversation wanders away from the interview, try to cut it off tactfully, preferably by asking the next question on the questionnaire. Over-friendliness and concern on your part may actually lead to your collecting less information. However, the rapport you develop with a farmer in your early interviews will determine the ease and quality of your interviews throughout the survey period.

2. Many times you will learn some personal information about the respondent or his family during the course of the interview. It is important that you maintain an objective attitude, that is, do not indicate your personal opinion about any information given to you, even by your facial expression or tone of voice. Expressions of surprise, disapproval or excessive sympathy on your part may cause respondents to become embarrassed and want to end the interview.

3. Never become involved in discussions relating to politics or religion. If the respondent gives his views on a religious or political topic, simply acknowledge it and continue the interview.

4. Never 'talk down' to respondent. When necessary, explain the terms or questions, but give as direct and simple explanations as possible.

Answering Questions Respondents Might Ask

It is possible that respondents might ask you questions during the interview.

(a) Some of the questions might be as follows:

Who are you?
What do you want?

Your answer to these questions should include information suggested for your introductory procedure; e.g., your name, identification card and the fact that you are from the Ministry of Agriculture.

(b) Selection of Respondent's Household

Why did you pick me?

You should tell him that he was selected at random from the list which was obtained when the census was taken in 1979. He has been included again in the present survey to make our information consistent with what was obtained in 1979.

(c) Confidentiality

(i) Is my name going to be released when the information is published?

(ii) What will you do with my information?

Advise the farmer that no name will be mentioned in the report, that the information obtained from all the farmers will be put together to produce that report.

HOW TO ASK THE QUESTIONS

Ask each question in the order presented in the Questionnaire

Never change the order of the questions in the questionnaire. The sequence could alter the intent of the questionnaire. In fact, asking the question out of sequence can affect the answers you receive later in the interview.

It is bad interviewing practice to ask a question when the respondent has already provided you with the specific answer. It may confuse the respondent or may even antagonize him and may result in loss of information for later questions in the interview. If the respondent has previously given you an answer, it is good interviewing practice to verify the answer by saying something like, 'I believe you told me earlier on that you own five acres of land; is that correct?' By doing this you let the respondent know that you have been listening to him as he talks.

Listening-Recording Information

Listen to the respondent until he finishes his statement

If you do not, you could put down incorrect or incomplete information.

There are two very common errors made in this area. They are:

(i) Failure to listen to the last half of the sentence because you are being busy recording the first half;

(ii) Interrupting the respondent before he has finished, especially if he/she hesitates.

A respondent often hesitates when trying to recall some facts and you should allow sufficient time for him to do this. Also, people will sometimes say 'I DO NOT KNOW' at first when actually they are considering a question. When you think that this might be the situation, wait for the respondent to finish the statement before repeating the question or asking an additional question.

Repeat the Answer

Sometimes it is important to repeat the respondent's answer and then pause. Often this will bring out additional information on the subject. It is also useful as a check on your understanding of what has been said, especially if the statements or comments given are not entirely clear.

Avoid Influencing the Respondent

Experience in other studies has shown that respondents tend to agree with what they think you expect them to say, even though the facts in the case may be different. Therefore you must avoid 'leading the respondent' by adding words to the questions or making slight changes that may indicate an answer you expect to hear.

Sometimes the respondent may not know the answer to the question, and if this is the case record the fact that he does not know.

INFORMATION GIVEN OUT OF TURN OR VOLUNTEERED

Sometimes when you ask a specific question respondents will give you a great deal of information which does not relate to the question you have asked. Instead, the information may deal with questions which you plan to ask afterwards. It can become very difficult to keep all of the information clear in your head when this happens. You should explain that you cannot keep up with him in recording the information and ask him to permit you to ask the questions as they appear so that he will not need to give the information more than once.

PACING THE INTERVIEW

(a) Try to avoid hurrying the interview even under trying circumstances. If the respondent senses that you are in a rush to complete the questions so that you may leave, he may omit important information which he might feel would take too much time to explain and record.

(b) Maintaining a calm unhurried manner and asking the questions in an objective and deliberate way will do much to promote an attitude of relaxed attention on the respondent.

PROBING

1. When to Probe

(a) Sometimes a person will give an answer which does not furnish the type of information you need or one which is not complete. It will be necessary to ask additional questions to obtain the required information, being careful to encourage the respondent to do the explaining without your suggesting what the explanations might be. Ask as many questions as possible to satisfy yourself that you have obtained complete and accurate information in so far as the respondent is able to give it to you.

(b) Be sure to ask additional questions until you have a complete picture on all the pertinent details.

(c) However, do not 'over probe'. If the respondent says he does not know the answer to a question, do not try to insist that he gives some answer.

This might irritate the respondent and make him wonder about our interest in accurate response.

HOW TO PROBE

(a) Ask in such a way that you obtain the information required without suggesting specific answers to the respondent. For example, 'please explain that a little more' or 'please describe what you mean'. Fit the answers to the information which has already been given.

In some instances you may need to suggest specific alternatives to the respondent when the general phrases have not been successful in obtaining the information. This is also an acceptable method for asking additional questions provided the respondent is never given a single choice. Any items specifically suggested to the respondent must always consist of two or more choices. The example below illustrates both acceptable and unacceptable methods for asking additional questions.

Examples of Probing

Acceptable	Not Acceptable
(i) Can you tell me the number of acres in pure stand?	(i) Would you say five acres are in pure stand?
(ii) Do you have any other major problems in farming?	(ii) You do not have any other major problems, do you?
(iii) Did you use more or less than nine workers?	(iii) Did you use more than nine workers?

(b) The 'Not Acceptable' questions in (i) and (iii) illustrate an invitation to the respondent to just say 'yes' without giving any thought to the question.

(c) The 'Acceptable' question in (iii) is an example where the respondent has a choice because more than one possibility is presented.

(d) The 'Not Acceptable' question in (ii) is obviously a biased question, so that the respondent knows exactly what answer the interviewer expects.

RECORDING THE INFORMATION CORRECTLY

Recording the information correctly is just as important a part of the interview as asking the questions correctly. This involves writing clearly and plainly in the spaces allotted for answers. If you feel additional information is required to clarify the answer write the information under 'Observations' and be sure to identify which rows and

columns you referring to. You will need to carry a notebook with you to all interviews in order to make accurate calculations before recording some responses. Be careful not to leave blank spaces where they can be filled in. Place a dash ('-') in each column which is left blank. Use a black head pencil to record information. If after an interview you discover blanks in the questionnaire for questions which should have been but were not asked, leave the items blank. You should never fill in missing information based on what you feel the answer might be. You may, of course, fill in blanks later for questions which were in fact asked and to which you know the answers.

Review of Work

At the close of the interview, look over the questionnaires while you are still with the farmer so that you can ask questions on missing items or clarify any questions you might have.

PART III

THE QUESTIONNAIRES

Twelve (12) questionnaires have been designed for this survey as shown below:-

Q1 - Household Census
Q2 - Field Census
Q3 - Crop Production and Marketing
Q4 - Farm Labour Use
Q5 - Agricultural Input Use
Q6 - Income and Farm Expenditures
Q7 - Housing and Other Rural Amenities
Q8 - Livestock Inventory
Q9 - Farm Credit
Q10 - Attitudes Towards Soil Conservation
Q11 - Participation in Farm/Community Organizations
Q12 - Extension Services.

Eight (8) of these (Q1, Q2, and Q7-Q12) will be administered one time only. The remaining four (4) (Q3-Q6) will be administered bi-weekly over a one-year period.

The twelve questionnaires have been designed in a format which allows for numerical coding of all responses in order to speed up data processing.

GENERAL CONCEPTS FOR USING Q1-Q12

A. Coding

1. Codelists are provided whenever necessary. If a farmer's response does not match any of the codes exactly, either find the nearest match (if the meaning is the same), choose 'other' (if the meaning is different from any of the choices) or leave the question unanswered and provide explanatory information under 'Observations'. If the latter course is chosen, be sure to specify to which row and column the explanation refers. For example, if hired labour is not measured in man-days, you may write '60 yam holes dug by hired labour: row 2, columns 24-25' under 'Observations' in Q4. Often both written and coded responses are required for a given question.

2. ~~A vertical 'column' is defined by a pre-typed number on~~ the questionnaire. A horizontal 'row' cuts across all the columns. A 'cell' is formed by the intersection of a column and a row. Only one digit is to be placed in any cell.

3. Some questions take up more than one column. Always fill in columns from the <u>right side first</u> and than fill in zero(s) to the left if necessary; e.g., nine years old is coded as

Age	
18	19
0	9

rather than

Age	
18	19
9	

4. Columns are left blank only if the question does not apply or if the response is unknown; e.g., if no crop was marketed from a field that was reaped, leave the columns under 'Marketing' in Q3 blank. Place a dash ('_') in those columns which are left blank.

5. Generally, you should record one row at a time. Always be careful that each response across the row refers consistently to the same 'field', 'crop', 'operation', etc.

6. Care must be taken to note the headings and sub-headings which appear above certain columns (e.g., 'Marketing' over 'Marketing Unit' over 'Code', etc.). This will help in organizing your questions.

B. <u>The Identifier</u>

The first seven questions (14 columns) across the top of each of the twelve questionnaires are collectively called the 'identifier'. The identifier is the same (other than the first two pre-typed columns which identify the questionnaire itself) on each of the twelve questionnaires. This information pertains to everything that follows on the completed form; all rows below it must refer to the same farmer and interview date. The questions are as follows:

Cols. 1-2	<u>Questionnaire</u>:	for computing purposes only
Col. 3	<u>Watershed</u>:	1 - Pindars 2 - Two Meetings
Cols. 4-5	<u>Sub-Watershed</u>:	Follows standard sub-watershed numbers: 01-12 Pindars, 01-08 Two Meetings.

Cols. 6-8	Household Number:	These 3 digit ID numbers will be assigned with farmer lists.
Cols. 9-10	Day:	Record the day of the month on which the interview takes place.
Cols. 11-12	Month:	month of the interview.
Cols. 13-14	Year:	year of the interview (last two digits).

C. Relationships between the Questionnaires: Cross-checks

1. The Household Census (Q1) and especially the Field Census (Q2) provide the groundwork for the four repeating questionnaires. All 'fields' noted in Q3, Q4, or Q5 must have been previously identified in the Field Census, and the same field name and field number always used.

2. If additional fields are discovered or brought into production during the survey period, these are to be:

(a) added to Q2 as the last field
(b) reported immediately to a supervisor

3. Two copies will be made after completion and editing of Q1 and Q2. One copy will reside with the interviewer throughout the survey period for use with the repeating questionnaires; the second copy will reside with the technical assistant. It is crucial that these two sets (plus the copy sent to be processed at the Data Bank) remain identical. If ammendments or additions to these questionnaires become necessary, the T.A. is to be notified immediately.

4. Inevitably, a few pieces of information are gathered more than once on these questionnaires - - although the questions are never identical. These provide opportunities to cross-check the accuracy and completeness of the farmer's answers. As examples:

a) Hired labour should appear in man-days in Q4, as an input in Q5 and as an expenditure in Q6. Check to make sure that the appropriate figures match.

b) Equipment or machinery rental should also appear as both an input (Q5) and an expenditure (Q6). Notice, however, that other inputs which may be stored and used a little at a time (e.g., fertilizer, other chemicals, seed, etc.) need not be purchased and used during the same two-week period.

c) Any crop marketing appearing in Q3 should also appear as income in Q6.

PART II

INTERVIEWING TECHNIQUES

You may have been hired as interviewers to collect data which will provide information on the agricultural, social and economic condition of the resident farmers within a select region. Consequently, you must understand that you have an extremely important role in the data collection process. We need to bear in mind that after the data has been collected, statistically analysed and published that the information contained in that publication is only as good as the information which you collect.

In order to have good information collected, the method of collecting the information must be good and this will depend on how well you do your job. It has been said that the persons who obtain data are the most important people in a survey.

What is a Survey

A survey usually involves interviewing people using questionnaires that are designed to obtain the needed information. In a 'sample survey' only a few persons or households are interviewed as representative of the total population, whereas in a 'census' all persons or households in a selected area are interviewed.

The Ethics of Survey Interviewing

As an interviewer, it is your responsibility to keep completely confidential anything you learn or observe during the interview. Never disclose the facts about anyone you interview to someone else. Respondents should be told that the information they provide will be analysed and published. The names of the farmers will not appear in the report.

Using the Questionnaires

To reach the interviewer's goal of collecting accurate information it is necessary to understand the questionnaires and the principles of their use. The principles include asking the questions properly, following instructions for the questionnaires and identifying the different types of questions.

As information is gathered on labour use, crop production, etc., interviewers need to judge regularly whether or not these figures are reasonable, given their knowledge of the particular field and crop.

HOUSEHOLD CENSUS (Q1)

Purpose/Application

The Household Census provides a listing of all persons in the farmer's household (see Glossary for definition) and some of their characteristics. It is to be administered only once, at the beginning of the survey period. The information from this questionnaire will be used to help categorize households into groups and to estimate their availability of labour for agriculture. No personal names will appear in any report, but are recorded only to help the interviewer do his job. You should become familiar with the persons in your selected households in order to help assure the accuracy of the information you gather. If, for example, the farmer reports no activities on the part of an adult of the household for several weeks, you should inquire to be sure that you are recording complete information.

Cols. 1-14: Identifier

Individual Name

- Instructions: List the full names of all persons within the household, beginning with the farmer and then the farmer's spouse.
- Question: "What is your full name"
  "What is your wife's (husband's) name?" etc.

Cols. 15-16: Individual I.D.

- Instructions: The farmer is assigned No. 01, his/her spouse No. 02, etc.

Col. 17: Farm Labourer

- Instructions: We want to know to what extent each member of the household works on the family farm. Follow the codelist below:
- Question: "Over the course of the year, on average, how many days out of seven (one week) does (John Doe) work on your farm?".
- Example: "John spends about 3 days a week on our farm work".
  Record 3 in col. 17.

Cols. 18-19: Age

- Instructions: Record the current age of each person; those less than six months old = 00
- Question: "How old is (John Doe) now?".

Col. 20: Sex

- Instructions: Follow codelist below

Codelist

1 male
2 female

Cols. 21-22: Primary Occupation

- Instructions: Record each person's most important occupation/activity (according to their own judgement) and select the most appropriate code from those listed below.
- Question: "What is (John Doe's) main job or activity?".
- Example: "John digs ditches for the town". Code 01 = unskilled manual

Codelist

01	unskilled manual	07	professional/technical
02	skilled manual	08	administrative
03	farming - crop	09	student
04	farming - livestock	10	other
05	higgler	11	none
06	clerical		

Cols. 23-24: Secondary Occupation

- Instructions: Repeat procedure (using same codelist) under Primary Occupation, but for such person's occupation/activity of secondary importance.
- Question: "Does (John Doe) have a second job or activity which he pursues at least one fourth of the time? If so, what is it?".
- Example: "John helps out with the crops when he has the time." Code 03 = farming - crop.

Col. 25: Education

- Instructions: Record the highest level of education attained so far by each person, according to the codelist below.

- Question: "How much schooling has (John Doe) had?"

- Example: "John spent two years at Manchester High School, but did not graduate."
  Code 5 = secondary imcomplete.

Codelist

1	no formal education	6	secondary complete
2	JAMAL	7	vocational
3	primary incomplete	8	post-secondary
4	primary complete	9	other
5	secondary incomplete		

Overseas Work

- Instructions: The following five questions concern any overseas work that each person may have done. The first two questions (Cols. 26 and 27) under Total refer to the sum total of all overseas work experiences. The last 3 questions (Cols. 28 to 30) refer only to the single overseas work experience of longest duration.

Total

Col. 26: No. of Times

- Instructions: Record the total number of times each person has worked overseas.

- Question: "How many times has (John Doe) worked outside Jamaica?".

Col. 27 Duration

- Instructions: Record the sum total of time spent overseas in all jobs, following the codelist below.

- Question: "What is the total amount of time that (John Doe) has spent working outside Jamaica?"

- Example: "John Doe has spent about 3½ years working outside Jamaica". Code 4 = 2-5 years.

Codolist

1 0-6 months
2 6-12 months
3 1-2 years
4 2-5 years
5 5-10 years
6 over 10 years

Longest

Col. 28: Type

- Instructions: Record the type of work performed on the longest overseas job, following the codelist below.

- Question: "On (John Doe's) longest overseas job, what did he do?".

- Example: "John worked seven months one time picking oranges." Record 2 = farm labour - fruit.

Codolist

1 farm labour - general
2 farm labour - fruit
3 farm labour - vegetable
4 farm labour - sugarcane
5 office/clerical
6 unskilled nonfarm manual
7 skilled nonfarm manual
8 other

Col. 29: Location

- Instructions: Record the location of the longest overseas job, following the codelist below.

- Question: "Where did (John Doe) pick oranges during those seven months?"

- Example: "John worked on a farm in Florida at that time."
Record 1 = US/Canada.

Codelist

1 US/Canada
2 other Caribbean (incl. Puerto Rico)
3 Central/South America (incl. Mexico)
4 Europe
5 other.

Col. 30: Duration

- Instructions: Record the length of time spent on the overseas job of longest duration, following the codelist under Duration above.
- Question: (Following the above example, the question has already been answered)
  Record 2 in col. 30 = 6-12 months.

FIELD CENSUS (Q2)

Purpose/Application

The Field Census provides a listing of the more important crops on all land cultivated by the farmer's household. This includes land not owned by the farmer and in any location. Land not currently under cultivation but belonging to the farmer should also be listed as 'fields'. Fields should be defined according to their location and crops contained. What is most important is that the farmer visit each field with the interviewer during the initial interview in order to demarcate and name each one. This method avoids later confusion.

The information gathered in the Field Census is critical in two respects:

1) It will form the basis for our classification of farmers
2) It will be used by interviewers and supervisors alike throughout the survey period, and will also be important for the final analysis of the data.

Although it is only administered once, the Field Census must be continually updated as changes occur during the survey period. Supervisors are to be notified immediately of any changes made by the interviewer.

Cols. 1-14: Identifier

Field Name

- Instructions: Each piece of land owned by the farmer is to be assigned a 'Field Name' mutually agreed upon and understood by farmer and interviewer. This also includes land not currently under cultivation. Interviewers must visit these fields with the farmer in order to assure that they are speaking of the same exact areas, to verify the crops and to estimate acreage.

- Question: "What do you usually call this piece of land?" (Walk along field boundaries while asking question).

- Example: "We usually call this the south mango orchard." Record 'south mango' under Field Name. (If no name, create one).

Col. 15: Field No.

- Instructions: As each field is named, attach a one-digit number to it (maximum of 9 fields), starting with 1.

Cols. 16-18: Estimated Area: Acres, Squares

- Instructions: Use the technique demonstrated during training to estimate each field area, in acres (Cols. 16-17) and square chains (or 'squares', Col. 18). Do this in the presence of the farmer.

- Example: "If your best estimate of the area of the field is 3 acres, 4 squares (3.4 acres), record 034 in Cols, 16-18.

Col. 19: Slope Category:

- Instructions: Use the technique demonstrated during training and the codelist below to estimate the slope category for each field. If a field (as previously defined) includes more than one slope category, record the one which covers the largest area of the field.

- Example: If you estimate a large section of a banana field to be sloped at about 15° and a smaller section at about 25°, code 4= 10° - 20°.

Codelist

1 0 - 2°
2 2 - 5°
3 5 - 10°
4 10 - 20°
5 20 - 30°
6 over 30°

Col. 20: Tenure

- Instructions: We want to know to what extent the farmer controls and is responsible for each piece of land; use the codelist below.

- Question: "Is this particular piece of land ... (read codelist to farmer and record his response)?".

Codelist

1 owned
2 rented
3 leased
4 family free land
5 government land
6 other.

Soil Conservation Treatment

- Instructions: The following four questions concern any soil conservation treatments which may have been undertaken on each field. Tell this to the farmer before asking the first of these questions. If no conservation measures have been taken leave cols. 22-32 blank. If some treatment has been undertaken, be sure to phrase your questions so that they follow each other smoothly.

Col. 21: Treatment

- Instructions: Read the codelist of possible treatments to the farmer and ask him if any of these treatments have been made on the field. Visual inspection of the field assures accuracy. Be sure that the farmer understands all the terms and that his response is correct before recording it. If the field has had more than one treatment record the more important (in terms of land area covered) or more recent one.

If no treatment has been made, code 9 in col. 21 and put dashes through to col. 32.

- Question: "Have you ever had any of the following soil conservation treatments on this field?" (Read the codelist to the farmer).

- Example: "Yes, I had hillside ditches with individual basins constructed". Code 3 = hillside ditches.

Codelist:

1	bench terraces	5	contour barriers
2	orchard terraces	6	reforestation
3	hillside ditches	7	diversion ditches
4	improved pasture	8	other
		9	none

Col. 22: By Whom

- Instructions: Ask the farmer whether or not IRDP was involved in the treatment construction and code his response with the codelist below.

- Question: "Was the construction of the treatment done with the help of IRDP?"

Codelist:

1 Yes, IRDP was involved
2 No, IRDP was not involved

Cols. 23-24: Year of Treatment

- Instructions: Record the last two digits of the year in which the treatment was completed.

- Question: "When were these hillside ditches completed?"

- Example: "We finished the work in February, 1980." Record 80 in cols. 23-24.

Cols. 25-28: Cost of Maintenance

- Instructions: Record in Jamaican dollars the farmer's estimate of the total amount (if any) he has spent to maintain the treatment since its completion. This should include all labour and materials costs.

- Question: "Since the hillside ditches were completed, have you spent any money to keep them in good condition? If so, can you give me an estimate of the total amount you have spent on labour and materials for maintenance?"

- Example: "I have spent about $200 for labour and about $50 for materials". Record 0250 in Cols. 25-28.

Cols. 29-32: Crops Grown Before Treatment: (Crop 1, Crop 2)

- Instructions: Ask the farmer if any crops were grown on this field prior to treatment of the land. If so, ask him for the two most important crops grown immediately before the treatment, according to the codelist below. Cols. 29-30 (Crop 1) are for the most important crop on the field (in the farmer's own judgement) and Cols. 31-32 (Crop 2) are for the second most important crop (if any).

- Question: "Did you grow any crops on this field before the hillside ditches were constructed? If so, please name the most important (principal) crop just before construction was commenced ... also the second-most important crop."

- Example: "This used to be a field of pumpkins, with a little bit of ginger in the corner." Code 30 in cols. 29-30 (Crop 1) and 14 in cols. 31-32 (Crop 2).

Codelist: (See codelist below).

Cols. 33-40: Crops Currently Under Cultivation (Crop 1, Crop 2, Crop 3 Crop 4)

- Instructions: Make clear to the farmer that you are now going to ask about the crops currently in the field. Ask him to list the four most important crops (Crop 1 = the most important crop, Crop 2 = the second most important crop, etc.) at present. Verify these in the field, and record them according to the codelist below. If fewer than four crops are in the field, leave the extra columns blank, placing a "__ " in each appropriate column.

- Question: "Do you currently have any crops or timber trees planted in this field? If not, is the land bare, in fallow or ruinate? If so, please name the most important crop .. the second-most important crop ... the third most important crop". (Note: if you are with the farmer in the field at this time, ask only those questions which are not obvious).

- Example: "Cocoa is my main crop, as you can see, on this field. Bananas are found in the middle and there are just a few coffee trees on that side." Code 12 in cols. 33-34 (Crop 1), 10 in cols. 35-36 (Crop 2), 13 in cols. 37-38 (Crop 3) and " _ " in cols. 39-40 (Crop 4).

Codelist:

00 no crop
01 yellow yam
02 other yam
03 Irish potato
04 sweet potato
05 coco
06 corn
09 other root crop or coroal
10 banana
11 sugar cane
12 cocoa
13 coffee
14 ginger
15 citrus
19 other tree or semi-permanent crop
20 red peas
21 cow peas
22 gungo peas
29 other pulse
30 pumpkin
31 cabbage
39 other vegetable
40 timber trees
41 pasture land
42 fallow
43 ruinate
95 other/unknown

Write down in each row, under 'Observations' the crops listed under 'Crops currently under cultivation' for that field; i.e., Crop 1, Crop2, Crop 3, Crop 4, in that order.

Cols. 41-43: Inputs Used Past 6 Months (Input 1, Input 2, Input 3)

- Instructions: Record the three principal purchased/rented inputs or free seed/planting material utilized during the six months prior to the interview on the field; see codelist below.

- Question: "Did you use any of the following inputs on this field during the past 6 months? (read codelist) Please specify the three costliest."

- Example: "Hired labour, fertilizer and planting materials cost me the most on this field over the past 6 months." Record 015 in cols. 41-43 (Input 1, Input 2, Input 3)

Codelist:

1 fertilizer/manure
2 fungicide } or rental of
3 insecticide } application equipment
4 seed
5 planting material
6 tools or traction equipment (rental)
7 machinery (rental)
8 hired labour
9 other

THE REPEATING QUESTIONNAIRES

CROP PRODUCTION AND MARKETING (Q3)

Purpose/Application

This questionnaire will contain information on all crops harvested or marketed during the previous two weeks. This information is recorded by crop and by field. You should always go through the list of fields on the Field Census with the farmer to make sure that no field has been forgotten. Since a crop may be harvested, but not marketed (or vice-versa) during any given period, you will often fill in only half a row on this form. You may also have more than one row for the same crop - - if it is grown on more than one field. You should from time to time evaluate whether the information you gather is reasonable --based for example, on your own knowledge of the size of the field or on the current price of the crop (Total Revenues ÷ No. of Units Marketed). You should also look at, whenever possible, the production/marketing units in order to estimate their capacities, making notes under 'Observations'. Accurate production data is necessary for almost any type of analysis.

Cols. 1-14: Identifier
Field Name

- Instructions: Using your copy of the Field Census, ask the farmer, field by field, whether he has harvested or marketed any of the crops listed during the past two weeks. If a certain crop has been either harvested or marketed from a certain field, write the field name from the Field Census and continue across the row. If the crop has been harvested but not marketed, leave the entire marketing section blank (with - -'s across the row). Remember that each row contains information

on one crop from one field only. After you have asked about all crops recorded on the Field Census, ask the farmer whether any additional crops were harvested or marketed.

- Question: "Have you during the past two weeks reaped or sold any yams from your yellow yam field? Have you reaped or sold any cabbage from your yellow yam field? ... Have you reaped or sold any bananas from your banana field .. etc. ... Have you reaped, or sold any other crops not already mentioned?"

- Example: "Yes, I have reaped and sold yam from my yellow yam field". Write down 'yellow yam' (if that is how it was recorded on the Field Census) under Field Name.

Col. 15: Field No.

- Instructions: Record the appropriate field number from the Field Census. If a new field is 'discovered' (i.e., was missed when doing the Field Census), it should be added to the Field Census and this information given to a supervisor.

Cols. 16-17: Crop

- Instructions: Record the crop harvested and/or marketed in words and then record its code in cols. 16-17.

- Example: Record 'yellow yam' and code 01 on one row; record 'cabbage' and code 31 on a second row, etc.

Codelist

00	no crop	20	red peas
01	yellow yam	21	cow peas
02	other yam	22	gungo peas
03	Irish potato	29	other pulse
04	sweet potato	30	pumpkin
05	coco	31	cabbage
06	corn	39	other vegetable
09	other root crop or cereal	40	timber trees
10	banana	41	pasture land
11	sugar cane	42	fallow
12	cocoa	43	ruinate
13	coffee	95	other/unknown
14	ginger		
15	citrus		
19	other tree or semi-permanent crop		

Production

- Instructions: Tell the farmer that the next two questions are concerned with production; i.e., quantities harvested. These questions are only to be asked if the farmer has already said (see above under Field Name) that he has in fact harvested some quantity of that crop from that field. If the crop was marketed only (this is possible, if the crop was harvested earlier), leave cols. 18-22 blank and proceed to the marketing section.

Cols. 18-19: Production Unit

- Instructions: Write in words and then code (codelist below) the unit in which the crop was harvested. It is always preferable to use standard weights or measures if possible (e.g., pounds, quarts, etc.); if these units are not known or they cannot be readily converted, use the unit the farmer knows and give additional information under 'Observations' to help with the subsequent conversion.

- Question: "What quantity of yams did you reap from this field during the past two weeks?"

- Example: "I reaped 30 heads which weighed perhaps 5 pounds apiece on average." Record 'pounds' and code 01 = pounds in cols. 18-19.

Codelist

01	pounds	08	bushels
02	hundredweights	09	boxes
03	tons	10	bags
04	units	11	bundles
05	dozens	12	hills
06	quarts	13	stems
07	gallons	14	bunches
		15	other
		16	inches

Cols. 20-22: Number of Units Harvested

- Instructions: Be very careful that the number of units recorded here are in terms of the production unit already specified.

- Question: (already asked)

- Example: Using the previous example, you would record 150 in cols. 20-22 since the unit chosen was pounds.

Marketing

- Instructions: Tell the farmer that the next four questions are about marketing, i.e., crop sales.

Cols. 23-24: Marketing Unit

- Instructions: Follow the instructions under 'Production Unit' above, but ask the questions in relation to marketing. Standard weights and measures are always most useful.

- Question: "What quantity of yams did you sell from this field during the past two weeks?"

- Example: "I sold about half of the yams I reaped in the last two weeks." Record 'pounds' as the marketing unit and code 01 = pounds in cols. 23-24.

Codelist

01	pounds	08	bushels
02	hundredweights	09	boxes
03	tons	10	bags
04	units	11	bundles
05	dozens	12	hills
06	quarts	13	stems
07	gallons	14	bunches
		15	other
		16	inches.

Cols. 25-27: Number of Units Marketed

- Instructions: Again, be sure that the number of units recorded here are in terms of the marketing unit already specified.

- Question: (already asked)

- Example: Keeping the same example, record 075 in cols. 25-27; i.e., 75 pounds of yams marketed.

Cols. 28-30: Total Revenues

- Instructions: Ask the farmer what was the total value of his sales of the crop and record his response in Jamaican dollars.

- Question: "How much money did you receive for the 75 pounds of yams you sold from this field?"

- Example: "I was paid $30 per pound for those yams." Record 023 in cols. 28-30, since $.30/lb x 75 lb. = $22.50 or about $23.

Cols. 31-32: Market Outlet

- Instructions: Record in writing the type of person or organization which purchased the crop, and use the codelist below to fill in cols. 31-32. Notice that if a single crop is sold to more than one outlet, separate rows must be made for each market outlet, with the number of marketing units and total revenues distributed accordingly.

- Question: "To whom did you sell your 75 pounds of yam?"

- Example: "I sold the entire quantity to AMC." Record 'AMC' under Market Outlet and code 01 = AMC in cols. 31-32.

Codelist:

01	AMC	07	local market
02	Supermarket/grocer	08	urban market
03	higgler	09	agro-business
04	trucker-wholesale	10	cooperative
05	trucker-retail	11	JAS
06	hotel	12	other

FARM LABOUR USE (Q4)

Purpose/Application

This questionnaire will contain the number of man-days of labour used on each crop-operation by field during the previous two weeks. The labour of different types of workers is specified. You should ask the farmer about each field during each interview, as in Q3 and Q5. We will use this information to determine crop labour requirements and to see if there are labour shortages at certain times of the year. Use your own knowledge of the farm to probe for more complete or accurate information whenever necessary.

Cols. 1-14: Identifier

Field Name

- Instructions: Use your own copy of the Field Census to ask the farmer, field by field, whether any work was done on any of the crops on each field during the previous two weeks. This should include work done by any type of labourer - - household member or otherwise. Note again that each row contains information on one crop-operation for one field only. If the farmer indicates that some work has been done on a particular field, write down the name of that field from the Field Census and continue across the row. After all fields have been covered in this manner, ask the farmer whether any additional work not already mentioned was done. This may involve bushing a new field, preparation of seed, soil conservation work, etc.

- Question: "Has any work at all been done on your coffee/banana field during the past two weeks?"

- Example: "Yes, there was a little work done on this field last week." Write down 'coffee/banana' under Field Name.

Col. 15: Field Number

- Instructions: Record the appropriate field no. from the Field Census, e.g., for the coffee/banana field above. If some work was done which was not field - specific (e.g., preparation of seed/planting material, crop transport, etc.) code 0 in col. 15.

Cols. 16-17: Crop

- Instructions: Record the crop on which work was done in words, and then according to the codelist, in cols. 16-17. If work was done simultaneously on all crops in the field, record the crop listed as Crop 1 in that field from the Field Census. If some work was done which was not crop-specific (e.g., soil conservation treatment maintenance), leave 'Crop' blank and code 00 in cols. 16-17. Be very careful not to double-count labour used simultaneously for two crops on one field.

- Question: "What crops did you work on in your coffee/banana field last week?"

- Example: "We worked a little on all the crops at the same time." Record the name and code no. of the most important crop (Crop 1) in the field from the Field Census.

Codelist:

00 no crop
01 yellow yam
02 other yam
03 Irish potato
04 sweet potato
05 coco
06 corn
09 other root crop or cereal
10 banana
11 sugar cane
12 cocoa
13 coffee
14 ginger
15 citrus
19 other tree or semi-permanent crop
20 red peas
21 cow peas
22 gungo peas
29 other pulse
30 pumpkin
31 cabbage
39 other vegetable
40 timber trees
41 pasture land
42 fallow
43 ruinate
95 other/unknown

Cols. 18-19: Operation

- Instructions: Record in words and then code (cols. 18-19) the specific operation which was performed. A separate row must be made for each particular operation - - even those performed on the same crop and field. Notice that a separate operation code exists for soil conservation treatment maintenance.

- Question: "What sorts of work were done on your coffee/banana field during the past two weeks?"

- Example: "We weeded the field by hand and then applied fertilizer over the whole surface." Record in one row 'weeding by hand' and code 10 in cols. 18-19; record in the second row 'fertilizer application' and code 16 in cols. 18-19.

Codelist

01 bushing/clearing
02 forking/tillage by hand
03 ploughing-animal traction
04 ploughing-machinery
05 sowing
06 transplanting
07 preparation of seed/planting material
08 thinning
09 pruning
10 weeding/cultivating by hoe/hand
11 weeding/cultivating-animal traction
12 weeding/cultivating-machinery
13 mounding
14 digging holes/ditches
15 staking
16 application of fertilizer/other chemical/manure
17 watering/irrigation
18 reaping (harvesting)
19 transport of crop to home
20 threshing/winnowing
21 burning field/crop
22 soil conservation treatment maintenance
23 other

Cols. 20-27: Man-Days Labour (Farmer, Household, Hired, Exchange)

- Instructions: For each particular crop-operation performed on each field during the past two weeks, record the farmer's estimate of the number of man-days of labour applied by: the farmer himself (cols. 20-21), the rest of his household (cols. 22-23), hired workers (cols. 24-25) and exchange workers (cols. 26-27). One man-day is defined as 8 hours of labour. Hired labour includes paid workers outside the immediate household (family). Exchange labour includes unpaid workers outside the immediate household who may help with farm work. Be sure that if a farmer gives you work times in days that he is speaking of approximately 8-hour days. If he gives you work times in hours, you must convert these to 8-hour days and round to the nearest whole day; e.g., 20 hours = 2½ days or about 3 man-days. If the farmer is only able to give labour amounts in some other unit, and you cannot convert these readily to hours or man-days, write all information available under 'Observations' and leave cols. 20-27 blank. It is always preferable to convert to man-days if possible, however,

- Question: (following the previous example) "how much time did you yourself spend weeding the coffee/banana field? How much time did the rest of your household spend weeding it? How much time did hired workers spend weeding it? How much time did unpaid (exchange) workers outside the family spend weeding it? How much time did you yourself spend fertilizing the coffee/banana field? How much time did the rest of your household spend fertilizing it? ... Hired labour?.. Exchange labour?

- Example: "I weeded for four full days. My wife and son each weeded 2½ days. Three hired workers each spent 3 full days weeding. No unpaid (exchange) workers outside the household helped out. I did all the fertilizing myself. It took me about 5 full days." Record as follows:

Operation			Man-days-Labour							
	Code		Farmer		Household		Hired		Exchange	
	18	19	20	21	22	23	24	25	26	27
Weeding by Hand	1	0	0	4	0	5	0	9	0	0
Fertilizer Application	1	6	0	5	0	0	0	0	0	0

AGRICULTURAL INPUT USE (Q5)

Purpose/Application

You will use this questionnaire to list all purchased or rented inputs used on crops during the previous two weeks. Hired (paid) labour is considered an input here. Input use is listed by crop as well as by field, and you will need to go through your list of fields with the farmer at each interview. Only record the quantity and cost of inputs actually used. Check occasionally to see if the cost information the farmer gives you is in line with your knowledge of input prices (Total Cost ÷ No. of Units). This information will be related to crop production figures (Q3) to allow us to estimate the cost of production.

Cols. 1-14: Identifier

Field Name

- Instructions: Use your copy of the Field Census to ask the farmer, field by field, whether any of the purchased/rented inputs in the codelist below were utilized during the past two weeks on any of his fields (crops). Remember that you are asking about input use rather than purchase, and the quantities and costs should be for only what was used during the past two weeks on any given field. First read the codelist to the farmer (repeating it occasionally so he does not forget) and then ask, field by field, whether any of these inputs were used. When a positive response is given, record the field name from the Field Census. Notice again that each row contains information on only one input used on one or more crops on one field. Note also that only equipment/machinery rental is included as in input on this form and that hired labour (if paid) is included.

- Question : (after reading codelist to farmer) "Did you use any of those items on your Irish potato field during the past two weeks?"

- Example: "Yes, I bought some potato seed which I planted in the last two weeks." Record 'Irish potato' under field name.

Col. 15: Field No.

- Instructions: Record the appropriate number from the Field Census; e.g., the number of the Irish potato field above.

Cols. 16-17: Crop

- Instructions: Record the crop on which the input was used and code it in cols. 16-17. If the input was used simultaneously on more than one crop on the field, record the crop listed as Crop 1 in the Field Census. If no crop is in the field, code 00. Guard against double-counting.

- Question: (Following the previous example, no question is necessary since the farmer has already stated that potato seed was the purchased input used). Record 'Irish potato' under 'Crop' and code 03 in cols. 16-17.

Codelist

00 no crop
01 yellow yam
02 other yam
03 Irish potato
04 sweet potato
05 coco
06 corn
09 other root crop or cereal
10 banana
11 sugar cane
12 cocoa
13 coffee
14 ginger
15 citrus
19 other tree or semi-permanent crop
20 red peas
21 cow peas
22 gungo peas
29 other pulse
30 pumpkin
31 cabbage
39 other vegetable
40 timber trees
41 pasture land
42 fallow
43 ruinate
95 other/unknown

Col. 18: Input

- Instructions: Write down the input and code it according to the codelist.
- Question: (following the same example, again no question is necessary). Record 'seed' and code 4 in col. 18.

Codelist (See Field Census above)

Col. 19: Unit

- Instructions: Ask the farmer how much of the input was used. He will automatically name the unit of measure. It is preferable that the unit be standardized if possible. It would always be useful to provide information on the type or capacity of the sack, for example, if the weight of the input used was not known. Write down the unit and its code in col. 19 - - - following the codelist below.
- Question: "How much potato seed did you use during the past two weeks?"
- Example: "I used about half a sack which I had bought earlier. The whole sack weighed 100 pounds." Record 'pounds' as the unit and code 2 in col. 19.

Codelist

1	ounces	6	units
2	pounds	7	days
3	pints	8	acres
4	packets	9	other
5	sacks		

Cols. 20-22: Number of Units

- Instructions: Record the number of units, being sure that they correspond with the unit code already selected.

- Question: (The question has already been asked, as in the above example)

- Example: Using the same example, cols. 20-22 = 050, or 50 pounds.

Cols. 23-35: Total Cost

- Instructions: Ask the farmer how much he actually paid for the purchase or rental of the amount of input specified. This is only for that amount used as recorded. Enter his response in Jamaican dollars.

- Question: "How much did you pay for the half sack of potato seed?"

- Example: "One whole sack cost me $75."

  Record 038 in cols. 23-25, since $75/2= $37.50, or about $38.

Col. 26: Supplier

- Instructions: Ask the farmer from what type of person or organization he purchased/rented the input. If the supplier was a private individual, determine whether the person was from the local community or not. Code the response in col. 26 according to the codelist below.

- Question: "Who sold you the potato seed you used in the last two weeks on this field?"

- Example: "I bought that seed from the Christiana Potato Growers Association." Write 'CPGA' and code 2 = cooperative in col. 26.

Codelist

1 commercial store/private nursery
2 cooperative
3 Banana Boxing Board
4 Coffee Board
5 JAS
6 IRDP
7 person within local community
8 person outside local community
9 other

INCOME AND FARM EXPENDITURES (Q6)

Purpose/Application

This questionnaire will be used to record each source of household income received and each farm-related expenditure made during the previous two weeks. As in Q3, you are recording two independent sets of information and so should expect to have some incomplete rows. Ask first about all income sources before turning to expenditures. Notice that we are interested in non-farm as well as farm income. Since this is a particularly sensitive topic for many people, your ability to reassure and to gain the confidence of farmers is very important here. Under farm expenditures we include livestock and property expenses along with crop expenses. With these two sets of information we hope to gain a more complete picture of farmers' cash flows.

Cols. 1-14: Identifier

Income

- Instructions: Tell the farmer that the first four questions relate to income received from any source during the past two weeks. It may help to reassure him at this point that all of this information is confidential.

Cols. 15-16: Source

- Instructions: Ask the farmer whether he or any member of his household has received cash income from any source during the past two weeks. If so, ask him the source of the income and code his response according to the codelist below. If you have already learned that the farmer has marketed crops (Q3), you may ask him to verify your summation of total crop revenues. After he has volunteered information, read the codelist to him to remind him of any other possible sources. Notice that livestock is differentiated by type of animal sold. If the farmer has no income to report,

leave cols. 15-24 blank and proceed to 'Farm Expenditures', (col. 25).

- Question: "Have you or has any member of your household received any cash income at all during the past two weeks? If so, from what sources?"

- Example: "Yes, my son and I both worked on building construction in town."
  Record 'building construction' and code 13 = nonfarm labour in cols. 15-16.

Codelist:

01	crop sales	10	animal products
02	dairy cattle	11	land/equipment rental
03	beef cattle	12	farm labour
04	pigs	13	nonfarm labour
05	chickens	14	agricultural credit
06	goats	15	remittances
07	sheep	16	social security/pension
08	donkeys/mules	17	other
09	horses		

Cols. 17-20: Amount of Income (J$)

- Instructions: Ask the farmer how much cash income he made from each source he mentions. Record the amount in Jamaican dollars.

- Question: "May I ask how much money you and your son received in total for your construction work during the past two weeks?"

- Example: "We each worked four days and were paid $15 a day. "Record 0120 in cols. 17-20 since $15 x 4 = $60, x 2 = $120

Cols. 21-22: Agricultural Credit Purpose

- Instructions: Ask this question only if the farmer stated that he received cash credit for agricultural purposes as an income source. If so, ask him the principal purpose for which this money was borrowed. Write his response and use the codelist given below. If no agricultural credit was reported, leave cols. 21-22 blank (' _ _ ').

- Question: (not related to previous example)
  "For what main purpose do you intend to use this money you borrowed?"

- Example: "I need to build some new fences around my land." Code 09 in cols. 21-22 = purchase/improve farm property.

Codelist

01 purchase fertilizer/manure
02 purchase fungicide
03 purchase insecticide
(02, 03: or purchase/rent equipment to apply)
04 purchase seed
05 purchase planting material
06 purchase/rent hand tools/traction equipment
07 purchase/rent farm machinery
08 purchase/rent land
09 purchase/improve farm property (buildings, fences etc.)
10 pay hired labour -- crop/livestock
11 pay hired labour -- soil conservation
12 pay crop transport costs
13 purchase livestock
14 purchase livestock feed/equipment
15 pay previous debt
16 other

Cols. 23-24: Man-Days Nonfarm Labour

- Instructions: Ask this question only if the farmer has stated that his household earned income from some sort of nonfarm labour during the past two weeks. If so, ask him the total length of time worked for this income. Record his response in 8-hour man-days. If no nonfarm income was reported, leave cols. 23-24 blank (' _ _ ').

- Question: (from original example)
  "How much time each day did you and your son have to work on construction for the payment you received?"
  Note: The question was asked in this manner because the response must be coded in 8-hour man-days and we already know how many days were worked).

- Example: "I worked 10-hour days and my son worked 8-hour days". Record 09 in cols. 23-24, since 10 x 4 = 40 hours, ÷ 8 hours/man-day = 5 man-days (farmer) + 4 man-days (son) = 9 man-days total.

Farm Expenditures

- Instructions: Explain to the farmer that the last two questions concern any expenditures that he or members of his household have made on the farming operation during

the past two weeks. Notice that you are asking about total expenditures (purchases or rentals) rather than the cost of inputs used during the previous two weeks (see 35).

Cols. 25-26: Type

- Instructions: Ask the farmer whether he or any member of his household has spent any money for running the farm over the past two weeks. If so, ask him what the expenditures were for, and use the codelist under agricultural credit purpose above to code his response. If not, leave cols. 25-30 blank. After recording the expenditures volunteered by the farmer, read the codelist to him to remind him of any others.

- Question: "Have you or has any member of your household spent any money for running the farm over the past two weeks? If so, what were these expenditures?"

- Example: "I bought a 100 lb. sack of fertilizer for my vegetables and we also hired a worker for the yams". Record on one row: 'fertilizer' and code 01 in cols. 25-26. Record on the second row: 'hired labour - crop' and code 10 in cols. 25-26.

Codelist

01 purchase fertilizer/manure
02 purchase fungicide
03 purchase insecticide
(02 and 03: or purchase/rent equipment to apply)
04 purchase seed
05 purchase planting material
06 purchase/rent hand tools/ traction equipment
07 purchase/rent farm machinery
08 purchase/rent land
09 purchase/improve farm property (buildings, fences etc.)
10 pay hired labour --crop/ livestock
11 pay hired labour -- soil conservation
12 pay crop transport costs
13 purchase livestock
14 purchase livestock food/ equipment
15 pay previous debt
16 other

Cols. 27-30: Amount of Expenditure (J3)

- Instructions: Ask the farmer how much he spent on each purchase and record the amounts in Jamaican dollars.

- Question: "How much did the fertilizer cost? How much did you pay the hired worker?"

- Example: "The fertilizer cost J125. We gave the worker J10 a day for 5 days." Record as follows:

Farm Expenditures						
Type			Amount of Expenditure (J3)			
	Code					
	25	26	27	28	29	30
Fertilizer	0	1	0	1	2	5
Hired labour-crop	1	0	0	0	5	0

HOUSING AND OTHER RURAL AMENITIES (Q7)

Purpose/Application

This questionnaire is designed to obtain information relating to the living conditions of the farmers and their families. It covers their housing situation, toilet facilities, water supply and source of light and power. It is to be administered only once.

Cols. 1-14: Identifier

- Instructions:

Col. 15: Using the codelist provided indicate the type of dwelling the farmer has by writing in the space provided, the material of which the outer walls are made, and enter the appropriate code in this column. If the house is in view and you are sure of the material of which it is made, you need not ask the farmer. If not ask the following question: What type of materials make up the outer walls of your dwelling:

Col. 16: Ask the following question: What type of roof is on your house? Using the codelist provided enter the code which corresponds to the farmer's answer in column. 16.

Cols. 17-18: Ask the following question: What is the age of your dwelling? Using the procedure outlined under General Concepts for using Q1-Q12 - Coding, enter the farmer's response in cols. 16-17.

Col. 19: Ask the farmer: Do you own, rent, or lease this house, or is it a family house you occupy free of cost? Using the codelist, write in the space provided, the type of tenure and enter the appropriate code in col. 19.

Cols. 20-21: Ask the question: How many rooms are there in this house? Bathrooms, passageways and kitchens should not be counted. Following the same principle used for recording in cols. 17-18, enter the farmer's response in cols. 20-21.

Col. 22: From you own observation indicate the general condition of the farmer's dwelling. Using the codelist provided enter the appropriate code in col. 22.

Cols. 23-24: Ask the following question: What type of toilet facilities do you have? Using the codelist A, under toilet facilities, place the code which corresponds to the farmer's answer in col. 23. Then ask the question: Are these facilities shared with another household? Using codelist B, place the code which corresponds to the farmer's response in col. 24.

Col. 25: Ask the following question: What is your main source of water supply? Place the appropriate code in col. 25. Note that only one source should be coded.

Col. 26: Ask the following question: Do you have electricity in your home? <u>If No</u>, place the code which corresponds to non-electrical source, in col. 26.

<u>If Yes</u>, ask the question: Do you have your own generator or do you get electricity from the J.P.S.? Place the appropriate code in col. 26.

<u>LIVESTOCK INVENTORY</u> (Q8)

The purpose of this questionnaire is to ascertain the livestock holdings of the farmer. It should be made clear to the farmer that these questions are asked to provide information on the extent to which livestock farming takes place in the project area.

Cols. 1-14: Identifier

- Instructions:

Col. 15: Ask the following question: What type of livestock do you currently own? Read the codalist 'Livestock Type' and record the farmer's response. Place the corresponding codes in col. 15.

Cols. 16-17: For each livestock type the farmer reports record the number owned in those two columns. Use the same procedure for recording numbers in two columns, as instructed in the other questionnaires.

Cols. 18-19: For each livestock type the farmer reports, ASK the following question:
When did you acquire (that is, purchased, received as gift, resulted from reproduction of existing stock) those animals? Record the last two digits of the year in which they were acquired in cols. 18-19, using the procedure outlined, for cols. 26-27 under Farm Credit (Q9).

Cols. 20-23: Record the unit market value at the time of acquisition (cost price) for each livestock type reported. To obtain this information you should ask the following question: How much did each of these cows (goats, pigs, chickens etc.) cost you at the time of purchase?

Use the same procedure for recording these values as previously instructed.

Cols.24-27: Follow the same procedure as for cols. 20-23, using this question: What is the present value of each of your cows (goats, pigs etc.)?

FARM CREDIT (Q9)

This questionnaire is very important, as making credit more accessible to farmers is an integral part of the 2nd IRDP.

It is aimed at securing information on the credit situation of farmers - number of loans obtained since inception of the project; difficulties involved in obtaining loans; loan use; and farmer's attitudes toward credit. It should be administered only once.

Cols. 1-14: Identifier

- Instructions:

Cols. 15-16: Ask the following question: Do you have any current loans from a credit institution, government programme or any informal source?
THEN Read the list of loan sources to the farmer. Write in the space provided, the source of the loans, and enter in columns 15-16 the corresponding
If the farmer has no current loans, ask the following question: Have you had any loan(s) from any of these sources within the last 5 years? If No skip to col. 34. If Yes, treat these loans in the same manner as current loans that is, collect all information you are required to obtain for current loans.

Cols. 17-18: For each loan the farmer has, record the information on the length of time which elapsed between the application for the loan and the date of approval. The values coded should be in weeks.

Cols. 19-20: For each loan the farmer has, record the information on the length of time which elapsed between the approval of the loan and the date on which he received the first disbursement.

Cols. 21-25: Using those columns, record the total value of each loan the farmer obtained. Pay careful attention to the procedure used for recording values in more than one column.

Cols. 26-29: In the first two columns (26-27) enter the code corresponding to the month in which the farmer received each loan.
In the other two columns (28-29) enter the last two digits of the year in which the farmer received each loan. For example, if he obtained the loan in 1979, enter 7 in column 28, and 9 in col. 29.

Cols. 30-31: Record the purpose for which each loan was used and enter the corresponding codes from the Agricultural Credit Use codelist in these two columns.

Cols. 32-33: Use those two columns to record the total number of loans the farmer currently has obtained within the last five years from each source.

Col. 34: Ask the following question: What do you think of the formal loan sources? (Give examples of formal loans source, for instance the P.C. Bank) THEN, read the codelist 'Opinions re Formal Loan Sources'. Record the farmers response in the space provided and enter the corresponding code in col. 34. This question is asked whether or not a farmer has received a loan in the past five years.

ATTITUDES TOWARDS SOIL CONSERVATION (Q10)

Purpose/Application

This questionnaire is designed to obtain information on the attitude of farmers towards soil conservation. It will also be used to assess the extent to which soil conservation treatments will be continued when the project is terminated.
It is administered once, and only to farmers who have used soil conservation treatments on their land.

Cols. 1-14: Identifier

- Instructions:

Col. 15: Ask the following question: Which of the soil conservation treatments do you prefer to use on your land? Redd the codelist 'Soil Conservation Treatments' to the farmer. Then write in the space provided his response, in the same order given. For example, if he mentions hillside ditches then contour barriers, you first put down hillside ditches then contour barriers below it.
Enter the corresponding codes in col. 15.

Col. 16: Ask the following question: Why do you prefer to use those treatments you just named? Read to the farmer the codelist 'Reasons for Preference.' All reasons given should then be written in the appropriate space and then codes entered in col. 16.

Col. 17: Ask the following question: Do you think soil conservation measures are useful? If the farmer responds negatively write in the space provided 'not beneficial' and enter the corresponding code in col. 17.
If the farmer responds positively
Ask the question: In what ways do you think they are useful? Then, read the first three items in the codelist 'Opinions re Usefullness of Soil Conservation Treatments' to the farmer. Record his answers in the appropriate space. Enter corresponding codes in col. 17.

Col. 18: Ask the following question: What do you consider to be the main problems involved in adopting soil conservation measures? Read codelist 'Difficulties in Adopting Soil Conservation Measures' to the farmer. Then, record in the space provided the items to which the farmer responds affirmatively. Enter the corresponding codes in col. 18.

Col. 19: Ask the following question: Will you continue soil conservation treatment on your land after the second IRDP has ended? Then, record the appropriate code from the codelist 'Continuation of Treatment at the end of the Project.'

PARTICIPATION IN FARM/COMMUNITY ORGANIZATIONS (Q11)

This questionnaire will provide information on the farmer's involvement in Farmers Associations and Community Organizations. When the data is being analysed we will assess whether the level of involvement in these organizations enhances his farming operations.

Cols. 1-14: Identifier

Col. 15: Ask the following question: Are you a member of any Farm/ Community Organizations? If No, skip to col. 19 'Reason for non-participation in Farm/Community Organizations'. If Yes, Read codelist 'Farm Community Organizations' and record in the space provided the names of the organizations to which the farmer belongs. Enter the corresponding codes in col. 15.

Col. 16: Record information on attendance at meetings for each organization to which the respondent belongs. Ask the following question: How often do you attend meetings? Then, read to the farmer the codelist 'Attendance at Meetings.' Enter in column 16 the code corresponding to the farmer's response.
Note that only one answer can be given.

Col. 17: For each organization in which the farmer has membership, ask the following six questions:

1) Do you hold any official post?
2) Are you a member of any committee?
3) Do you participate in discussions?
4) Do you vote on issues?
5) Do you participate in special projects and activities organized by the Association?
6) Do you pay dues?

In the space provided, record items to which an affirmative answer is given.

Col. 18 Record under heading 'Membership Benefits', information on membership benefits derived from each organization to which the farmer belongs. Phrase the question in the manner outlined below.

What benefits do you derive from being a member of?
(name of organization to be inserted)

.....

For example, if the farmer reports being a member of the JAS, and also the Potato Grower's Co-op, should say What membership benefits do you derive from being a member of the JAS?
Then ask again, What membership benefits do you derive from being a member of the Potato Growers Co-op?.
Note, there are no pre-coded responses for this question and col. 18 should be left blank for office use.

Col. 19: For farmers who are not members of any Farm/Community Organizations, ask the following: What are your reasons for not joining any farm/community organizations?
Read the relevant codelist to the farmer and record items to which an affirmative response is given in space provided. Enter the appropriate codes in col. 19.
Note more than one reason can be given; items in the code are not mutually exclusive.

EXTENSION SERVICES (Q12)

The purpose of this questionnaire is to evaluate the effectiveness of the extension services in the project area.

Cols. 1-14: Identifier

- Instructions

Col. 15: Ask the following question: Do you know your extension officer by name or by sight? Using code - list 'Acquaintance with Extension Officer', enter the code corresponding to farmer's answer in col. 15.

Col. 16: Ask the following question: Where is your extension officer located? Using codelist 'Knowledge of Location of Extension Officer', enter the code corresponding to the farmer's answer in this column.

Col. 17: Ask the question: How often have you visited the extension officer at his office since the start of the Project? Read codelist 'Visits to/from Extension Officer'. Enter in column 17 the code corresponding to the item to which the farmer gives an affirmative response.
Note only one answer can be given.
If response is negative, that is, 'Never visited extension officer,' skip col. 18 and proceed to 19.

Col. 18: Ask the following question: What were your reasons for visiting the extension officer? Read the codelist 'Reasons for Visiting Extension Officer'. Record in the space provided items to which an affirmative answer is given. Enter corresponding codes in col. 18.

Col. 19: Ask the following question: How often are you visited by your extension officer? Then, follow same procedure as for column 17. If the respondent never visited the extension office and was never visited by the extension officer, skip cols. 20-22 and proceed to col. 23. Then skip col. 24 and proceed to 25.

Col. 20: Ask the following question: Where does your extension officer normally visit you? Read the codelist 'Place of visits from extension officer' and enter in col. 20 the code corresponding to farmer's response.

Col. 21: Ask the following question: What type of assistance have you received from your extension officer since the start of the Project? Read codelist 'Type of Assistance received from Extension Officer'. Record in the space provided, items to which an affirmative response is given. Enter corresponding codes in col.21.

Col.22: Ask the following question: How often do you have discussions with your extension officer? Read the codelist 'Frequency/Desired frequency of Discussions with Extension Officer'. Enter code for item corresponding to farmer's response in col. 22.
Note, only one answer can be given. The answer should correspond to either col 19 or col. 17 (or both)—depending on which type of visit was more frequent.

Col. 23: Ask the following question:
How often would you like to have discussions with your Extension Officer. Then follow the same procedure as for col. 22.

Col. 24: Ask the following question:
When you seek help or information from your extension officer, how often do you feel that you get the results you need? Read codelist 'Level of Satisfaction with Extension Services'. Enter in col. 24 the code corresponding to the respondent's answer.
Note, only one answer can be given.

Col. 25: Ask the following question: In what areas do you think you need most help or information from the extension services? Record the farmer's answer in the space provided. This is an open-ended question, i.e. possible answers are not listed. Record the answer in the farmer's own words wherever possible. Col. 25 should be left blank for office use.

Col. 26: Ask the following questions:
Are you able to understand the written materials given to you by the extension officers?

Do you find them useful?

Using the codelist provided enter the farmer's response in col. 26.

Col. 27: Ask the following question:
How useful do you find the practical demonstrations given by the extension officers? Using the codelist provided, enter the farmer's response in col. 27.

ANNEX B - THE QUESTIONNAIRE

PART III

THE QUESTIONNAIRES

Twelve (12) questionnaires have been designed for this survey as shown below:-

Q1 - Household Census
Q2 - Field Census
Q3 - Crop Production and Marketing
Q4 - Farm Labour Use
Q5 - Agricultural Input Use
Q6 - Income and Farm Expenditures
Q7 - Housing and Other Rural Amenities
Q8 - Livestock Inventory
Q9 - Farm Credit
Q10 - Attitudes Towards Soil Conservation
Q11 - Participation in Farm/Community Organizations
Q12 - Extension Services.

Eight (8) of these (Q1, Q2, and Q7-Q12) will be administered one time only. The remaining four (4) (Q3-Q6) will be administered bi-weekly over a one-year period.

The twelve questionnaires have been designed in a format which allows for numerical coding of all responses in order to speed up data processing.

GENERAL CONCEPTS FOR USING Q1-Q12

A. Coding

1. Codelists are provided whenever necessary. If a farmer's response does not match any of the codes exactly, either find the nearest match (if the meaning is the same), choose 'other' (if the meaning is different from any of the choices) or leave the question unanswered and provide explanatory information under 'Observations'. If the latter course is chosen, be sure to specify to which row and column the explanation refers. For example, if hired labour is not measured in man-days, you may write '60 yam holes dug by hired labour: row 2, columns 24-25' under 'Observations' in Q4. Often both written and coded responses are required for a given question.

2. ~~A vertical 'column' is defined by a pre-typed number on~~ the questionnaire. A horizontal 'row' cuts across all the columns. A 'cell' is formed by the intersection of a column and a row. Only one digit is to be placed in any cell.

3. Some questions take up more than one column. Always fill in columns from the <u>right side first</u> and then fill in zero(s) to the left if necessary; e.g., nine years old is coded as

Age	
18	19
0	9

rather than

Age	
18	19
9	

4. Columns are left blank only if the question does not apply or if the response is unknown; e.g., if no crop was marketed from a field that was reaped, leave the columns under 'Marketing' in Q3 blank. Place a dash ('_') in those columns which are left blank.

5. Generally, you should record one row at a time. Always be careful that each response across the row refers consistently to the same 'field', 'crop', 'operation', etc.

6. Care must be taken to note the headings and sub-headings which appear above certain columns (e.g., 'Marketing' over 'Marketing Unit' over 'Code', etc.). This will help in organizing your questions.

B. <u>The Identifier</u>

The first seven questions (14 columns) across the top of each of the twelve questionnaires are collectively called the 'identifier'. The identifier is the same (other than the first two pre-typed columns which identify the questionnaire itself) on each of the twelve questionnaires. This information pertains to everything that follows on the completed form; all rows below it must refer to the same farmer and interview date. The questions are as follows:

Cols. 1-2	<u>Questionnaire</u>:	for computing purposes only
Col. 3	<u>Watershed</u>:	1 - Pindars 2 - Two Meetings
Cols. 4-5	<u>Sub-Watershed</u>:	Follows standard sub-watershed numbers: 01-12 Pindars, 01-08 Two Meetings.

Cols. 6-8	Household Number:	These 3 digit ID numbers will be assigned with farmer lists.
Cols. 9-10	Day:	Record the day of the month on which the interview takes place.
Cols. 11-12	Month:	month of the interview.
Cols. 13-14	Year:	year of the interview (last two digits).

C. Relationships between the Questionnaires. Cross-checks

1. The Household Census (Q1) and especially the Field Census (Q2) provide the groundwork for the four repeating questionnaires. All 'fields' noted in Q3, Q4, or Q5 must have been previously identified in the Field Census, and the same field name and field number always used.

2. If additional fields are discovered or brought into production during the survey period, these are to be:

(a) added to Q2 as the last field
(b) reported immediately to a supervisor

3. Two copies will be made after completion and editing of Q1 and Q2. One copy will reside with the interviewer throughout the survey period for use with the repeating questionnaires; the second copy will reside with the technical assistant. It is crucial that these two sets (plus the copy sent to be processed at the Data Bank) remain identical. If ammendments or additions to these questionnaires become necessary, the T.A. is to be notified immediately.

4. Inevitably, a few pieces of information are gathered more than once on these questionnaires - - although the questions are never identical. These provide opportunities to cross-check the accuracy and completeness of the farmer's answers. As examples:

a) Hired labour should appear in man-days in Q4, as an input in Q5 and as an expenditure in Q6. Check to make sure that the appropriate figures match.

b) Equipment or machinery rental should also appear as both an input (Q5) and an expenditure (Q6). Notice, however, that other inputs which may be stored and used a little at a time (e.g., fertilizer, other chemicals, seed, etc.) need not be purchased and used during the same two-week period.

c) Any crop marketing appearing in Q3 should also appear as income in Q6.

PART II

INTERVIEWING TECHNIQUES

You may have been hired as interviewers to collect data which will provide information on the agricultural, social and economic condition of the resident farmers within a select region. Consequently, you must understand that you have an extremely important role in the data collection process. We need to bear in mind that after the data has been collected, statistically analysed and published that the information contained in that publication is only as good as the information which you collect.

In order to have good information collected, the method of collecting the information must be good and this will depend on how well you do your job. It has been said that the persons who obtain data are the most important people in a survey.

What is a Survey

A survey usually involves interviewing people using questionnaires that are designed to obtain the needed information. In a 'sample survey' only a few persons or households are interviewed as representative of the total population, whereas in a 'census' all persons or households in a selected area are interviewed.

The Ethics of Survey Interviewing

As an interviewer, it is your responsibility to keep completely confidential anything you learn or observe during the interview. Never disclose the facts about anyone you interview to someone else. Respondents should be told that the information they provide will be analysed and published. The names of the farmers will not appear in the report.

Using the Questionnaires

To reach the interviewer's goal of collecting accurate information it is necessary to understand the questionnaires and the principles of their use. The principles include asking the questions properly, following instructions for the questionnaires and identifying the different types of questions.

As information is gathered on labour use, crop production, etc., interviewers need to judge regularly whether or not these figures are reasonable, given their knowledge of the particular field and crop.

HOUSEHOLD CENSUS (Q1)

Purpose/Application

The Household Census provides a listing of all persons in the farmer's household (see Glossary for definition) and some of their characteristics. It is to be administered only once, at the beginning of the survey period. The information from this questionnaire will be used to help categorize households into groups and to estimate their availability of labour for agriculture. No personal names will appear in any report, but are recorded only to help the interviewer do his job. You should become familiar with the persons in your selected households in order to help assure the accuracy of the information you gather. If, for example, the farmer reports no activities on the part of an adult of the household for several weeks, you should inquire to be sure that you are recording complete information.

Cols. 1-14: Identifier

Individual Name

- Instructions: List the full names of all persons within the household, beginning with the farmer and then the farmer's spouse.
- Question: "What is your full name"
  "What is your wife's (husband's) name?" etc.

Cols. 15-16: Individual I.D.

- Instructions: The farmer is assigned No. 01, his/her spouse No. 02, etc.

Col. 17: Farm Labourer

- Instructions: We want to know to what extent each member of the household works on the family farm. Follow the codelist below:
- Question: "Over the course of the year, on average, how many days out of seven (one week) does (John Doe) work on your farm?".
- Example: "John spends about 3 days a week on our farm work".
  Record 3 in col. 17.

Cols. 18-19: Age

- Instructions: Record the current age of each person; those less than six months old = 00
- Question: "How old is (John Doe) now?".

Col. 20: Sex

- Instructions: Follow codelist below

Codelist

1 male
2 female

Cols. 21-22: Primary Occupation

- Instructions: Record each person's most important occupation/activity (according to their own judgement) and select the most appropriate code from those listed below.
- Question: "What is (John Doe's) main job or activity?".
- Example: "John digs ditches for the town".
  Code 01 = unskilled manual

Codelist

01	unskilled manual	07	professional/technical
02	skilled manual	08	administrative
03	farming - crop	09	student
04	farming - livestock	10	other
05	higgler	11	none
06	clerical		

Cols. 23-24: Secondary Occupation

- Instructions: Repeat procedure (using same codelist) under Primary Occupation, but for such person's occupation/activity of secondary importance.
- Question: "Does (John Doe) have a second job or activity which he pursues at least one fourth of the time? If so, what is it?".
- Example: "John helps out with the crops when he has the time." Code 03 = farming - crop.

Col. 25: Education

- Instructions: Record the highest level of education attained so far by each person, according to the codelist below.

- Question: "How much schooling has (John Doe) had?"

- Example: "John spent two years at Manchester High School, but did not graduate."
  Code 5 = secondary incomplete.

Codelist

1	no formal education	6	secondary complete
2	JAMAL	7	vocational
3	primary incomplete	8	post-secondary
4	primary complete	9	other
5	secondary incomplete		

Overseas Work

- Instructions: The following five questions concern any overseas work that each person may have done. The first two questions (Cols. 26 and 27) under Total refer to the sum total of all overseas work experiences. The last 3 questions (Cols. 28 to 30) refer only to the single overseas work experience of longest duration.

Total

Col. 26: No. of Times

- Instructions: Record the total number of times each person has worked overseas.

- Question: "How many times has (John Doe) worked outside Jamaica?".

Col. 27 Duration

- Instructions: Record the sum total of time spent overseas in all jobs, following the codelist below.

- Question: "What is the total amount of time that (John Doe) has spent working outside Jamaica?"

- Example: "John Doe has spent about 3½ years working outside Jamaica". Code 4 = 2-5 years.

Codelist

1 0-6 months
2 6-12 months
3 1-2 years
4 2-5 years
5 5-10 years
6 over 10 years

Longest

Col. 28: Type

- Instructions: Record the type of work performed on the longest overseas job, following the codelist below.

- Question: "On (John Doe's) longest overseas job, what did he do?".

- Example: "John worked seven months one time picking oranges." Record 2 = farm labour - fruit.

Codelist

1 farm labour - general
2 farm labour - fruit
3 farm labour - vegetable
4 farm labour - sugarcane
5 office/clerical
6 unskilled nonfarm manual
7 skilled nonfarm manual
8 other

Col. 29: Location

- Instructions: Record the location of the longest overseas job, following the codelist below.

- Question: "Where did (John Doe) pick oranges during those seven months?"

- Example: "John worked on a farm in Florida at that time."
Record 1 = US/Canada.

Codelist

1 US/Canada
2 other Caribbean (incl. Puerto Rico)
3 Central/South America (incl. Mexico)
4 Europe
5 other.

Col. 30: Duration

- Instructions: Record the length of time spent on the overseas job of longest duration, following the codelist under Duration above.
- Question: (Following the above example, the question has already been answered)
  Record 2 in col. 30 = 6-12 months.

FIELD CENSUS (Q2)

Purpose/Application

The Field Census provides a listing of the more important crops on all land cultivated by the farmer's household. This includes land not owned by the farmer and in any location. Land not currently under cultivation but belonging to the farmer should also be listed as 'fields'. Fields should be defined according to their location and crops contained. What is most important is that the farmer visit each field with the interviewer during the initial interview in order to demarcate and name each one. This method avoids later confusion.

The information gathered in the Field Census is critical in two respects:

1) It will form the basis for our classification of farmers
2) It will be used by interviewers and supervisors alike throughout the survey period, and will also be important for the final analysis of the data.

Although it is only administered once, the Field Census must be continually updated as changes occur during the survey period. Supervisors are to be notified immediately of any changes made by the interviewer.

Cols. 1-14: Identifier

Field Name

- Instructions: Each piece of land owned by the farmer is to be assigned a 'Field Name' mutually agreed upon and understood by farmer and interviewer. This also includes land not currently under cultivation. Interviewers must visit these fields with the farmer in order to assure that they are speaking of the same exact areas, to verify the crops and to estimate acreage.

- Question: "What do you usually call this piece of land?" (Walk along field boundaries while asking question).

- Example: "We usually call this the south mango orchard." Record 'south mango' under Field Name. (If no name, create one).

Col. 15: Field No.

- Instructions: As each field is named, attach a one-digit number to it (maximum of 9 fields), starting with 1.

Cols. 16-18: Estimated Area: Acres, Squares

- Instructions: Use the technique demonstrated during training to estimate each field area, in acres (Cols. 16-17) and square chains (or 'squares', Col. 18). Do this in the presence of the farmer.

- Example: "If your best estimate of the area of the field is 3 acres, 4 squares (3.4 acres), record 034 in Cols, 16-18.

Col. 19: Slope Category:

- Instructions: Use the technique demonstrated during training and the codelist below to estimate the slope category for each field. If a field (as previously defined) includes more than one slope category, record the one which covers the largest area of the field.

- Example: If you estimate a large section of a banana field to be sloped at about 15° and a smaller section at about 25°, code 4= 10° - 20°.

Codelist

1 0 - 2°
2 2 - 5°
3 5 - 10°
4 10 - 20°
5 20 - 30°
6 over 30°

Col. 20: Tenure

- Instructions: We want to know to what extent the farmer controls and is responsible for each piece of land; use the codelist below.

- Question: "Is this particular piece of land ... (read codelist to farmer and record his response)?".

Codelist

1 owned
2 rented
3 leased
4 family free land
5 government land
6 other.

Soil Conservation Treatment

- Instructions: The following four questions concern any soil conservation treatments which may have been undertaken on each field. Tell this to the farmer before asking the first of these questions. If no conservation measures have been taken leave cols. 22-32 blank. If some treatment has been undertaken, be sure to phrase your questions so that they follow each other smoothly.

Col. 21: Treatment

- Instructions: Read the codelist of possible treatments to the farmer and ask him if any of these treatments have been made on the field. Visual inspection of the field assures accuracy. Be sure that the farmer understands all the terms and that his response is correct before recording it. If the field has had more than one treatment record the more important (in terms of land area covered) or more recent one.

If no treatment has been made, code 9 in col. 21 and put dashes through to col. 32.

- Question: "Have you ever had any of the following soil conservation treatments on this field?" (Read the codelist to the farmer).
- Example: "Yes, I had hillside ditches with individual basins constructed". Code 3 = hillside ditches.

Codelist:

1	bench terraces	5	contour barriers
2	orchard terraces	6	reforestation
3	hillside ditches	7	diversion ditches
4	improved pasture	8	other
		9	none

Col. 22: By Whom

- Instructions: Ask the farmer whether or not IRDP was involved in the treatment construction and code his response with the codelist below.
- Question: "Was the construction of the treatment done with the help of IRDP?"

Codelist:

1 Yes, IRDP was involved
2 No, IRDP was not involved

Cols. 23-24: Year of Treatment

- Instructions: Record the last two digits of the year in which the treatment was completed.
- Question: "When were these hillside ditches completed?"
- Example: "We finished the work in February, 1980." Record 80 in cols. 23-24.

Cols. 25-28: Cost of Maintenance

- Instructions: Record in Jamaican dollars the farmer's estimate of the total amount (if any) he has spent to maintain the treatment since its completion. This should include all labour and materials costs.

- Question: "Since the hillside ditches were completed, have you spent any money to keep them in good condition? If so, can you give me an estimate of the total amount you have spent on labour and materials for maintenance?"

- Example: "I have spent about $200 for labour and about $50 for materials". Record 0250 in Cols. 25-28.

Cols. 29-32: Crops Grown Before Treatment: (Crop 1, Crop 2)

- Instructions: Ask the farmer if any crops were grown on this field prior to treatment of the land. If so, ask him for the two most important crops grown immediately before the treatment, according to the codelist below. Cols. 29-30 (Crop 1) are for the most important crop on the field (in the farmer's own judgement) and Cols. 31-32 (Crop 2) are for the second most important crop (if any).

- Question: "Did you grow any crops on this field before the hillside ditches were constructed? If so, please name the most important (principal) crop just before construction was commenced ... also the second-most important crop."

- Example: "This used to be a field of pumpkins, with a little bit of ginger in the corner." Code 30 in cols. 29-30 (Crop 1) and 14 in cols. 31-32 (Crop 2).

Codelist: (See codelist below).

Cols. 33-40: Crops Currently Under Cultivation (Crop 1, Crop 2, Crop 3 Crop 4)

- Instructions: Make clear to the farmer that you are now going to ask about the crops currently in the field. Ask him to list the four most important crops (Crop 1 = the most important crop, Crop 2 = the second most important crop, etc.) at present. Verify these in the field, and record them according to the codelist below. If fewer than four crops are in the field, leave the extra columns blank, placing a "__ " in each appropriate column.

- Question: "Do you currently have any crops or timber trees planted in this field? If not, is the land bare, in fallow or ruinate? If so, please name the most important crop .. the second-most important crop ... the third most important crop". (Note: if you are with the farmer in the field at this time, ask only those questions which are not obvious).

- Example: "Cocoa is my main crop, as you can see, on this field. Bananas are found in the middle and there are just a few coffee trees on that side." Code 12 in cols. 33-34 (Crop 1), 10 in cols. 35-36 (Crop 2), 13 in cols. 37-38 (Crop 3) and " _ " in cols. 39-40 (Crop 4).

Codelist:

00 no crop
01 yellow yam
02 other yam
03 Irish potato
04 sweet potato
05 coco
06 corn
09 other root crop or cereal
10 banana
11 sugar cane
12 cocoa
13 coffee
14 ginger
15 citrus
19 other tree or semi-permanent crop
20 red peas
21 cow peas
22 gungo peas
29 other pulse
30 pumpkin
31 cabbage
39 other vegetable
40 timber trees
41 pasture land
42 fallow
43 ruinate
95 other/unknown

Write down in each row, under 'Observations' the crops listed under 'Crops currently under cultivation' for that field; i.e., Crop 1, Crop2, Crop 3, Crop 4, in that order.

Cols. 41-43: Inputs Used Past 6 Months (Input 1, Input 2, Input 3)

- Instructions: Record the three principal purchased/rented inputs or free seed/planting material utilized during the six months prior to the interview on the field; see codelist below.

- Question: "Did you use any of the following inputs on this field during the past 6 months? (read codelist) Please specify the three costliest."

- Example: "Hired labour, fertilizer and planting materials cost me the most on this field over the past 6 months." Record 815 in cols. 41-43 (Input 1, Input 2, Input 3)

Codelist:

1 fertilizer/manure
2 fungicide } or rental of
3 insecticide } application equipment
4 seed
5 planting material
6 tools or traction equipment (rental)
7 machinery (rental)
8 hired labour
9 other

THE REPEATING QUESTIONNAIRES

CROP PRODUCTION AND MARKETING (G3)

Purpose/Application

This questionnaire will contain information on all crops harvested or marketed during the previous two weeks. This information is recorded by crop and by field. You should always go through the list of fields on the Field Census with the farmer to make sure that no field has been forgotten. Since a crop may be harvested, but not marketed (or vice-versa) during any given period, you will often fill in only half a row on this form. You may also have more than one row for the same crop - - if it is grown on more than one field. You should from time to time evaluate whether the information you gather is reasonable --based for example, on your own knowledge of the size of the field or on the current price of the crop (Total Revenues ÷ No. of Units Marketed). You should also look at, whenever possible, the production/marketing units in order to estimate their capacities, making notes under 'Observations'. Accurate production data is necessary for almost any type of analysis.

Cols. 1-14: Identifier
Field Name

- Instructions: Using your copy of the Field Census, ask the farmer, field by field, whether he has harvested or marketed any of the crops listed during the past two weeks. If a certain crop has been either harvested or marketed from a certain field, write the field name from the Field Census and continue across the row. If the crop has been harvested but not marketed, leave the entire marketing section blank (with - -'s across the row). Remember that each row contains information

on one crop from one field only. After you have asked about all crops recorded on the Field Census, ask the farmer whether any additional crops were harvested or marketed.

- Question: "Have you during the past two weeks reaped or sold any yams from your yellow yam field? Have you reaped or sold any cabbage from your yellow yam field? ... Have you reaped or sold any bananas from your banana field .. etc. ... Have you reaped, or sold any other crops not already mentioned?"

- Example: "Yes, I have reaped and sold yam from my yellow yam field". Write down 'yellow yam' (if that is how it was recorded on the Field Census) under Field Name.

Col. 15: Field No.

- Instructions: Record the appropriate field number from the Field Census. If a new field is 'discovered' (i.e., was missed when doing the Field Census), it should be added to the Field Census and this information given to a supervisor.

Cols. 16-17: Crop

- Instructions: Record the crop harvested and/or marketed in words and then record its code in cols. 16-17.

- Example: Record 'yellow yam' and code 01 on one row; record 'cabbage' and code 31 on a second row, etc.

Codelist

00	no crop	20	red peas
01	yellow yam	21	cow peas
02	other yam	22	gungo peas
03	Irish potato	29	other pulse
04	sweet potato	30	pumpkin
05	coco	31	cabbage
06	corn	39	other vegetable
09	other root crop or cereal	40	timber trees
10	banana	41	pasture land
11	sugar cane	42	fallow
12	cocoa	43	ruinate
13	coffee	95	other/unknown
14	ginger		
15	citrus		
19	other tree or semi-permanent crop		

Production

- Instructions: Tell the farmer that the next two questions are concerned with production; i.e., quantities harvested. These questions are only to be asked if the farmer has already said (see above under Field Name) that he has in fact harvested some quantity of that crop from that field. If the crop was marketed only (this is possible, if the crop was harvested earlier), leave cols. 18-22 blank and proceed to the marketing section.

Cols. 18-19: Production Unit

- Instructions: Write in words and then code (codelist below) the unit in which the crop was harvested. It is always preferable to use standard weights or measures if possible (e.g., pounds, quarts, etc.); if these units are not known or they cannot be readily converted, use the unit the farmer knows and give additional information under 'Observations' to help with the subsequent conversion.

- Question: "What quantity of yams did you reap from this field during the past two weeks?"

- Example: "I reaped 30 heads which weighed perhaps 5 pounds apiece on average." Record 'pounds' and code 01 = pounds in cols. 18-19.

Codelist

01	pounds	08	bushels
02	hundredweights	09	boxes
03	tons	10	bags
04	units	11	bundles
05	dozens	12	hills
06	quarts	13	stems
07	gallons	14	bunches
		15	other
		16	inches

Cols. 20-22: Number of Units Harvested

- Instructions: Be very careful that the number of units recorded here are in terms of the production unit already specified.

- Question: (already asked)

- Example: Using the previous example, you would record 150 in cols. 20-22 since the unit chosen was pounds.

Marketing

- Instructions: Tell the farmer that the next four questions are about marketing, i.e., crop sales.

Cols. 23-24: Marketing Unit

- Instructions: Follow the instructions under 'Production Unit' above, but ask the questions in relation to marketing. Standard weights and measures are always most useful.

- Question: "What quantity of yams did you sell from this field during the past two weeks?"

- Example: "I sold about half of the yams I reaped in the last two weeks." Record 'pounds' as the marketing unit and code 01 = pounds in cols. 23-24.

Codelist

01	pounds	08	bushels
02	hundredweights	09	boxes
03	tons	10	bags
04	units	11	bundles
05	dozens	12	hills
06	quarts	13	stems
07	gallons	14	bunches
		15	other
		16	inches.

Cols. 25-27: Number of Units Marketed

- Instructions: Again, be sure that the number of units recorded here are in terms of the marketing unit already specified.

- Question: (already asked)

- Example: Keeping the same example, record 075 in cols. 25-27; i.e., 75 pounds of yams marketed.

Cols. 28-30: Total Revenues

- Instructions: Ask the farmer what was the total value of his sales of the crop and record his response in Jamaican dollars.

- Question: "How much money did you receive for the 75 pounds of yams you sold from this field?"

- Example: "I was paid $30 per pound for those yams." Record 023 in cols. 28-30, since $.30/lb x 75 lb. = $22.50 or about $23.

Cols. 31-32: Market Outlet

- Instructions: Record in writing the type of person or organization which purchased the crop, and use the codelist below to fill in cols. 31-32. Notice that if a single crop is sold to more than one outlet, separate rows must be made for each market outlet, with the number of marketing units and total revenues distributed accordingly.

- Question: "To whom did you sell your 75 pounds of yam?"

- Example: "I sold the entire quantity to AMC." Record 'AMC' under Market Outlet and code 01 = AMC in cols. 31-32.

Codelist:

01	AMC	07	local market
02	Supermarket/grocer	08	urban market
03	higgler	09	agro-business
04	trucker-wholesale	10	cooperative
05	trucker-retail	11	JAS
06	hotel	12	other

FARM LABOUR USE (Q4)

Purpose/Application

This questionnaire will contain the number of man-days of labour used on each crop-operation by field during the previous two weeks. The labour of different types of workers is specified. You should ask the farmer about each field during each interview, as in Q3 and Q5. We will use this information to determine crop labour requirements and to see if there are labour shortages at certain times of the year. Use your own knowledge of the farm to probe for more complete or accurate information whenever necessary.

Cols. 1-14: Identifier

Field Name

- Instructions: Use your own copy of the Field Census to ask the farmer, field by field, whether any work was done on any of the crops on each field during the previous two weeks. This should include work done by any type of labourer - - household member or otherwise. Note again that each row contains information on one crop-operation for one field only. If the farmer indicates that some work has been done on a particular field, write down the name of that field from the Field Census and continue across the row. After all fields have been covered in this manner, ask the farmer whether any additional work not already mentioned was done. This may involve bushing a new field, preparation of seed, soil conservation work, etc.

- Question: "Has any work at all been done on your coffee/banana field during the past two weeks?"

- Example: "Yes, there was a little work done on this field last week." Write down 'coffee/banana' under Field Name.

Col. 15: Field Number

- Instructions: Record the appropriate field no. from the Field Census, e.g., for the coffee/banana field above. If some work was done which was not field - specific (e.g., preparation of seed/planting material, crop transport, etc.) code 0 in col. 15.

Cols. 16-17: Crop

- Instructions: Record the crop on which work was done in words, and then according to the codelist, in cols. 16-17. If work was done simultaneously on all crops in the field, record the crop listed as Crop 1 in that field from the Field Census. If some work was done which was not crop-specific (e.g., soil conservation treatment maintenance), leave 'Crop' blank and code 00 in cols. 16-17. Be very careful not to double-count labour used simultaneously for two crops on one field.

- Question: "What crops did you work on in your coffee/banana field last week?"

- Example: "We worked a little on all the crops at the same time." Record the name and code no. of the most important crop (Crop 1) in the field from the Field Census.

Codolist:

00 no crop
01 yellow yam
02 other yam
03 Irish potato
04 sweet potato
05 coco
06 corn
09 other root crop or cereal
10 banana
11 sugar cane
12 cocoa
13 coffee
14 ginger
15 citrus
19 other tree or semi-permanent crop
20 red pean
21 cow peas
22 gungo peas
29 other pulse
30 pumpkin
31 cabbage
39 other vegetable
40 timber trees
41 pasture land
42 fallow
43 ruinate
95 other/unknown

Cols. 18-19: Operation

- Instructions: Record in words and then code (cols. 18-19) the specific operation which was performed. A separate row must be made for each particular operation - - even those performed on the same crop and field. Notice that a separate operation code exists for soil conservation treatment maintenance.

- Question: "What sorts of work were done on your coffee/banana field during the past two weeks?"

- Example: "We weeded the field by hand and then applied fertilizer over the whole surface." Record in one row 'weeding by hand' and code 10 in cols. 18-19; record in the second row 'fertilizer application' and code 16 in cols. 18-19.

Codelist

01 bushing/clearing
02 forking/tillage by hand
03 ploughing-animal traction
04 ploughing-machinery
05 sowing
06 transplanting
07 preparation of seed/planting material
08 thinning
09 pruning
10 weeding/cultivating by hoe/hand
11 weeding/cultivating-animal traction
12 weeding/cultivating-machinery
13 mounding
14 digging holes/ditches
15 staking
16 application of fertilizer/other chemical/manure
17 watering/irrigation
18 reaping (harvesting)
19 transport of crop to home
20 threshing/winnowing
21 burning field/crop
22 soil conservation treatment maintenance
23 other

Cols. 20-27: Man-Days Labour (Farmer, Household, Hired, Exchange)

- Instructions: For each particular crop-operation performed on each field during the past two weeks, record the farmer's estimate of the number of man-days of labour applied by: the farmer himself (cols. 20-21), the rest of his household (cols. 22-23), hired workers (cols. 24-25) and exchange workers (cols. 26-27). One man-day is defined as 8 hours of labour. Hired labour includes paid workers outside the immediate household (family). Exchange labour includes unpaid workers outside the immediate household who may help with farm work. Be sure that if a farmer gives you work times in days that he is speaking of approximately 8-hour days. If he gives you work times in hours, you must convert these to 8-hour days and round to the nearest whole day; e.g., 20 hours = 2½ days or about 3 man-days. If the farmer is only able to give labour amounts in some other unit, and you cannot convert these readily to hours or man-days, write all information available under 'Observations' and leave cols. 20-27 blank. It is always preferable to convert to man-days if possible, however,

- Question: (following the previous example) "how much time did you yourself spend weeding the coffee/banana field? How much time did the rest of your household spend weeding it? How much time did hired workers spend weeding it? How much time did unpaid (exchange) workers outside the family spend weeding it? How much time did you yourself spend fertilizing the coffee/banana field? How much time did the rest of your household spend fertilizing it? ... Hired labour?.. Exchange labour?

- Example: "I weeded for four full days. My wife and son each weeded 2½ days. Three hired workers each spent 3 full days weeding. No unpaid (exchange) workers outside the household helped out. I did all the fertilizing myself. It took me about 5 full days." Record as follows:

Operation			Man-days-Labour							
	Code		Farmer		Household		Hired		Exchange	
	18	19	20	21	22	23	24	25	26	27
Weeding by Hand	1	0	0	4	0	5	0	9	0	0
Fertilizer Application	1	6	0	5	0	0	0	0	0	0

AGRICULTURAL INPUT USE (Q5)

Purpose/Application

You will use this questionnaire to list all purchased or rented inputs used on crops during the previous two weeks. Hired (paid) labour is considered an input here. Input use is listed by crop as well as by field, and you will need to go through your list of fields with the farmer at each interview. Only record the quantity and cost of inputs actually used. Check occasionally to see if the cost information the farmer gives you is in line with your knowledge of input prices (Total Cost ÷ No. of Units). This information will be related to crop production figures (Q3) to allow us to estimate the cost of production.

Cols. 1-14: Identifier

Field Name

- Instructions: Use your copy of the Field Census to ask the farmer, field by field, whether any of the purchased/rented inputs in the codelist below were utilized during the past two weeks on any of his fields (crops). Remember that you are asking about input use rather than purchase, and the quantities and costs should be for only what was used during the past two weeks on any given field. First read the codelist to the farmer (repeating it occasionally so he does not forget) and then ask, field by field, whether any of these inputs were used. When a positive response is given, record the field name from the Field Census. Notice again that each row contains information on only one input used on one or more crops on one field. Note also that only equipment/machinery rental is included as in input on this form and that hired labour (if paid) is included.

- Question : (after reading codelist to farmer) "Did you use any of those items on your Irish potato field during the past two weeks?"

- Example: "Yes, I bought some potato seed which I planted in the last two weeks." Record 'Irish potato' under field name.

Col. 15: Field No.

Instructions: Record the appropriate number from the Field Census; e.g., the number of the Irish potato field above.

Cols. 16-17: Crop

- Instructions: Record the crop on which the input was used and code it in cols. 16-17. If the input was used simultaneously on more than one crop on the field, record the crop listed as Crop 1 in the Field Census. If no crop is in the field, code 00. Guard against double-counting.

- Question: (Following the previous example, no question is necessary since the farmer has already stated that potato seed was the purchased input used). Record 'Irish potato' under 'Crop' and code 03 in cols. 16-17.

Codelist

00	no crop	20	red peas
01	yellow yam	21	cow peas
02	other yam	22	gungo peas
03	Irish potato	29	other pulse
04	sweet potato	30	pumpkin
05	coco	31	cabbage
06	corn	39	other vegetable
09	other root crop or cereal	40	timber trees
10	banana	41	pasture land
11	sugar cane	42	fallow
12	cocoa	43	ruinate
13	coffee	95	other/unknown
14	ginger		
15	citrus		
19	other tree or semi-permanent crop		

Col. 18: Input

- Instructions: Write down the input and code it according to the codelist.
- Question: (following the same example, again no question is necessary). Record 'seed' and code 4 in col. 18.

Codelist (See Field Consus above)

Col. 19: Unit

- Instructions: Ask the farmer how much of the input was used. He will automatically name the unit of measure. It is preferable that the unit be standardized if possible. It would always be useful to provide information on the type or capacity of the sack, for example, if the weight of the input used was not known. Write down the unit and its code in col. 19 - - - following the codelist below.
- Question: "How much potato seed did you use during the past two weeks?"
- Example: "I used about half a sack which I had bought earlier. The whole sack weighed 100 pounds." Record 'pounds' as the unit and code 2 in col. 19.

Codelist

1	ounces	6	units
2	pounds	7	days
3	pints	8	acres
4	packets	9	other
5	sacks		

Cols. 20-22: Number of Units

- Instructions: Record the number of units, being sure that they correspond with the unit code already selected.

- Question: (The question has already been asked, as in the above example)

- Example: Using the same example, cols. 20-22 = 050, or 50 pounds.

Cols. 23-35: Total Cost

- Instructions: Ask the farmer how much he actually paid for the purchase or rental of the amount of input specified. This is only for that amount used as recorded. Enter his response in Jamaican dollars.

- Question: "How much did you pay for the half sack of potato seed?"

- Example: "One whole sack cost me $75."

  Record 038 in cols. 23-25, since $75/2= $37.50, or about $38.

Col. 26: Supplier

- Instructions: Ask the farmer from what type of person or organization he purchased/rented the input. If the supplier was a private individual, determine whether the person was from the local community or not. Code the response in col. 26 according to the codelist below.

- Question: "Who sold you the potato seed you used in the last two weeks on this field?"

- Example: "I bought that seed from the Christiana Potato Growers Association." Write 'CPGA' and code 2 = cooperative in col. 26.

Codelist

1 commercial store/private nursery
2 cooperative
3 Banana Boxing Board
4 Coffee Board
5 JAS
6 IRDP
7 person within local community
8 person outside local community
9 other

INCOME AND FARM EXPENDITURES (Q6)

Purpose/Application

This questionnaire will be used to record each source of household income received and each farm-related expenditure made during the previous two weeks. As in Q3, you are recording two independent sets of information and so should expect to have some incomplete rows. Ask first about all income sources before turning to expenditures. Notice that we are interested in non-farm as well as farm income. Since this is a particularly sensitive topic for many people, your ability to reassure and to gain the confidence of farmers is very important here. Under farm expenditures we include livestock and property expenses along with crop expenses. With those two sets of information we hope to gain a more complete picture of farmers' cash flows.

Cols. 1-14: Identifier

Income

- Instructions: Tell the farmer that the first four questions relate to income received from any source during the past two weeks. It may help to reassure him at this point that all of this information is confidential.

Cols. 15-16: Source

- Instructions: Ask the farmer whether he or any member of his household has received cash income from any source during the past two weeks. If so, ask him the source of the income and code his response according to the codelist below. If you have already learned that the farmer has marketed crops (Q3), you may ask him to verify your summation of total crop revenues. After he has volunteered information, read the codelist to him to remind him of any other possible sources. Notice that livestock is differentiated by type of animal sold. If the farmer has no income to report,

leave cols. 15-24 blank and proceed to 'Farm Expenditures',(col. 25).

- Question: "Have you or has any member of your household received any cash income at all during the past two weeks? If so, from what sources?"

- Example: "Yes, my son and I both worked on building construction in town."
  Record 'building construction' and code 13 = nonfarm labour in cols. 15-16.

Codelist:

01	crop sales	10	animal products
02	dairy cattle	11	land/equipment rental
03	beef cattle	12	farm labour
04	pigs	13	nonfarm labour
05	chickens	14	agricultural credit
06	goats	15	remittances
07	sheep	16	social security/pension
08	donkeys/mules	17	other
09	horses		

Cols. 17-20: Amount of Income (J$)

- Instructions: Ask the farmer how much cash income he made from each source he mentions. Record the amount in Jamaican dollars.

- Question: "May I ask how much money you and your son received in total for your construction work during the past two weeks?"

- Example: "We each worked four days and were paid $15 a day. "Record 0120 in cols. 17-20 since $15 x 4 = $60, x 2 = $120

Cols. 21-22: Agricultural Credit Purpose

- Instructions: Ask this question only if the farmer stated that he received cash credit for agricultural purposes as an income source. If so, ask him the principal purpose for which this money was borrowed. Write his response and use the codelist given below. If no agricultural credit was reported, leave cols. 21-22 blank (' __ ').

- Question: (not related to previous example) "For what main purpose do you intend to use this money you borrowed?"

- Example: "I need to build some new fences around my land." Code 09 in cols. 21-22 = purchase/improve farm property.

Codelist

01 purchase fertilizer/manure
02 purchase fungicide } or purchase/rent equipment to apply
03 purchase insecticide
04 purchase seed
05 purchase planting material
06 purchase/rent hand tools/traction equipment
07 purchase/rent farm machinery
08 purchase/rent land
09 purchase/improve farm property (buildings, fences etc.)
10 pay hired labour -- crop/livestock
11 pay hired labour -- soil conservation
12 pay crop transport costs
13 purchase livestock
14 purchase livestock feed/equipment
15 pay previous debt
16 other

Cols. 23-24: Man-Days Nonfarm Labour

- Instructions: Ask this question only if the farmer has stated that his household earned income from some sort of nonfarm labour during the past two weeks. If so, ask him the total length of time worked for this income. Record his response in 8-hour man-days. If no nonfarm income was reported, leave cols. 23-24 blank (' _ _ ').

- Question: (from original example)

  "How much time each day did you and your son have to work on construction for the payment you received?"

  Note: The question was asked in this manner because the response must be coded in 8-hour man-days and we already know how many days were worked).

- Example: "I worked 10-hour days and my son worked 8-hour days". Record 09 in cols. 23-24, since 10 x 4 = 40 hours, ÷ 8 hours/man-day = 5 man-days (farmer) + 4 man-days (son) = 9 man-days total.

Farm Expenditures

- Instructions: Explain to the farmer that the last two questions concern any expenditures that he or members of his household have made on the farming operation during

the past two weeks. Notice that you are asking about total expenditures (purchases or rentals) rather than the cost of inputs used during the previous two weeks (see 35).

Cols. 25-26: Type

- Instructions: Ask the farmer whether he or any member of his household has spent any money for running the farm over the past two weeks. If so, ask him what the expenditures were for, and use the codelist under agricultural credit purpose above to code his response. If not, leave cols. 25-30 blank. After recording the expenditures volunteered by the farmer, read the codelist to him to remind him of any others.

- Question: "Have you or has any member of your household spent any money for running the farm over the past two weeks? If so, what were these expenditures?"

- Example: "I bought a 100 lb. sack of fertilizer for my vegetables and we also hired a worker for the yams". Record on one row: 'fertilizer' and code 01 in cols. 25-26. Record on the second row: 'hired labour - crop' and code 10 in cols. 25-26.

Codelist

01 purchase fertilizer/manure
02 purchase fungicide } or purchase/rent equipment to apply
03 purchase insecticide } or purchase/rent equipment to apply
04 purchase seed
05 purchase planting material
06 purchase/rent hand tools/ traction equipment
07 purchase/rent farm machinery
08 purchase/rent land
09 purchase/improve farm property (buildings, fences etc.)
10 pay hired labour --crop/ livestock
11 pay hired labour -- soil conservation
12 pay crop transport costs
13 purchase livestock
14 purchase livestock food/ equipment
15 pay previous debt
16 other

Cols. 27-30: Amount of Expenditure (J3)

- Instructions: Ask the farmer how much he spent on each purchase and record the amounts in Jamaican dollars.

- Question: "How much did the fertilizer cost? How much did you pay the hired worker?"

- Example: "The fertilizer cost J125. We gave the worker J10 a day for 5 days." Record as follows:

Farm Expenditures						
Type			Amount of Expenditure (J3)			
	Code					
	25	26	27	28	29	30
Fertilizer	0	1	0	1	2	5
Hired labour-crop	1	0	0	0	5	0

HOUSING AND OTHER RURAL AMENITIES (Q7)

Purpose/Application

This questionnaire is designed to obtain information relating to the living conditions of the farmers and their families. It covers their housing situation, toilet facilities, water supply and source of light and power. It is to be administered only once.

Cols. 1-14: Identifier

- Instructions:

Col. 15: Using the codelist provided indicate the type of dwelling the farmer has by writing in the space provided, the material of which the outer walls are made, and enter the appropriate code in this column. If the house is in view and you are sure of the material of which it is made, you need not ask the farmer. If not ask the following question: What type of materials make up the outer walls of your dwelling:

Col. 16: Ask the following question: What type of roof is on your house? Using the codelist provided enter the code which corresponds to the farmer's answer in column. 16.

Cols. 17-18: Ask the following question: What is the age of your dwelling? Using the procedure outlined under General Concepts for using Q1-Q12 - Coding, enter the farmer's response in cols. 16-17.

Col. 19: Ask the farmer: Do you own, rent, or lease this house, or is it a family house you occupy free of cost? Using the codelist, write in the space provided, the type of tenure and enter the appropriate code in col. 19.

Cols. 20-21: Ask the question: How many rooms are there in this house? Bathrooms, passageways and kitchens should not be counted. Following the same principle used for recording in cols. 17-18, enter the farmer's response in cols. 20-21.

Col. 22: From you own observation indicate the general condition of the farmer's dwelling. Using the codelist provided enter the appropriate code in col. 22.

Cols. 23-24: Ask the following question: What type of toilet facilities do you have? Using the codelist A, under toilet facilities, place the code which corresponds to the farmer's answer in col. 23. Then ask the question: Are those facilities shared with another household? Using codelist B, place the code which corresponds to the farmer's response in col. 24.

Col. 25: Ask the following question: What is your main source of water supply? Place the appropriate code in col. 25. Note that only one source should be coded.

Col. 26: Ask the following question: Do you have electricity in your home? <u>If No</u>, place the code which corresponds to non-electrical source, in col. 26.

<u>If Yes</u>, ask the question: Do you have your own generator or do you get electricity from the J.P.S.? Place the appropriate code in col. 26.

<u>LIVESTOCK INVENTORY</u> (Q8)

The purpose of this questionnaire is to ascertain the livestock holdings of the farmer. It should be made clear to the farmer that those questions are asked to provide information on the extent to which livestock farming takes place in the project area.

Cols. 1-14: Identifier

- Instructions:

Col. 15: Ask the following question: What type of livestock do you currently own? Read the codelist 'Livestock Type' and record the farmer's response. Place the corresponding codes in col. 15.

Cols. 16-17: For each livestock type the farmer reports record the number owned in these two columns. Use the same procedure for recording numbers in two columns, as instructed in the other questionnaires.

Cols. 18-19: For each livestock type the farmer reports, ASK the following question:
When did you acquire (that is, purchased, received as gift, resulted from reproduction of existing stock) those animals? Record the last two digits of the year in which they were acquired in cols. 18-19, using the procedure outlined, for cols. 26-27 under Farm Credit (Q9).

Cols. 20-23: Record the unit market value at the time of acquisition (cost price) for each livestock type reported. To obtain this information you should ask the following question: How much did each of these cows (goats, pigs, chickens etc.) cost you at the time of purchase?

Use the same procedure for recording these values as previously instructed.

Cols.24-27: Follow the same procedure as for cols. 20-23, using this question: What is the present value of each of your cows (goats, pigs etc.)?

FARM CREDIT (Q9)

This questionnaire is very important, as making credit more accessible to farmers is an integral part of the 2nd IRDP.

It is aimed at securing information on the credit situation of farmers - number of loans obtained since inception of the project; difficulties involved in obtaining loans; loan use; and farmer's attitudes toward credit. It should be administered only once.

Cols. 1-14: Identifier

- Instructions:

Cols. 15-16: Ask the following question: Do you have any current loans from a credit institution, government programme or any informal source?
THEN Read the list of loan sources to the farmer. Write in the space provided, the source of the loans, and enter in columns 15-16 the corresponding
If the farmer has no current loans, ask the following question: Have you had any loan(s) from any of these sources within the last 5 years? If No skip to col. 34. If Yes, treat these loans in the same manner as current loans that is, collect all information you are required to obtain for current loans.

Cols. 17-18: For each loan the farmer has, record the information on the length of time which elapsed between the application for the loan and the date of approval. The values coded should be in weeks.

Cols. 19-20: For each loan the farmer has, record the information on the length of time which elapsed between the approval of the loan and the date on which he received the first disbursement.

Cols. 21-25: Using these columns, record the total value of each loan the farmer obtained. Pay careful attention to the procedure used for recording values in more than one column.

Cols. 26-29: In the first two columns (26-27) enter the code corresponding to the month in which the farmer received each loan.
In the other two columns (28-29) enter the last two digits of the year in which the farmer received each loan. For example, if he obtained the loan in 1979, enter 7 in column 28, and 9 in col. 29.

Cols. 30-31: Record the purpose for which each loan was used and enter the corresponding codes from the Agricultural Credit Use codelist in these two columns.

Cols. 32-33: Use these two columns to record the total number of loans the farmer currently has obtained within the last five years from each source.

Col. 34: Ask the following question: What do you think of the formal loan sources? (give examples of formal loans source, for instance the P.C. Bank) THEN, read the codelist 'Opinions re Formal Loan Sources'. Record the farmers response in the space provided and enter the corresponding code in col. 34. This question is asked whether or not a farmer has received a loan in the past five years.

ATTITUDES TOWARDS SOIL CONSERVATION (Q10)

Purpose/Application

This questionnaire is designed to obtain information on the attitude of farmers towards soil conservation. It will also be used to assess the extent to which soil conservation treatments will be continued when the project is terminated.
It is administered once, and only to farmers who have used soil conservation treatments on their land.

Cols. 1-14: Identifier

- Instructions:

Col. 15: Ask the following question: Which of the soil conservation treatments do you prefer to use on your land? Redd the codelist 'Soil Conservation Treatments' to the farmer. Then write in the space provided his response, in the same order given. For example, if he mentions hillside ditches then contour barriers, you first put down hillside ditches then contour barriers below it.
Enter the corresponding codes in col. 15.

Col. 16: Ask the following question: Why do you prefer to use those treatments you just named? Read to the farmer the codelist 'Reasons for Preference..' All reasons given should then be written in the appropriate space and then codes entered in col. 16.

Col. 17: Ask the following question: Do you think soil conservation measures are useful? If the farmer responds negatively write in the space provided 'not beneficial' and enter the corresponding code in col. 17.
If the farmer responds positively
Ask the question: In what ways do you think they are useful? Then, read the first three items in the codelist 'Opinions re Usefullness of Soil Conservation Treatments' to the farmer. Record his answers in the appropriate space. Enter corresponding codes in col. 17.

Col. 18: Ask the following question: What do you consider to be the main problems involved in adopting soil conservation measures? Read codelist 'Difficulties in Adopting Soil Conservation Measures' to the farmer. Then, record in the space provided the items to which the farmer responds affirmatively. Enter the corresponding codes in col. 18.

Col. 19: Ask the following question: Will you continue soil conservation treatment on your land after the second IRDP has ended? Then, record the appropriate code from the codelist 'Continuation of Treatment at the end of the Project.'

PARTICIPATION IN FARM/COMMUNITY ORGANIZATIONS (Q11)

This questionnaire will provide information on the farmer's involvement in Farmers Associations and Community Organizations. When the data is being analysed we will assess whether the level of involvement in these organizations enhances his farming operations.

Cols. 1-14: Identifier

Col. 15: Ask the following question: Are you a member of any Farm/ Community Organizations? If No, skip to col. 19 'Reason for non-participation in Farm/Community Organizations'. If Yes, Read codelist 'Farm Community Organizations' and record in the space provided the names of the organizations to which the farmer belongs. Enter the corresponding codes in col. 15.

Col. 16: Record information on attendance at meetings for each organization to which the respondent belongs. Ask the following question: How often do you attend meetings? Then, read to the farmer the codelist 'Attendance at Meetings.' Enter in column 16 the code corresponding to the farmer's response.
Note that only one answer can be given.

Col. 17: For each organization in which the farmer has membership, ask the following six questions:

1) Do you hold any official post?
2) Are you a member of any committee?
3) Do you participate in discussions?
4) Do you vote on issues?
5) Do you participate in special projects and activities organized by the Association?
6) Do you pay dues?

In the space provided, record items to which an affirmative answer is given.

Col. 18 Record under heading 'Membership Benefits', information on membership benefits derived from each organization to which the farmer belongs. Phrase the question in the manner outlined below.

What benefits do you derive from being a member of?
(name of organization to be inserted)

.....

For example, if the farmer reports being a member of the JAS, and also the Potato Grower's Co-op, should say What membership benefits do you derive from being a member of the JAS?
Then ask again, What membership benefits do you derive from being a member of the Potato Growers Co-op?.
Note, there are no pre-coded responses for this question and col. 18 should be left blank for office use.

Col. 19: For farmers who are not members of any Farm/Community Organizations, ask the following: What are your reasons for not joining any farm/community organizations?
Read the relevant codelist to the farmer and record items to which an affirmative response is given in space provided. Enter the appropriate codes in col. 19.
Note more than one reason can be given; items in the code are not mutually exclusive.

EXTENSION SERVICES (Q12)

The purpose of this questionnaire is to evaluate the effectiveness of the extension services in the project area.

Cols. 1-14: Identifier

- Instructions

Col. 15: Ask the following question: Do you know your extension officer by name or by sight? Using code - list 'Acquaintance with Extension Officer', enter the code corresponding to farmer's answer in col. 15.

Col. 16: Ask the following question: Where is your extension officer located? Using codelist 'Knowledge of Location of Extension Officer', enter the code corresponding to the farmer's answer in this column.

Col. 17: Ask the question: How often have you visited the extension officer at his office since the start of the Project? Read codelist 'Visits to/from Extension Officer'. Enter in column 17 the code corresponding to the item to which the farmer gives an affirmative response.
Note only one answer can be given.
If response is negative, that is, 'Never visited extension officer,' skip col. 18 and proceed to 19.

Col. 18: Ask the following question: What were your reasons for visiting the extension officer? Read the codelist 'Reasons for Visiting Extension Officer'. Record in the space provided items to which an affirmative answer is given. Enter corresponding codes in col. 18.

Col. 19: Ask the following question: How often are you visited by your extension officer? Then, follow same procedure as for column 17. If the respondent never visited the extension office and was never visited by the extension officer, skip cols. 20-22 and proceed to col. 23. Then skip col. 24 and proceed to 25.

Col. 20: Ask the following question: Where does your extension officer normally visit you? Read the codelist 'Place of visits from extension officer' and enter in col. 20 the code corresponding to farmer's response.

Col. 21: Ask the following question: What type of assistance have you received from your extension officer since the start of the Project? Read codelist 'Type of Assistance received from Extension Officer'. Record in the space provided, items to which an affirmative response is given. Enter corresponding codes in col.21.

Col.22: Ask the following question: How often do you have discussions with your extension officer? Read the codelist 'Frequency/Desired frequency of Discussions with Extension Officer'. Enter code for item corresponding to farmer's response in col. 22.
Note, only one answer can be given. The answer should correspond to either col 19 or col. 17 (or both)—depending on which type of visit was more frequent.

Col. 23: Ask the following question:
How often would you like to have discussions with your Extension Officer. Then follow the same procedure as for col. 22.

Col. 24: Ask the following question:
When you seek help or information from your extension officer, how often do you feel that you get the results you need? Read codelist 'Level of Satisfaction with Extension Services'. Enter in col. 24 the code corresponding to the respondent's answer.
Note, only one answer can be given.

Col. 25: Ask the following question: In what areas do you think you need most help or information from the extension services? Record the farmer's answer in the space provided. This is an open-ended question, i.e. possible answers are not listed. Record the answer in the farmer's own words wherever possible. Col. 25 should be left blank for office use.

Col. 26: Ask the following questions:
Are you able to understand the written materials given to you by the extension officers?

Do you find them useful?

Using the codelist provided enter the farmer's response in col. 26.

Col. 27: Ask the following question:
How useful do you find the practical demonstrations given by the extension officers? Using the codelist provided, enter the farmer's response in col. 27.

ANNEX C - COMPUTER EDIT SPECIFICATIONS

ANNEX C

COMPUTER EDIT SPECIFICATIONS

The following pages define the position and possible values of each variable used in each questionnaire of the present survey. Also provided is additional inter-variable information which is useful for data editing. Information is also included on the aggregate data files.

The value ranges for the variables have been established not only to eliminate errors but also to examine possible "outlier" data cases. Therefore, these ranges do exclude some "good" data cases, which have not been altered upon correction of error lists.

Price ranges for crops (Q3) and inputs (Q5) were based on information collected in the field and in several shops in the area. Input prices were collected in May, 1983; not long after this time, agricultural inputs were moved to the parallel market list of imports and many prices subsequently increased.

AGGREGATE DATA FILES

Variable	Column(s)	Possible Values/ Value Ranges	Observations
Household ID	1-6	(see attached sheets)	Corresponds to watershed - sub-watershed - Household No. in other questionnaires.
No. of Fields	7	1-9	Maximum number of fields (highest no. in Q2).
Cultivated Acres	8-10	001-320	Cols. 8-9 are in acres; Col. 10 in square chains. All crop codes included except fallow (42) and ruinate (43).
IRDP Acres	11-13	'---', 000-325	Includes fields with bench terraces, orchard terraces or hillside ditches from Q2 - by IRDP only.
CB, DD, etc.	14-15	'--', 00-30	Fields with contour barriers, diversion ditches, individual basins, improved pasture - done by IRDP. (Codes 4,5,7,8 in Q2); Col. 14 in acres; Col. 15 in square chains.
Forestry			
- squares	16-17	'--', 00-70	Fields with forestry by IRDP (Code 6 under "Treatment" in Q2); Col. 16 in acres; Col. 17 in square chains.
- condition class	18	'-', 1-6	Must be coded 1-6 if Cols. 16-17 0. This information, with acreages above, is mainly taken from "II Integrated Rural Development Project - Forestry Inventory Final Report," Sept. 16, 1983, Paul Grandison, Lynford Thompson and John Sloan -- in conjunction with our own information.

Variable	Column(s)	Possible Values/ Value Ranges	Observations
Forestry - condition class (cont.)			Condition Class Codes: 1 = good colour, good form, no insect problem. 2 = good colour and form, little insect damage. 3 = good form, yellowish colour. 4 = poor form, colour all right. 5 = poor form, yellowish colour, noticeable insect damage. 6 = no trees surviving.
Ruinate, Fallow	19-21	'---', 000-585	Acreage of fields containing only ruinate (crop code 43) or fallow (crop code 42). Cols. 19-20 in acres; Col. 21 in square chains.
Farm Size Group (FSG)	22	1-6	Using cultivated acres, follows same code list as Baseline Survey: 1 = < 1 acre 2 = 1 - < 2 acres 3 = 2 - < 5 acres 4 = 5 - < 10 acres 5 = 10 - < 25 acres 6 = 25 - < 50 acres
Maintenance	23-24	'--', 00-14	Numerical rating from Soil Conservation Treatment Maintenance Checklists, aggregated to the farm level. Used in compiling IRDP Farm Groups: 00-07 = "poor maintenance"; 08-14 = "good maintenance."
Extension Frequency	25	'-', 1-7	Taken from Q12 data, Col. 22: 1 = weekly 2 = bi-weekly 3 = monthly 4 = bi-monthly 5 = quarterly 6 = half-yearly 7 = once per year '-' = never This data was collected in August, 1982 and probably most closely

Variable	Column(s)	Possible Values/ Value Ranges	Observations
Extension Frequency (cont.)			reflects the farmers' frequency of contact with IRDP extension officers at that time.
Credit			
- $	26-29	'----', 0000-5100	Sum total (in $J) value of all loans received by farmer(to August 1982) through IRDP. Only loans facilited by/processed through IRDP are included. Information from Q9 data was all reconfirmed later in the survey by interviewers (i.e., dollar amounts and the participation of IRDP officers).
- No.	30	'-', 1-2	Number of IRDP loans received by farmer.
IRDP Farm Group (F.G.)	31	1-6	See text on IRDP Farm Groups; classifies farmers according to their participation in IRDP activities: 1 = no soil conservation treatment, no credit. 2 = no soil conservation treatment, credit. 3 = soil conservation treatment, poor maintenance, no credit. 4 = soil conservation treatment, good maintenance, no credit. 5 = soil conservation treatment, poor maintenance, credit. 6 = soil conservation treatment, good maintenance, credit. Soil conservation treatments include only bench terraces, orchard terraces and hillside ditches; maintenance based on Cols. 23-24; credit based on Cols. 26-30 (yes or no).

Aggregate Data Files (cont.)

Variable	Column(s)	Possible Values/ Value Ranges	Observations
Interviewer	32-33	01-10	Identifies interviewer; may be used to check quality of data and/or eliminate cases.

HOUSEHOLD IDENTIFIER
(Watershed, Sub-Watershed, Household Number)
Columns 3-8, Possible Values/Value Ranges
(final listing; applies to all questionnaires)

S. Johnson	P. Coley	D. Virtue	R. Harriott	O. Morris
201013	202219	203650	206216	101140
201036	202239	204652-204654	206162	101107
201043	202151	204657-204658	207001	101049
201044	202050	205662-205671	207165	101033
201098	202090	203088	208026	101114
201050	202017	204025	206675-206676	101011
201111	202237	204001	206678-206682	102090
201114	202165	204097		102032
201141	202040	204076		101706
201189	202191	205059	206684	101711-101714
201191	203148	205036	206686-206687	102716-102722
201162	203021	205124	206689-206691	
201184	203077	205075	207692	
201601-201603	203233	205058	207694-207696	
201605-201610	203179	205015	207698	
201616-201618	202626-202636	205190	208700-208704	
201621-201622	203637-203644			
201624-201625	203646-203647			

A. Golding/ K. Stanberry	C. Douglas	N. Stewart/ N. Dawkins	Y. Williams/ M. Golding	A. Munroe/ W. Manning
103116	106028	107101	108077	110010
104055	106098	107110	108061	110005
105049	106068	108039	109050	110071
105035	106052	107770-107771	108795-108798	110020
103724-103727	106749	107773-107778	108800-108802	111082
104728-104734	106751-106754	107780-107783	109804-109806	111011
105735-105740	106756-106760	107785-107787	109808-109811	109821
106744-106745	106762-106763	108788-108790	109813	109823-109826
	107767-107769	108793-108794	109816-109819	111830-111837
	106049		112845	112839-112841
	106097		112847-112848	112843-112844
	106742-743		112850	

NOTE: All Household Numbers (the last three digits in the Household ID) less than 600 were also IRDP Farm Plan Numbers--taken from the available listings of farmers with farm plans at the IRDP Registry in June-July, 1982. All Household Numbers greater than or equal to 600 were assigned arbitrarily--and indicate that no farm plan number was available for that farmer.

HOUSEHOLD CENSUS (Q1)

Variable	Column(s)	Possible Values/ Value Ranges
Questionnaire	1-2	01
Household Identifier (Watershed, Sub-Watershed, Household Number)	3-8	(See attached sheets)
Day	9-10	01-31
Month	11-12	07, 08, 09
.ear	13-14	82
Individual I.D.	15-16	01-20
Farm Labourer	17	0-7
Age	18-19	00-99
Sex	20	1, 2
Primary Occupation	21-22	01-11
Secondary Occupation	23-24	'--', 01-11
Education	25	1-9
Overseas Work		
Total		
- No. of Times	26	1-9, '-'
- Duration	27	1-6, '-'

HOUSEHOLD CENSUS (Q1) (Cont.)

Variable	Column(s)	Possible Values/ Value Ranges
Overseas Work (Cont.)		
Longest		
- Type	28	1-8, '-'
- Location	29	1-5, '-'
- Duration	30	1-6, '-'

HOUSING AND OTHER RURAL AMENITIES (Q7)

Variable	Column(s)	Possible Values/ Value Ranges
Questionnaire	1-2	07
Household Identifier (Watershed, Sub-watershed, Household Number)	3-8	(See attached sheets)
Day	9-10	01-31
Month	11-12	07, 08, 09
Year	13-14	82
Type of Dwelling	15	1-7
Type of Roof	16	1-7
Age of Dwelling	17-18	00-99
Tenure of Dwelling	19	1-4
No. of Rooms	20-21	01-10
General Condition of Dwelling	22	1-3
Type of Toilet Facilities		
A	23	'-', 1-3
B	24	'-', 1-2
Main Source of Water Supply	25	1-7
Source of Light and Power	26	1-3

LIVESTOCK INVENTORY (Q8)

Variable	Column(s)	Possible Values/ Value Ranges
Questionnaire	1-2	08
Household Identifier (Watershed, Sub-Watershed, Household Number)	3-8	(See attached sheets)
Day	9-10	01-31
Month	11-12	08, 09, 10
Year	13-14	82
Livestock Type Code	15	1-9
Number	16-17	01-50
Year of Acquisition	18-19	50-82
Unit Market Value at Acquisition	20-23	0000-2500
Current Unit Market Value	24-27	0001-2500

FARM CREDIT (Q9)

Variable	Column(s)	Possible Values/ Value Ranges
Questionnaire	1-2	09
Household Identifier (Watershed, Sub-Watershed, Household Number)	3-8	(See attached sheets)
Day	9-10	01-31
Month	11-12	08, 09, 10
Year	13-14	82
Loan Source Code	15-16	1-13
Time Between Application & Approval of Loan	17-18	01-52, '--'
Time Between Approval & Disbursement	19-20	01-52, '--'
Amount $	21-25	00050-10,000
Date of First Disbursement		
- Month	26-27	01-12, '--'
- Year	28-29	70-82, '--'
Purpose for Which Loan was Used (Code)	30-31	01-16
No. of Loans	32-33	01-05
Opinion Re Formal Loan Sources	34	1-6, '-'

NOTE: Columns 15-33 may all have dashes (blank) if Col. 34 is completed with a number.

ATTITUDES TOWARD SOIL CONSERVATION (Q10)

Variable	Column(s)	Possible Values/ Value Ranges
Questionnaire	1-2	10
Household Identifier (Watershed, Sub-Watershed, Household Number)	3-8	(See attached sheets)
Day	9-10	01-31
Month	11-12	08, 09, 10
Year	13-14	82
Soil Conservation Treatment (Code)	15	1-8
Reason for Preference	16	1-5
Opinion re Usefulness Soil Conservation Treatments	17	1-5
Difficulties Involved in Adopting Soil Conservation Measures	18	1-5, '-'
Continuation of Treatment at End of Project	19	1-5

PARTICIPATION IN FARM/COMMUNITY ORGANIZATION (Q11)

Variable	Column(s)	Possible Values/ Value Ranges
Questionnaire	1-2	11
Household Identifier (Watershed, Sub-Watershed, Household Number)	3-8	(See attached sheets)
Day	9-10	01-31
Month	11-12	08, 09, 10
Year	13-14	82
Farm Community Organization (Code)	15	1-9
Attendance at Meetings	16	1-5
Level of Participation	17	1-6, '-'
Membership Benefits	18	'-' [open-ended question]
Reasons for Non-participation in Farm/Community Organization	19	1-4, '-'

NOTE: Columns 15-18 may all have dashes (blank) if Col. 19 is completed with a number (1-4).

EXTENSION SERVICES (Q12)

Variable	Column(s)	Possible Values/ Value Ranges
Questionnaire	1-2	12
Household Identifier (Watershed, Sub-Watershed, Household Number)	3-8	(See attached sheets)
Day	9-10	01-31
Month	11-12	08, 09, 10
Year	13-14	82
Acquaintance of Extension Officer	15	1-4
Knowledge Location of Extension Officer	16	1-2
Visits to Extension Office Since 1977	17	1-9
Reasons for Visiting Extension Officer (Code)	18	1-9, '-'
Visits from Extension Officer	19	1-9
Place of Visit from Extension Officer	20	1-3, '-'
Type of Assistance Received from Extension Officer (Code)	21	1-9, '-'
Frequency Discussions with Extension Officer	22	1-9

EXTENSION SERVICES (Q12) (Cont.)

Variable	Column(s)	Possible Values Value Ranges
Desired Frequency Discussions with Extension Officer	23	1-9
Level Satisfaction with Extension Services	24	1-4, '-'
Area of Greatest Need for Extension Services	25	[Open-ended question]
Usefulness Written Materials	26	1-6, '-'
Usefulness Practical Demonstrations	27	1-6, '-'

FIELD CENSUS (Q2)

Variable	Column(s)	Possible Values/ Value Ranges
Questionnaire	1-2	02
Household Identifier (Watershed, Sub-Watershed, Household Number)	3-8	(See attached sheets)
Day	9-10	01-31
Month	11-12	07, 08, 09
Year	13-14	82
Field No.	15	1-9
Estimated Area		
- Acres	16-17	00-25
- Squares	18	0-9
Slope Category	19	1-6
Tenure	20	1-6
Soil Conservation Treatment		
- Treatment	21	1-9
- By Whom	22	1-2, '-'
- Year Treatment	23-24	65-82, '--'
- Cost of Maintenance	25-28	0000-1000, '----'
- Crops Grown Before Treatment		
- Crop 1	29-30	(00, 01-06, 09-15, 19-22, (29-31, 39-43, 95, '--'
- Crop 2	31-32	(

FIELD CENSUS (Q2) (Cont.)

Variable	Column(s)	Possible Values/ Value Ranges
Crops Currently Under Cultivation		
- Crop 1	33-34	00, 01-06, 09-15, 19-22, 29-31, 39-43, 95
- Crop 2	35-36	
- Crop 3	37-38	(00, 01-06, 09-15, 19-22,
- Crop 4	39-40	(29-31, 39-43, 95, '--'
		(
Inputs Used Past 6 Months		
- Input 1	41	1-9, '-'
- Input 2	42	1-9, '-'
- Input 3	43	1-9, '-'

CROP PRODUCTION AND MARKETING (Q3)

Variable	Column(s)	Possible Values/ Value Ranges
Questionnaire	1-2	03
Household Identifier (Watershed, Sub-Watershed, Household Number)	3-8	(See previous sheets)
Day	9-10	01-31
Month-Year	11-14	0982, 1082, 1182, 1282, 0183, 0283, 0383, 0483, 0583, 0683, 0783, 0883, 0983, 1083 - limit end month as data recorded.
Field No.	15	(See attached sheets), 0
Crop (Code)	16-17	01-06, 09-15, 19-22, 29-31, 39-40, 95
Production		
- Production Unit (Code)	18-19	01-06, 08-10, 13-16, '--'
- Number of Units Harvested	20-22	001-999, '---'
Marketing		
- Marketing Unit (Code)	23-24	01-06, 08-10, 13-16, '--'
- Number of Units Marketed	25-27	001-999, '---'
- Total Revenues	28-30	001-999, '---'
- Market Outlet	31-32	01-12, '--'

FARM LABOUR USE (Q4)

Variable	Column(s)	Possible Values/ Value Ranges
Questionnaire	1-2	04
Household Identifier (Watershed, Sub-Watershed, Household Number)	3-8	(See previous sheets)
Day	9-10	01-31
Month-Year	11-14	0982, 1082, 1182, 1282, 0183, 0283, 0383, 0483, 0583. 0683, 0783, 0883, 0983, 1083 - limit end month as data recorded.
Field No.	15	(See attached sheets)
Crop (Code)	16-17	00, 01-06, 09-15, 19-22, 29-31, 39-43, 95
Operation (Code)	18-19	01-23
Man-Days Labour		
- Farmer	20-21	00-10
- Household	22-23	00-15
- Hired	24-25	00-15
- Exchange	26-27	00-10

AGRICULTURAL INPUT USE (Q5)

Variable	Column(s)	Possible Values/ Value Ranges
Questionnaire	1-2	05
Household Identifier (Watershed, Sub-Watershed, Household Number)	3-8	(See previous sheets)
Day	9-10	01-31
Month-Year	11-14	0982, 1082, 1182, 1282, 0183, 0283, 0383, 0483, 0583, 0683, 0783, 0883, 0983, 1083 - limit end month as data recorded.
Field No.	15	(See attached sheets)
Crop (Code)	16-17	01-06, 09-15, 19-22, 29-31, 39-43, 95, 00
Input (Code)	18	1-9
Unit (Code)	19	1-8
Number of Units	20-22	001-999
Total Cost	23-25	000-600
Supplier	26	1-9

INCOME AND FARM EXPENDITURES (Q6)

Variable	Column(s)	Possible Values/ Value Ranges
Questionnaire	1-2	06
Household Identifier (Watershed, Sub-Watershed, Household Number)	3-8	(See previous sheets)
Day	9-10	01-31
Month-Year	11-14	0982, 1082, 1182, 1282, 0183, 0283, 0383, 0483, 0583, 0683, 0783, 0883, 0983, 1083 - limit end month as data recorded.
Income		
- Source	15-16	01-06, 08, 10, 12-17
- Amount of Income	17-20	0001-2000, '----'
- Agric. Credit Purpose	21-22	01-16, '--'
- Man-Days Non-Farm Labour	23-24	01-20, '--'
Farm Expenditures		
- Type (Code)	25-26	01-07, 09-16
- Amount of Expenditure (J$)	27-30	0001-1500, '----'

ADDITIONAL INFORMATION FOR DATA ENTRY/EDITING OF Q3-Q6 (THE REPEATING QUESTIONNAIRES)

Q3

- Cols. 1-17 are never blank.
- Cols. 18-22 may be blank (all or nothing) iff Cols. 23-32 are completed.
- Cols. 23-32 may be blank (all or nothing) iff Cols. 18-22 are completed.
- Field No. may = 0 iff Field Name = "Outside IRDP."
- If Cols. 16-17 equal ... then Cols. 18-19 and/or Cols. 23-24 may equal ...

If Cols. 16-17 equal ...	then Cols. 18-19 and/or Cols. 23-24 may equal ...
01,02	01, 02, 04, 05
03	01, 02, 10
04	01, 02
05, 09	01, 04, 05
06	04, 05, 06, 08
10	13, 14, 01, 02
11	02, 03, 04, 05
12	09, 16
13	09, 01
14	01, 15
15	04, 05, 09
19	01, 04, 05, 13, 14
20, 21, 22, 29	01, 06, 08
30	01, 04
31	01, 04, 05
39	01
40	15
41, 42, 43	should not be recorded
95	01, 15

- If Cols. 18-19 = Cols. 23-24, then Cols. 20-22 $\geq$ Cols. 25-27.
- If Cols. 16-17 equal ... and Cols. 23-24 equal ... then $\frac{\text{Cols. 28-30}}{\text{Cols. 25-27}} = P$, Where ...

If Cols. 16-17 equal ...	and Cols. 23-24 equal ...	then $\frac{\text{Cols. 28-30}}{\text{Cols. 25-27}} = P$, Where ...
01, 02	01	$.80 \geq P \geq .25$
	02	$80 \geq P \geq 25$
03	01	$1.50 \geq P \geq .50$
	02	$150 \geq P \geq 50$
	10	$168 \geq P \geq 56$
04	01	$.80 \geq P \geq .20$
	02	$80 \geq P \geq 20$
05, 09	01	$.80 \geq P \geq .20$

ADDITIONAL INFORMATION FOR DATA ENTRY/EDITING
OF Q3-Q6 (THE REPEATING QUESTIONNAIRES) (Cont.)

- If Cols. 16-17 equal ... and Cols. 23-24 equal ... then $\frac{\text{Cols. 28-30}}{\text{Cols. 25-27}}$ = P, Where ...

Q3 (Cont.)	06	04	.30 ≥ P ≥ .10 *
		05	3.00 P 1.00
		06	2.00 P .50
		08	48.00 P 16.00
	10	13	5.00 P .50
		14	5.00 P .50
		01	.30 P .15
		02	20.00 P 10.00
	11	04	2.00 P .40
		02	5.00 P 1.50
		03	50.00 P 30.00
		05	20.00 P 3.00
	12	09	20.00 P 13.00
		16	1.70 P 1.08
	13	09	20.00 P 13.00
		01	.35 P .22
	14	01	1.20 P .80
		15	6.00 P 4.00
	15	04	.25 P .04
		05	3.00 P .50
		09	15.00 P 4.00
	19	01	2.00 P .15
		13,14	9.00 P 1.00
		04	2.00 P .15
		05	12.00 P 1.00
	20, 21	01	1.20 P .60
		06	8.00 P 3.00
		08	256.00 P 96.00
	22, 29	01	1.20 P .60
		06	6.00 P 2.00
		08	192.00 P 64.00
	30	04	5.00 P .50
		01	.80 P .15
	31	01	.80 P .15
		04	2.00 P .25
		05	18.00 P 3.00
	39	01	3.00 P .15
	40	15	22.00 P 15.00
	95	01	3.50 P 1.50

- Cols. 18-19 and/or Cols. 23-24 may equal 15 only if Cols. 16-17 = 14, 40 or 95.

* ≥ between P and all numbers.

ADDITIONAL INFORMATION FOR DATA ENTRY/EDITING OF Q3-Q6 (THE REPEATING QUESTIONNAIRES)

Q3

- Cols. 1-17 are never blank.
- Cols. 18-22 may be blank (all or nothing) if Cols. 23-32 are completed.
- Cols. 23-32 may be blank (all or nothing) if Cols. 18-22 are completed.
- Field No. may = 0 if Field Name = "Outside IRDP."
- If Cols. 16-17 equal ... then Cols. 18-19 and/or Cols. 23-24 may equal ...

01,02	01, 02, 04, 05
03	01, 02, 10
04	01, 02
05, 09	01, 04, 05
06	04, 05, 06, 08
10	13, 14, 01, 02
11	02, 03, 04, 05
12	09, 16
13	09, 01
14	01, 15
15	04, 05, 09
19	01, 04, 05, 13, 14
20, 21, 22, 29	01, 06, 08
30	01, 04
31	01, 04, 05
39	01
40	15
41, 42, 43	should not be recorded
95	01, 15

- If Cols. 18-19 = Cols. 23-24, then Cols. 20-22 Cols. 25-27.
- If Cols. 16-17 equal ... and Cols. 23-24 equal ... then $\frac{\text{Cols. 28-30}}{\text{Cols. 25-27}}$ = P, Where ...

01, 02	01	.80	P	.25
	02	80	P	25
03	01	1.50	P	.50
	02	150	P	50
	10	168	P	56

ADDITIONAL INFORMATION FOR DATA ENTRY/EDITING
OF Q3-Q6 (THE REPEATING QUESTIONNAIRES) (Cont.)

Q4

- No blanks (dashes) are allowed on this questionnaire, unless only the identifier (Cols. 1-14) is completed.
- If Cols. 18-19 equal ... then Cols. 16-17 may only equal ...

If Cols. 18-19 equal ...	then Cols. 16-17 may only equal ...
22	00
20	06, 14, 20, 21, 22, 29
15	01, 02, 39
09	01, 02, 10, 12, 13, 15, 19, 40
06	01, 02, 04, 05, 09, 10, 11, 12, 13, 14, 15, 19, 31, 39, 40, 95
05	01, 02, 03, 04, 05, 06, 09, 20, 21, 22, 29, 30, 31, 39, 95

- If Cols. 16-17 equal 41, 42 or 43, then Cols. 18-19 may only equal 01, 02, 03, 04, 10, 11, 12, 14, 16, 21 or 23

- Col. 15 ≠ 0

Q5

- No blanks (dashes) are allowed on this questionnaire, unless only the identifier (Cols. 1-14) is completed.
- Col. 15 ≠ 0.
- If Col. 18 equals ... Then Cols. 16-17 may only equal ...

If Col. 18 equals ...	Then Cols. 16-17 may only equal ...
4	03, 06, 20, 21, 22, 29, 30, 31, 39, 95
5	01, 02, 04, 05, 09, 10, 11, 12, 13, 14, 15, 19, 31, 39, 95

- If Col. 18 equals ... Then Col. 19 may only equal ...

If Col. 18 equals ...	Then Col. 19 may only equal ...
1	2, 5
2	1, 2
3	1, 2, 3
4	1, 2, 3, 4, 5
5	2, 5, 6
6, 7	7, 8
8	7

ADDITIONAL INFORMATION FOR DATA ENTRY/EDITING OF Q3-Q6 (THE REPEATING QUESTIONNAIRES) (Cont.)

Q5 (Cont.) - If Col. 18 equals ... and Col. 19 equals ... Then Cols. 23-25 / Cols. 20-22 = P, Where ...

1	2	.36 ≥ P ≥ .10*
	5	40.00 P 4.00
2	1	1.40 P .25
	2	20.00 P 4.00
3	1	2.00 P .50
	2	15.00 P 9.00
	3	25.00 P 12.00
4	1	6.00 P 0
	2	80.00 P 0
	3	6.00 P 0
	4	6.00 P 0
	5	55.00 P 0
5	2	1.00 P 0
	5	55.00 P 0
	6	2.00 P 0
6, 7	7	100.00 P 15.00
	8	300.00 P 75.00
8	7	15.00 P 4.00

Q6

- Cols. 1-14 are never blank.
- Cols. 15-24 may be blank, as a group.
- Cols. 21-22 should always be blank, except when Cols. 15-16 = 14.
- Cols. 23-24 should always be blank, except when Cols. 15-16 = 13.
- Cols. 25-30 may be blank, as a group (all or nothing).
- If Cols. 15-16 = 13, then Cols. 17-20 / Cols. 23-24 = P, where 75.00 P 2.00.
- If Cols. 15-16 equal ... Then Cols. 17-20 should not exceed ...

01	1500
02, 03	2000
04, 06, 08, 14	0500
05	0150
10	1800
12, 15, 16	0300
13	0800

* between P and all numbers.

ADDITIONAL INFORMATION FOR DATA ENTRY/EDITING
OF Q3-Q6 (THE REPEATING QUESTIONNAIRES) (Cont.)

Q6 (Cont.) - If Cols. 25-26 equal ...	Then Cols. 27-30 should not exceed
01	0600
02, 03	0060
04	0400
05	0200
06, 07, 09, 11	0300
10	0800
12	0400
13	1500
14, 15	0100

ADDITIONAL INFORMATION TO BE USED FOR DATA ENTRY/EDITING OF THE ONE-TIME QUESTIONNAIRES

Q1

- Individual ID Nos. are consecutive, beginning with 01.
- If any one column of 26-30 has a digit, then all five cols. (26-30) should have digits (no dashes); i.e., either all digits or all dashes.
- All rows should be complete (only one response/question).

Q7

- All rows should be complete (only one response/question).

Q8

- All rows should be complete - no blanks at all.
- If Col. 15 = 4, then Cols. (20-23) (24-27) should not exceed 0010.
- If Col. 15 = 5 or 6 or 3 then Cols. (20-23) (24-27) should not exceed 0300.
- If Col. 15 = 1 or 2 or 7 or 8, then Cols. (20-23) (24-27) should not exceed 2500.

Q9

- Cols. 17-20 may be blank if Cols. 15-16 = 11 or 12 or 13 (they should be blank if Cols. 15-16 = 11 or 12).
- There may be more than one response per loan source in Cols. 30-31; one response (per loan source) only for the other questions.
- Cols. 15-33 may all be blank iff Col. 34 is completed with a number.

Q10

- Cols. 15-19 may all be blank iff no soil conservation treatment; otherwise, only Col. 18 may be blank.
- Cols. 16, 17, 18 may have more than one response; Col. 19 has only one response per questionnaire.
- If more than one response in Col. 15, responses in Cols. 16-19 refer to all responses in Col. 15 as a group.

Q11

- Cols. 17 and 18 may have more than one response per organization; these are listed separately for each organization (if more than one).
- Col. 19 may have more than one response; it is filled in with a number only if Cols. 15-18 are blank (conversely, Cols. 15-16 may be blank iff Col. 19 has a number)
- Col. 16 has one response per organization.
- Col 18 was not pre-coded.

ADDITIONAL INFORMATION TO BE USED FOR DATA ENTRY/EDITING OF THE ONE-TIME QUESTIONNAIRES (Cont.)

Q12

- Cols. 18, 21, 25 may have more than one response per questionnaire; all other cols. have only one response.
- Col. 25 was not pre-coded.
- Col. 18 may be blank if Col. 17 = 8.
- Cols. 20 and 21 may be blank if Col. 19 = 8.
- If Cols. 17 and 19 both = 8, then Col. 22 = 8.
- If Cols. 17, 19 and 22 = 8, then Col. 24 is blank.

Q2

- All rows should be complete (only one response per question).
- Field Nos. are consecutive, beginning with 1 on each form (they may be entered in any order, of course).
- Cols. 22-32 should be blank (dashes) if Col. 21 = 9
- Cols. 22-32 may only be blank if col. 21 = 9.
- Cols. 31-32 may be blank under any circumstances.
- Cols. 33-34 should never be blank.
- Cols. 35-36, 37-38, and 39-40 may be blank under any circumstances.
- As on other questionnaires, zeros signify something different from dashes (blanks).
- Cols. 16, 17 and 18 may never all be zero.
- If Col. 22 = 1, then Cols. 23-24 should be $\geq$ 77.

ANNEX D - UNIT CONVERSION FACTORS

ANNEX D

UNIT CONVERSION FACTORS

The following conversion factors were assembled in the field over the course of the survey. They apply mainly to Q3 (for production unit and marketing unit), but some also apply to Q5 (for input unit-planting material. Some of these factors are widely accepted standards and others are more localized. They are to be used in conjunction with other lists of standard conversion factors in order to put each crop into a single unit before beginning the analysis. A quite comprehensive listing of unit conversion factors, yields and prices (now outdated) was assembled for the 1979 Baseline Survey: "Crop Work-Sheet - Appendix I (Computer Editing Specifications)." All crop-specific tables based on these conversion factors should include notes stating the condition (e.g., green vs dried, threshed vs unthreshed, etc.) of each crop which is commonly reported in more than one condition. It should also be borne in mind that all conversion factors are, to one degree or another, approximations.

CONVERSION FACTORS: UNITS ENCOUNTERED DURING THE CURRENT SURVEY

Coffee:	1 box = 60 lb. (green)
Cocoa:	1 box = 12 inches (green) (ex: 9 in. (code 16) = .75 box)
Citrus:	1 box = 1 hamper ("hamper" = unit code 15, Q3)
Pimento:	1 bag (code 10) = 20 lb.
Ginger:	1 kerosene "tin" (code 15) = 20 lb. (fresh) 5 "tins" = 1 bag (code 10) (fresh) 1 bag = 100 lb. (fresh)

[NOTE: If, on Q3, crop = "ginger" (14) and unit = "other" (15), then the "other" unit is always kerosene "tins" of green ginger. If ginger is given in pounds (01), then the ginger is always dried and peeled.]

Tobacco: 1 "rack" (or "rail") = 5 lb. (dried)
120 leaves = 1 "rack" (green)

[NOTE: If, on Q3, crop = "tobacco" (95) and unit = "other" (15), then the "other" unit is always "racks" of green tobacco. Once tobacco is dried on these racks, about 5 pounds of tobacco is obtained per rack. If tobacco is recorded on Q3 in pounds (01), then the tobacco is always dried.]

Yellow Yam: 3 heads = 1 hill

Other Yam: 4 heads = 1 hill

[NOTE: These figures may be taken as rough estimates for both Q3 and Q5. The actual number of heads planted and reaped per hill varies according to soil type; i.e., farmers in P9-P12 might be more likely to plant only two heads per hill, whereas farmers in P1 and P2 might average 4-6 heads per hill. On Q3, the "head" unit code is "unit" (04); on Q5, the "head" unit code is "unit" (6) and "hill" is "other" (9).]

Red Peas (1 "bundle" (code 11) = 1 lb. (green, unshelled)
Gango Peas (1 quart (code 06) (dry, shelled) = 2 lb. (green, unshelled)
Cow Peas (1 "bag" (or "sack") (code 10) (green, unshelled) = 1 bushel (code 08) (green, shelled)

[NOTE: If, on Q3, the crop is either red peas, gungo peas or cowpeas, and unit = "quart" (06), or "bushel" (08), then the crop has already been shelled. If, for these crops, unit = "bundle" (11), "bag" (10), "sack" (10), or "pounds," then the crop is unshelled.]

Irish Potato: 1 "bag" (01 "sack") (code 10 on Q3, code 5 on Q5) = 112 lb.

Corn: 12 "ears" (code 04) = 1 "bundle" (code 11) (fresh, unshelled)
Shelled weight = .35 times the fresh, unshelled weight

Banana, Plantain: 1 "bunch" (code 14) = 1 "stem" (code 13)

[NOTE: This terminology differs from what is normally used in Jamaica, but for our purposes, "bunch" and "stem" are the same unit.]

Variable	Column(s)	Possible Values/ Value Ranges	Observations
Forestry - condition class (cont.)			Condition Class Codes: 1 = good colour, good form, no insect problem. 2 = good colour and form, little insect damage. 3 = good form, yellowish colour. 4 = poor form, colour all right. 5 = poor form, yellowish colour, noticeable insect damage. 6 = no trees surviving.
Ruinate, Fallow	19-21	'---', 000-585	Acreage of fields containing only ruinate (crop code 43) or fallow (crop code 42). Cols. 19-20 in acres; Col. 21 in square chains.
Farm Size Group (FSG)	22	1-6	Using cultivated acres, follows same code list as Baseline Survey: 1 = 1 acre 2 = 1 - 2 acres 3 = 2 - 5 acres 4 = 5 - 10 acres 5 = 10 - 25 acres 6 = 25 - 50 acres
Maintenance	23-24	'--', 00-14	Numerical rating from Soil Conservation Treatment Maintenance Checklists aggregated to the farm level. Used in compiling IRDP farm groups: 00-07 = "poor maintenance"; 08-14 = "good maintenance."
Extension Frequency	25	'-', 1-7	Taken from Q12 data, Col. 22: 1 = weekly 2 = bi-weekly 3 = monthly 4 = bi-monthly 5 = quarterly 6 = half-yearly 7 = once per year '-' = never This data was collected in August, 1982 and probably most closely