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**Rwanda Farming Systems Research Program
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Farming Systems Research Program
(FSRP), Rwanda

TDY REPORT

Donald E. Voth
October 29-December 5, 1985

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Farming Systems Research Program (FSIP), Rwanda

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TRIP REPORT

Purpose

The "Expected Scope of Work" specified: "In particular, the consultant would: (1) with consultants from CIMMYT/Nairobi and FSSP/Florida aid in the development of work strategies that integrate methods and concepts emerging from the November 4, 1985, Farming Systems Conference in Kigali and the CIMMYT/FSSP/UOA follow-up FSR/E team training workshop in Rwerere; (2) provide assistance in designing evaluation criteria for internal evaluation that are consistent with project goals and objectives; (3) assist in the design and testing of a verification survey." Several other responsibilities were added during the time of the TDY, including, in particular, making some recommendations on project issues (FSR/E Advisor position, role of the extension training specialist, and liaison with MINAGRI functions in the project area).

Distribution of Time

The TDY was spent as follows:

First week (from Friday, Nov. 1, 1985, through Saturday, Nov. 9, 1985)--This period was spent (1) participating in part of the CIMMYT (Dr. Ananda) workshop at Rwerere with the FSIP team and (2) participating in the ISAR-CIMMYT FSR/E workshop in Kigali (Nov. 4-9) as a project and University of Arkansas observer.

Second week (from Nov. 11, 1985, through Nov. 15, 1985)--This week was spent (1) in some team-building activities with Ed Rawson and with the Rwerere team and (2) in contacting various persons and agencies concerning the baseline/verification survey and the FSR/E position.

Third week (from Nov. 18, 1985, through Nov. 23, 1985)--This week was spent in (1) meeting with the Rwerere team and (2) preparing preliminary drafts of reports in Kigali, including reports on the baseline/verification survey, the self-evaluation strategy, team building and team roles and responsibilities and other miscellaneous recommendations.

Fourth week (from Nov. 25, 1985, through Nov. 30, 1985)--This week was spent in (1) meeting with the Rwerere team to present and discuss preliminary reports and recommendations, (2) preparing final drafts of reports, and (3) exit interview with Mr. Michael Fuchs-Carsch of USAID.

Procedure

Several things were done to complete the responsibilities of the TDY:

1. Meeting and participating with the FSIP/Rwerere team:
 - Friday, Nov. 1 with Dr. Ananda of CIMMYT
 - Friday, Nov. 8 with Dr. Susan Poats of the Farming Systems Support Project of the University of Florida
 - Tuesday, Nov. 12 with the total FSIP/Rwerere team
 - Friday, November 15 with the total FSIP/Rwerere team
 - Monday, November 15 with the total FSIP/Rwerere team
 - Monday, November 25 with the total FSIP/Rwerere team

2. Interviewing, alone or in the company of other team members, a number of key individuals:
 - Mr. Edward Robins
 - Ms. Lucy Steinkamp
 - Mr. Bill Weber and several associates
 - Messrs. Craig, DeJaegher and Rwamasirabo at Enquete Agricole
 - Messrs. Rees and Sibomana at the Household Consumption Survey
 - Mr. Ntabahwana at the Census Bureau
3. Meeting with Mr. Gahamania, Director of ISAR, to discuss the status of FSIP and the FSR/E Advisor position.
4. Meeting with individual FSIP/Rwerere team members, largely in informal settings.

Hospitality

Because there are no hotel or restaurant facilities available at the ISAR station at Rwerere, it was necessary to take advantage of FSIP/Rwerere team member hospitality, which was generously provided. I spent eight days with the Rawsons and two with the Grosz' and had three meals, respectively, with K. B. Paul and Charles and Mercy Yamoah. Finally, I spent a very restful weekend in Gisenyi with Ed and Joan Rawson, November 16 and 17, 1985.

Products of the TDY

Separate reports have been prepared on the following:

1. Baseline/verification survey recommendations. Briefly, this report recommends that FSIP/Rwerere attempt to sub-contract with Enquete Agricole to perform a baseline/verification survey for the project in the near future. If this is not feasible, the report presents procedures that can be used by FSIP/Rwerere in performing this itself, with a cost estimate.
2. Self-Evaluation strategy. This report recommends that the FSIP/Rwerere team implement--or slightly expand--a system of activity record keeping and documentation and that the team plan to have a "retreat" prior to the first USAID internal evaluation in order to compile, summarize and discuss achievements up to that time and in order to have a systematic record ready for USAID internal evaluation.
3. Team building. This report summarizes activities and recommendations in the area of team building. It notes that a large amount of generic "team building" has already occurred and that the major additional needs are clear specification of roles and responsibilities of team members; it makes certain recommendations that are designed to further improve team functioning.
4. Miscellaneous recommendations. Brief separate reports have been written, with recommendations, concerning the FSR/E Advisor Position, liaison with MINAGRI functions in the project area and the role of the Extension Training specialist on the FSR/E team.
5. Socio-economic profile. Using newly acquired reports from Enquete Agricole and the 1978 Census of Population, a preliminary report has been prepared describing the households and farms of the project area. These data are derived either from the Buberuka Highlands agricultural region or from the prefecture of Ruhengeri, depending upon their source.

Assessment of Team Functioning

Having been involved in the Project Paper phase, this TDY has given me an excellent opportunity to assess the project and the functioning of the team. Thus, I want to make several comments about the project and its design, about the team, its development and functioning and about support for the project and the team.

Project Design. Several issues discussed thoroughly during project design and subsequently have arisen again, or continue to be issues:

1. **Liaison with MINAGRI.** The pattern of relationship with MINAGRI functions within the communes and sectors proposed in the final Project Paper in which FSIP literally becomes responsible for all MINAGRI functions in the project area was neither desired nor intended by the original design team. It was introduced at the very end of the Team's time in country and is clearly not workable. Fortunately, efforts are underway to revise this.

2. **Procurement.** Anticipating difficulty with procurement, the International Agricultural Programs Office at the University of Arkansas obtained estimates for possible sub-contracts of procurement services. OAR/R, however, disapproved the proposed sub-contract. And there have been problems and delays, as the Design Team anticipated. Fortunately, the University of Arkansas has now negotiated another sub-contract that is, evidently, acceptable.

3. **Full-time administration.** Near the end of the PP development stage, the University of Arkansas, together with the other participating universities, urgently requested a full-time administrator/chief of party in Kigali. Although included for a period of time, this position was ultimately again eliminated. It is evident now that the administrative burden is so heavy as to prevent Ed Rawson, the FSR/E team socio-economist, from practicing as such. And, unfortunately, FSR/E heavily front-loads the socio-economic input, especially in the early descriptive and diagnostic phase. Fortunately, with radio communication, some of this administrative burden will be relieved. However, the problem remains.

4. **FSR/E Position.** The Design Team was uncertain about the advisability of including this position in FSIP. As it turns out, it has created a heavy administrative burden for FSIP and has been unproductive. There is already evidence that the inter-project political sensitivity of this position might, in the future, have a negative impact upon FSIP. This is discussed further elsewhere.

5. **Housing and phasing of team.** The Project Design team anticipated that housing would not be available at Rwerere in time for fielding the team. And the team argued desperately for a design that would phase in the arrival of the team to allow the project to begin somewhat more gradually. In terms of housing, at least, it is clear that this would have been preferable.

6. **Separate management of engineering and vehicle procurement.** The Design Team was quite uncomfortable with the proposal, ultimately accepted, that certain parts of the project, such as the road and water components, vehicle procurement and construction, be managed separately from the project. As it turns out, this has been and continues to be a serious problem, with the FSIP team having only the most minimal input into these aspects that are so crucial to its functioning.

The FSIP/Rwerere Team. Although there has been some initial ambiguity about the respective roles of the soil scientist and the agronomist, the extension training specialist, the chief-of-party/administrator and, even, about the counterparts, these have largely been worked out. This is an exceptionally well-qualified team technically, in terms of familiarity and experience with Africa, in language capability (two, if one includes the Administrative Officer in Kigali, speak Kinyarwanda, which is exceptional, and several others are learning) and in terms of their ability and willingness to work together.

The two counterparts who have been assigned, Ignace Bizimana and Louis Marie Marukezi, are also very well-qualified, enthusiastic and able to work together in a cross-cultural and multi-disciplinary environment.

Finally, the team, under Ed Rawson's leadership, has developed congenial and cooperative relationships with the ISAR/Rwerere administrator and his team who, for a long period of time, were quite unclear about exactly what role the project had or would have on "their" station.

Support for the Team. No doubt, the University of Arkansas, USAID and ISAR, have all tried to support the team the best they could under the circumstances. However, support has not been as good as it should have been. Some examples are suggested, and others could be given. Communication with the University has frequently been poor, and resolution about financial reimbursement for team members has taken a very long time; USAID has not had construction finished in time and has not involved FSIP members in the process; vehicles have been purchased that were not recommended and that are almost non-functional; and even GOR has failed to provide counterparts in a timely fashion or to arrange immediately for their maintenance and support. Some of these problems are now history, and some have been resolved. They are raised here only to emphasize the quality of the team, which has made very significant progress, even under difficult circumstances.

Recommendations. I have made various recommendations--perhaps too many--elsewhere. Here, in the context of my own overall assessment of FSIP team functioning, I make several specifically for the University of Arkansas. They are made here in the trip report, which will be completed after return to the U.S., since they need to be discussed with Dean Westing before becoming part of the record of my TDY.

I preface my recommendations with an important observation. The expatriate team is wholly dependent upon--and at the mercy of--its supporting institution: the University of Arkansas, USAID, the U.S. Embassy in Kigali and ISAR. Matters that, in ordinary life, are personal, such as health care, communications with children in the United States, provision of the basics for subsistence (heat in the house, fuel with which to cook, etc.), are largely controlled by these institutions. For example, during my stay in Rwanda, one of the team member wives developed an infected tooth and later another broken tooth. It was felt necessary to evacuate her to Nairobi for proper treatment, but, in attempting to achieve this, the Chief of Party encountered a confusing maze of rules and regulations and, more seriously, incompetent medical advice, including the fact that official medical files had no record of several medical encounters. The team has almost no way to influence this, and yet it must operate in this environment.

Ironically, the Chief of Party, while carrying heavy responsibility, has very limited authority by the time USAID, University of Arkansas and ISAR procedures and regulations are taken into consideration simultaneously.

It is simply a fact that numerous requests for information or for particular items needed by the team have never even received a response.

With this background, my recommendations:

1. First the International Programs Office at the University of Arkansas must take a position as advocate for the team in Rwanda. Recent experience has been the opposite or has at least been perceived as such. Disallowing claimed expenditures, repeatedly questioning and challenging requests, etc., is at least the perception in the field. The first thing that can be done to ameliorate this is timely and meticulous response to all questions and requests coming from the field, including informing the team that the home office doesn't know if it doesn't. The most demoralizing response is none at all.

2. To accomplish this, I suggest also initiating a policy of regular, weekly telexes from the home office to Kigali in which all outstanding issues/requests, etc. are up-dated and current status is reported. This has already been suggested in a letter and telex by Rawson and myself, but until now there has been no response.

3. It is imperative that the International Programs office designate one person to have responsibility for coordinating all communications with FSIP. With current practice team members do not know to whom to direct inquiries, and it is too easy for requests and inquiries to be overlooked.

EXIT BRIEFING WITH MICHAEL FUCHS-CARSCH

Donald E. Voth TDY
Friday, Nov. 29, 1985

I. Expectations for TDY

A. Review Scope of Work

1. Help FSIP team integrate FSR/E concepts
2. Assist in designing internal (self) evaluation criteria
3. Assist in design and testing of verification survey

B. Additional functions:

1. Assist in team building
2. Preparation of selected recommendations based upon PP design experience, and upon detailed discussion with team members and others
3. Participate with team in performing certain current activities in FSR/E process, e. g. evaluation and use of secondary data sources, preparation of socio-economic profiles, assist in further defining team member roles and responsibilities

C. Outputs expected

1. Team trained in FSR/E concepts and methods
2. Document proposing internal (self) evaluation strategy
3. Document outlining procedures for verification (baseline) survey
4. Draft trip report

D. Additional outputs

1. Brief report on team building activity
2. Miscellaneous recommendations
 - a. FSR/E Position
 - b. Liaison with MINAGRI
 - c. Role of extension training specialist in FSIP team
3. Socio-economic profile based upon report of Enquete Nationale Agricole (ENA) and upon 1978 Census of Population information (Buberuka Highlands region and Ruhengeri Prefecture)

II. Review by Item

A. Training

1. Participated with team in both CIMMYT workshops
2. Then, assisted in subsequent decision-making and role definition--from perspective of Design Team and its objectives:
 - a. Decisions concerning timing and role of verification/baseline survey (see document on this issue)
 - b. Decisions concerning researcher vs. farmer management of first year trials
 - c. Tentative decisions concerning relation to MINAGRI functions in the project area
 - d. Decisions concerning numbers of first year on-farm trials
 - e. Decisions concerning respective roles of FSR/E team--on-farm trials by FSR/E team vs. the soil fertility and erosion research of the soil scientist
3. Worked with Louis-Marie Marukezi during last week in:
 - a. Design of and negotiations for verification/baseline survey
 - b. Collection of price information

B. Procedures for verification/baseline survey (see document on verification/baseline survey)

1. Background

- a. PP specified a baseline for comparative monitoring of cooperating and control farmers, which has several functions.
- b. PP also refers, later, to verification survey, as per the CIMMYT FSR/E procedure (See CIMMYT workshop presentation materials). This has its own specialized functions.

Note: Verification survey terminology seems to have been added in REDSO after PP team left Rwanda.

2. Procedure

- a. Participated in CIMMYT workshops and with team in decision-making on this issue
- b. Reviewed, with the rest of the team, other major surveys already performed, or being performed, in Rwanda

(1) Objectives of reviews

See whether actual samples and data could be used for baseline/verification as first wave of a panel to be re-studied at end of project;

See whether questionnaires, or parts thereof, could be used by FSIP;

See whether data itself could be utilized;

See whether special analyses could be performed for FSIP.

(2) Procedure--a series of interviews with

RAMM project--Bill Weber

Ms. Lucy Steinkamp

Enquete Nationale Agricole

Household Consumption Survey

National Bureau of Census

3. Results/Recommendations

- a. Recommend a sub-contract with ENA for a large (200-400) sample general survey in project communes as verification/baseline

(1) Use ENA questionnaires as base

(2) Measure (all?) fields--or at least all fields producing the major six crops (beans, peas, sorghum, potatoes, sweet potatoes, bananas)

(3) Add questions on:

Major problems

Inputs used

Varieties

Agricultural calendar

And, possibly, also prices

- b. If this does not work out, consider FSIP doing its own survey on same pattern (laid out alternatives in document on verification/baseline survey)

- c. More intensive monitoring (for measurement of production and inputs)

(1) Identified several alternatives, with rough estimates of costs

(2) Suggesting that this be made part of "special studies"

C. Miscellaneous recommendations (see separate document on these)

1. FSR/E position
2. Liaison with MINAGRI
3. Role of extension training specialist in FSR/E team

D. Socio-economic profile

1. Begin to set a pattern for team to use and keep up-dated
2. "Typical" (average) household/farm in region using:
Buberuka region data
Ruhengeri prefecture data

E. Internal (self) evaluation (see document on project evaluation strategy)

1. Background

PP proposes self-evaluation in addition to "internal," "mid-term" and "end of project."

2. Issues

- a. Systematic documentation using logic of log-frame and work plan
- b. Issues unique to FSR/E
- c. Possibility of periodic self-review, and suggesting times for this in the process

3. Procedure

- a. Developed an activity flow-chart for the FSR/E process part of the project
- b. Suggested key questions by activity (e. g., who responsible, deadline, special issues for this activity, etc.)
- c. Assigned arbitrary identification numbers to activities and entered each in computer in Wordstar for continuous recording, editing, to build database on activities
- d. Prepared document outlining this procedure

VERIFICATION/BASELINE SURVEY REPORT AND RECOMMENDATIONS

The TDY Scope of Work included "(A)ssist in the design and testing of a verification survey," with expected outputs of "A document outlining the procedures for the verification survey." This is that document.

Procedure

The procedure involved was to (1) participate with the team and Dr. Ananda of CIMMYT in the design of and planning for FSIP's application of FSR/E methodology in the project area, including consideration of the possible role of verification and/or baseline surveys, (2) systematically examine existing data bases in Rwanda and especially in the project area to determine whether they might themselves serve the desired functions, (3) investigate the possibility of sub-contracting such a survey to Enquete Nationale Agricole (ENA) and (4) make recommendations, in as much detail as possible.

What has been done here, then, is to (1) discuss the verification/baseline survey, (2) report on reviews of several surveys recently performed, or being performed, in Rwanda, including recommendations concerning FSIP use of or relationship to each, (3) present a preliminary outline of a proposed sub-contract with ENA to carry out a survey for FSIP and (4) outline an alternative procedure for use if FSIP must do its own survey.

FSIP Application of FSR/E and the Role of Verification/Baseline Survey

Though "verification surveys" are, ordinarily, an element in the FSR/E process, especially as developed by CIMMYT, the FSIP team is not persuaded that such a survey, with its very narrow focus, is necessary. This is, essentially, the result of careful team consideration and discussion after the two CIMMYT FSR workshops, first with the FSIP team and then with a large group of agricultural researchers from three countries in Kigali. A verification survey would have to be completed and analyzed before going to the field with the first-season on-farm trials in March 1986. The decision not to carry out a verification survey means that, if a broad-based survey is performed, it can be done in a more reasonable time frame.

Although "baseline" surveys have a poor history in FSR/E projects, ordinarily consuming large amounts of time and resources and not being available until too late to benefit the project, the Project Paper proposes monitoring both participant and control farmers in the project area to try to estimate both impacts upon participating farmers and--to the extent possible--"spread effects" of the project.

In view of this, it was decided that the details of performing such a baseline survey would be worked out during my TDY so that the FSIP team could implement them if it decided to do so. To avoid problems encountered previously in baseline surveys, efforts will be made to limit the amount of information collected to the essential items, and, if possible, the task will be sub-contracted to a professional survey organization.

Baseline/Verification Survey Design Logic

The Baseline/Verification survey will serve several important functions for FSIP.

1. First, it will serve as a baseline for the measurement of at least some potential project impacts. The design logic here is that an experimental group of farmers will be selected for cooperating with FSIP in on-farm trials. The survey data will provide a comparison or "control" group (to compare with cooperating farmers) in order to ascertain changes in overall farming practices and yields. For example, it will allow for determination of changes in crops produced by participating vs. non-participating farmers and, thereby, determination of which changes result from the project and which are merely trends in the project area.¹ In addition to this, the baseline/verification survey will allow estimating potential "spread" effects of the FSIP-introduced technology at the end of the project period.

Agronomic experiments will be carried on on the cooperating farms as well, of course, and the experimental designs used by the agronomists will be used to estimate the performance of this new technology. These designs can be, and will be, optimum in terms of validity, and their results will tell the FSIP team what the new technology itself can do, that is, show its on-farm potential. For this level of analysis, the baseline/verification survey information, while useful in identifying and further explicating farmer situations and problems, is not essential for evaluation.

2. Secondly, the baseline/verification survey will serve an important verification function in obtaining valid estimates for the project region of certain key agricultural practices and problems. This will be of use to the FSIP team in selecting technologies to introduce during the second and following growing seasons.

3. Finally, the baseline/verification survey will provide the FSIP with information to determine which components of the farmer population are represented by the cooperating farmers in order to ascertain the potential applicability of technologies being tested.

Examination of Existing Data Bases and Data Sources

To achieve the objectives of this activity, it was necessary to assess the existing survey data bases in Rwanda, and particularly in the project area. The primary question to be answered was whether the actual samples used in other studies, as well as the data collected from those samples, could be used as the first wave of a panel, to be interviewed again at least once near the end of the project, if not also at an intermediate point. Other questions, of course, concerned (1) the availability of descriptive and analytic data to more fully describe the farming system of the project area, in particular the possibility of having special tabulations prepared for the FSIP project communes and (2) the availability of subject matter issues and questionnaire instruments that should be adopted by FSIP in its baseline survey.

Interviews were held with Dr. Edward Robins, USAID; Mr. Michael Fuchs-Carsch, USAID; Dr. Bill Weber and Ms. Lucy Steinkamp, RRAM project; Mr. Serge Rwamasirabo, Enquete Agricole; Messrs. Phil Rees and Jean Bosco Sibomana, Household Consumption Survey; and Mr. Ntabahwana, of the National Bureau of the Census. Particular attention was paid to the sampling procedures used by these respective surveys and to the nature of the samples in the project area. Following is a brief assessment of each of the relevant survey projects:²

RRAM Survey Carried out by Steinkamp

Description. This survey has been carried out on 660 households in 11 communes of Ruhengeri prefecture, which includes three project communes: Butaro, Cyeru and Nyarutovu. Two sectors were selected in each commune, with 30 families per sector. The families were then selected purposively to

¹There is a problem of design validity, since the experimental (cooperator) farms are not the same as the control farms. However, one can regard the design as "quasi-experimental" and, by using statistical controls for other differences, obtain reasonable estimates of unique project effects.

²A copy of these brief assessments of the respective surveys should also be extracted from this TDY report and included in FSIP's secondary data assessment and synthesis system.

represent agro-ecological variability within the respective sectors.

Although it was not discussed, it appears that this survey was designed to make estimates down to the commune level.

The survey is almost entirely attitudinal and deals with attitudes toward resources. Families were asked to give their names, and most did. Hence, the families could be identified as a panel for follow-up. Interviewers, University students from Ruhengeri, were paid about U.S.\$5.00 per day, and they completed from 2 to 4 interviews per day. The RAM project is running short of money to complete the work, and would, for that reason alone, invite collaboration. It is also interested in collaboration in principle.

It is possible to prepare special tabulations of the project communes, and Steinkamp indicated possible availability for this and/or other assistance to FSIP in carrying out their baseline survey in the general period of January to March 1986.

Recommendations. This appears to be an excellent survey, with particular utility for FSIP as a source of possible attitudinal questions that have been pre-tested and used and of questions about the use of trees and soil erosion prevention practices. The FSIP baseline could probably include several such items; impacts upon farmer attitudes and opinions are of great importance in the long run because of the importance of the soil fertility and erosion research program of FSIP.

However, because of (1) the subject matter covered, (2) the purposive nature of the sample and (3) the fact that only three communes in the project area are covered, it cannot be used to provide the baseline for FSIP.

Thus, the recommendations are as follows: (1) Several of the best questionnaire items could be selected from this survey, dealing with farmer attitudes and farmer practices with respect to soil erosion prevention and the use of trees, and these questions could be incorporated into the FSIP baseline survey, if possible. (2) When Steinkamp has time to do it, special tabulations could be requested from the three project communes, in total and commune by commune (if the commune-by-commune tabulations already exist, all that would be needed is the three-commune totals), and this important information could be synthesized and incorporated into FSIP farming systems documentation. (3) As an important contingency, consideration could be given to Steinkamp being employed to supervise the FSIP baseline study, if it is not possible to arrange a sub-contract with Enquete Agricole (see below). (4) Finally, Steinkamp could assist FSIP in special studies on land tenure, as she has a strong interest in this area. Louis-Marie Marukezi could work with her on this study.

Enquete Agricole

Description. This important study, the first results of which have just been published, was discussed with the Director, Mr. Serge Rwamasirabo. We also met with Drs. John Craig and Y. DeJaegher. The methodology of the study is described in the initial publication (Enquete Nationale Agricole, 1985)

Without going into detail, the sample is a probability sample from lists, with a total of 14 samples in each sample sector. Samples were taken from 5 sectors in the project area, one each in Butaro, Cyeru and Nyamugali, and two in Nyarutovu, with a total of 70 samples. The sample sectors are very broadly distributed in the project area from the northern to the southern extremes. The households can be identified and could, in principle, be retained as a panel for re-interview in the future.

The questionnaire is ideal as a baseline, except for several items it did not include, some of which could easily be added. These are as follows: (1) Not all fields were measured on each farm. (2) Neither farm-by-farm nor field-by-field yields can be determined since only a sample of fields was measured and harvest yields were measured as a total for the farm. (3) No questions (or only very limited questions) were asked about (a) agricultural inputs, (b) agricultural practices or (c) plant varieties used.³

This survey was designed to make estimates down to the level of the prefecture, the "agricultural region" and the "geographical region."

Special tabulations for the project area were discussed and, because of the small sample size and the nature of the sampling procedure, are considered inadvisable. (Subsequently, some tabulations were made to check the relationship between the overall data, e. g., for the Buberuka Highlands, and that for

³Were it not for the small sample size, FSIP could well be content to simply use the Enquete Agricole samples in the project area as its baseline, thereby eliminating the need for an additional survey.

the project region. See ENA files for these tabulations.) ENA is, in principle, interested in sub-contracting an FSIP baseline in the project area.

Several meetings were held with ENA concerning a possible sub-contract. The results of this as per 30-11-1985 are presented below under "Sub-Contract Details."

Recommendations. This is an excellent information source for FSIP. It is also an agency that now performs survey research and analysis at a fully professional level. Thus, the recommendation is that (1) an effort be made to sub-contract with Enquete Agricole to perform a baseline survey in the project area, probably near the end of the March-June growing season, (2) that this include some additional information items (in particular those enumerated above), (3) that the length of time farms are monitored by Enquete Agricole in this study be reduced from their ordinary whole year (two growing seasons) to include only the March-June season, (4) that FSIP extensively exploit the initial (and subsequent) publications and analyses produced by Enquete Agricole in the description of the project area farming system and (5) that, whatever is done, the questionnaire used by ENA be used as the base for questionnaire development. Louis-Marie Marukezi has developed additional questions already (30-11-1985)⁴

In terms of exploiting ENA publications, it would be desirable, using the tables by "Agricultural Region," to prepare a detailed description of the typical (average) farm in the Buberuka Highlands region. Because of the extent and quality of this data and the convenient way it has been organized, this task should have very high priority. 1978 census volumes might also be exploited for this.

Household Consumption Survey

Description. This project involves the analysis of data collected in a very extensive, nation-wide survey of household consumption that was performed by MINIPLAN in 1982. Project funds are being used to support some of the analysis, and USAID has a strong interest in this analysis because of the information that has been collected. Our interviews were primarily with Messrs. Phil Rees and Jean Bosco Sibomana, though we also talked very briefly with Mr. John Otto.

The sample is also a probability sample (like Enquete Agricole, multi-stage, stratified). A probability sample of communes was selected (90 communes out of 143); one sector was then selected per commune and one census district per sector (when these were not coterminous).⁵ Then 13 households were randomly selected from lists within the census districts (maps are available indicating the units selected in this multi-stage procedure).

A series of questionnaire instruments were used, and the most extensive analysis of transactions (buying and selling) was obtained from only 3 of the 13 households selected in each census district. Thus, there is a total national sample of 1170 (13 x 90) and a sample for analysis of detailed household transactions of 270 (3 x 90).

Current analysis is being performed on the sample of 270 on detailed household transactions. Current analysis (November 1985) is still in very preliminary stages, focusing upon frequency and percentage distributions of raw answers to questions about the nature of household transactions. There is not, as yet, a volume of output that can be used by FSIP to characterize the farming system of the region. Thus, at the moment it would probably not be useful for FSIP to spend much time with these preliminary results. In the future, however, they are almost certain to be very useful.

The samples have been retained in such a way that they could, in principle, be used as a baseline for FSIP. However, the small sample size in the project area (only two project communes, with a total of 13 or 6 samples, depending upon which questionnaire is used), the nature of the questions asked and the time (1982) all make it impossible to use these samples as the FSIP baseline.

This survey was designed to make estimates down to the level of the prefecture, at least for the large sample (1170).

Special tabulations were discussed, and Household Consumption Survey staff said they would be willing to make such tabulations; however, the size of sample would make such tabulations virtually meaningless.

⁴See his manuscript.

⁵Census districts include, on the average, about 1000 people.

Recommendations. This is an excellent study, with a very strong and potentially very useful data base concerned with commercialization (its nature, extent and relative importance to the households) of agricultural products. While no estimates can be made specifically for the project area, perhaps special tabulations could be done by the Buberuka highlands region, or Ruhengeri prefecture figures could be used for special studies and/or economic analyses.

Thus, it is recommended (1) that analytic output from this study be carefully monitored for inclusion in FSIP's documentation of its area farming systems, (2) that consideration be given at some time in the future, after the Household Consumption Survey has been able to identify and tabulate the items that seem to be of greatest importance, to requesting special tabulations for the Buberuka Highlands region for use by FSIP, (3) that consideration be given to commissioning a special study dealing with the extent and nature of commercialization of agricultural commodities using data from this study and (4) that efforts be made, at least on a selective basis, to obtain the raw data from the Household Consumption Survey for such analyses.

National Bureau of the Census

Description. The 1978 national census was discussed with Mr. Ntabahwana, Chef du Service Informatique of the Bureau, simply with a view towards obtaining census publications for use by FSIP. One copy had already been delivered to ISAR, and I was informed that, because of that, ISAR could not be given another. However, he gave me one for the University of Arkansas, which has been delivered to the project for use at Rwerere.

There are five volumes in the census, each except the last, which deals only with Kigali, presenting data in order, first for the whole of Rwanda, then by prefecture in alphabetical order. The volumes are as follows:

- Vol. I: Effectifs de la Population: Statut de Residence, Sexe, Age, Etat matrimonial, Polygamie, Lieu de naissance, Nationalite, et Niveau d'Instruction.
- Vol. II: Activite Economique
- Vol. III: Fecondite--Mortalite
- Vol. IV: Menages et Habitat
- Vol. V: Secteur Urbain

Recommendation. This is a rich source of information on issues of direct relevance to the farming systems of the project area (e. g., the extent of polygamy). The source should be extensively "mined" for information about the typical (average) household in the project area, using the Ruhengeri prefectural data.

The original TDY report here included details of several alternative schemes for carrying out a survey. Since this was not done and the section included many technical details, it has been deleted for this report.

TEAM BUILDING REPORT

One of the responsibilities of the TDY was team building, an activity that had been anticipated but not carried out prior to the TDY. This is a summary of what was done and recommendations for further strengthening the team in achieving its objectives.

Background

Prior to the TDY, I was asked to assist in making arrangements for a team building specialist to come to Rwanda for a team building workshop. The recommended person was not available, so potential alternatives were contacted. This was then discussed with Ed Rawson, COP, and Tom Westing, Associate Dean for International Programs at UoA, then in Malawi. It was decided that bringing in another professional to carry out a separate team building workshop would not be advisable because (1) Ron Grosz was already making a significant contribution in the field toward team building, (2) much of what would normally be accomplished in a team building workshop--selecting the team, orienting them to the

country and the project, assisting them to learn to know each other--had already occurred naturally, and (3) the team anticipated a heavy load of workshops and external activities (with two TDY's and the two CIMMYT workshops). Thus, it was decided that I would assist in selected team building activities during the TDY.

After discussions with team members and Ed Rawson, it was decided that, because much team building had already occurred quite naturally, and because the major issues still outstanding were clearer definitions of roles and responsibilities in the context of the outcome of the two FSR/E workshops, team building would focus upon the latter issues.

Procedure

Team building as a generic activity had, of course, been going on since the team arrived in the field. The specific activity that occurred more or less during the TDY included (1) the CIMMYT workshop with the FSIP team in Rwerere (very ably led by Dr. Ananda of CIMMYT), (2) my work with Ed Rawson initially and then with the entire team in sketching out, in a flow-chart format, the activities expected through the first phase of on-farm trials, (3) full team discussions of these activities, (4) further definition of roles and responsibilities of team members, (5) revisions, where necessary, of scope of work resulting from this definition of roles and responsibilities and (6) several recommendations for further strengthening team effectiveness based upon close observation of the team in operation. A final part of this process was (7) discussions I had with Ed, Ron Grosz and other team members specifically about the need for activities to strengthen team spirit and facilitate team communication.⁶

The CIMMYT workshop. Dr. Ananda of CIMMYT led this workshop, and I arrived in time to participate only during the last day. Dr. Ananda took the team through the CIMMYT FSR/E process in detail. This stimulated detailed, and sometimes heated, discussion about how the team should implement FSR/E in the project area. This workshop was followed immediately by the week-long ISAR-CIMMYT FSR/E workshop on FSR/E in Kigali, in which the entire FSIP team participated. Throughout this process, the team was able to define for itself how it intended to implement FSR/E in the project area. My role was to participate more or less as a team member but also as an outside observer and especially as one who represented the original goals and objectives of the project design.

Several issues turned out to be difficult to resolve. The first was the extent to which farmers vs. researchers would manage the first on-farm trials. The second was the nature and role of the definition of "target groups." The third was the question of the respective roles of the FSR/E agronomist and the soils specialist and their respective research programs. Finally, there were questions about the relationship of FSIP to local MINAGRI bureaucracy and personnel and the specific role of the Extension member of the FSR/E team.

This, then, leads to the second stage, in which I participated more extensively.

First Season Activity Flow-Chart. Ed Rawson and I developed a tentative flow-chart of activities for the first season based upon previous discussions and the annual work plan that had been developed previously. This was prepared, and issues it raised were identified for discussion with the team.

Team Discussion. The full team met Tuesday, November 12, 1985, for a thorough discussion of the flow-chart of activities and issues arising from it and from the two FSR/E workshops that had just been completed. The discussion lasted all morning and went into the afternoon, and Ed and I alternatively took the lead. The several issues above were discussed and tentatively resolved. Ed (1) made specific task assignments, (2) suggested a solution to the agronomists' respective roles, with Paul being responsible for FSR/E on-farm trials and Yamoah being responsible for a more basic program of soil fertility and erosion research, which, while it might include on-farm trials, would be entirely researcher managed, at least at the outset. He also suggested (3) that initial on-farm trials of the FSR/E team be primarily researcher managed.⁷

⁶The fact that these activities and issues are documented here in my report should not be construed to imply that I did them, or resolved them. It was clearly a team effort, and I participated in that process.

⁷Another issue that came up for thorough discussion in the afternoon, unfortunately in Ron Grosz' absence, was the responsibility of FSIP for managing MINAGRI responsibility in the project area. This issue is discussed elsewhere (Liaison with Extension), and has little to do with team building itself.

There was further tear discussion of some of these issues at another team meeting in Rwerere November 18, 1985.

Ed also requested that team members begin to examine their respective SOW's to more accurately reflect their responsibilities as they were developing and particularly as they had emerged from this meeting.

Recommendations. Several things can be done to strengthen team spirit and facilitate communication and functioning. They are not my unique recommendations; they result from discussions with Ed and the team and, for the most part, have been in effect--at least partially--already. However, they are important enough, in my view, that they should be included as part of the on-going team building process.

1. Delegate responsibility for supervision at Rwerere when Rawson is away. This has been done.
2. Develop a regular schedule of team meetings at Rwerere to discuss issues of common concern.
3. Use a system of rotating chairmanship and rotating responsibility for keeping notes of these meetings to assure documentation of decisions and to assure maximum responsibility and participation of all members of the team.
4. Develop a periodic schedule of meetings for the broader team--that is, including at least Mark Kile and wives of team members and possibly occasionally also other support staff in order to discuss issues of common concern. This could be particularly beneficial in developing a sense of involvement and commitment of wives and support staff to the goals and objectives of the project.

MISCELLANEOUS RECOMMENDATIONS

Following are discussions and recommendations concerning:

1. The FSR/E Advisor Position
2. Extension trainer role in FSIP
3. FSIP liaison with MINAGRI in project communes

FSR/E ADVISOR POSITION

Comments and Recommendations by Donald E. Voth
November 30, 1985

Situation Description

This position was defined in the original draft of the project paper to have several specific responsibilities, as follows (see copy attached):

1. Identifies needs for training in FSR/E concepts and methodology among ISAR and MINAGRI officials.
2. Organizes instruction for in-service training in FSR/E concepts and methodology.
3. Identifies institutional resources to support both commodity research and FSR/E concepts and methodology and develops networks within Rwanda and within Africa to integrate Rwandan scientists.
4. Identifies and establishes several types of data bases on Rwandan Farming Systems.

5. Assists counterpart in developing coordinating mechanisms to integrate the various Farming Systems approaches used in Rwanda.

6. Assists Chief of Party of FSIP in preparing annual work plans.

This was prepared by the Project Paper Design Team, including Mr. Robert McColough of REDSO, on the basis of discussions that had been held with Mr. Gahamanyi, Director of ISAR. Mr. Gahamanyi was, at the time, awaiting suggested terms of reference for such a position from the World Bank, but these were not available before the Design Team left Rwanda.

It is these responsibilities that were reflected in the original Project Paper and Log-Frame. Although the terms of reference of the position have changed substantially since that time, the responsibilities associated with it in the FSIP Project Paper and Log-Frame remain the same, as follows:

Under "End of Project Status," No. 4, "National and international networks established to support the FSIP and FSR/E in general in Rwanda," and No. 6, "Awareness and understanding of FSR/E among Rwandan scientists, extension personnel, officials and farmers."

Under "Project Outputs," No. 5, "Databases on Rwandan farming systems which integrate existing secondary data and incorporate new data generated under the FSIP and other farming systems projects," and No. 6. "Linkages with IARC'S."

Subsequently, several different definitions of the FSR/E Advisor position have been prepared, including the one that is in the final, official Project Paper. Biometrics and the responsibility of actually carrying out "systems" research at the Rubona ISAR Station, in addition to the responsibilities above, have been added to these descriptions. There is now another draft, which is also attached. It still identifies extraordinarily broad responsibility for the position, from assisting in experimental design and analysis of experimental data, to survey research responsibility, to actually carrying out on-farm trials him/herself, to building databases, to serving as liaison with farmers. What has been removed is the networking, training and conceptual responsibilities vis-a-vis FSR/E.

Observations

1. First, it will be impossible, in my judgment, to find someone who can satisfactorily achieve even the somewhat-reduced responsibilities found in the latest draft. Depth in even two of these areas--experimental design and its analysis, survey research and its analysis, and building and cumulating a broad range of databases (e. g., statistical data sets, bibliographic data sets, resumes of research, etc.)--is seldom found in one person, at least in my experience in the U.S. Land Grant system. If one adds to that the ability to carry out "systems" experiments, evidently "agronomic" experiments, the demands are overwhelming. Disappointment and frustration will inevitably result from not recognizing this.

2. Second, the implication that FSR/E should be a separate research program at ISAR/Rubona seems unwise to me. FSR/E should serve to implicate the commodity and discipline research and researchers of ISAR in applied, on-farm research and not develop a separate "systems" research program. Such a separate program runs a serious risk of becoming isolated and competitive and, at worst, emulating developed country "systems" research programs that tend to focus upon complex quantitative ecology or simulation of biological processes and interactions in a manner even more removed from practical reality than the commodity-oriented research that they replace.

3. It is my impression that the World Bank's several reports on their support project to ISAR figure very heavily in the conceptualization of the terms of reference for this position. I submit that these reports display a confused and inconsistent view of what FSR/E is, as is true of the major Farming Systems terminology that they reference (Simmonds, referenced in "Staff Appraisal Report," p. 55). It is represented at the same time as a process of carrying out agricultural research by, among other things, working with farmers (Project de Recherche Agricole, 1985) and in the same document, virtually as separate sub-disciplines (e. g., "systems" agronomist, "systems" economist, etc.) and as a separate research program (e. g., the respective terms of reference for the "systems" scientists). The "process" view, which is that espoused by FSIP--and by CIMMYT in their workshops in Kigali--is simply not consistent with these other views.

4. The relationship between the FSR/E Advisor position and FSIP has always been ambiguous. The PP Design Team was, initially, reluctant to include it in the FSIP because, as a coordinative position within ISAR, it seemed to imply responsibility for some degree of control and regulation of FSR/E activities, or at least concepts. For one donor project to presume to play this role, it was felt, could only hinder cooperation with other projects. Furthermore, the need for the position and the various terms of reference for the position have essentially emerged from World Bank (and, perhaps, ISNAR) analyses and recommendations. One can ask why FSIP should be asked to support and manage a position, the role and responsibilities of which are defined by another agency.

5. As much as one may try to avoid it, management of the FSR/E Advisor position complicates the management of an already very complicated project. The recent history of this position is ample evidence. From this point of view, one could argue that the position should be redefined so as to contribute more directly to FSIP and its goals and objectives, especially to easing its management burden.

6. Finally, superficial review of the World Bank documents and of the situation at ISAR suggests that the greatest weaknesses at the moment are in the areas of social science and biometrics. It is not clear how biometrics relates per se to FSR/E, although there are, no doubt, some biometricians with an FSR/E perspective. The social sciences (agricultural economics and rural sociology) do, of course, have more direct application, especially for an agency that is primarily made up of biological scientists. Without including the economic or sociological perspective, research and development can hardly be regarded as FSR/E at all.

Recommendations

1. It is important that the responsibility for the FSR/E Advisor be further delimited. Perhaps this can be done after a person has been found to fill the position so that the responsibility can be negotiated with that person. However, most candidates will be reluctant to accept the position until their roles and responsibilities are further delimited and clarified. Thus, I have prepared three suggested terms of reference, one for an Agricultural Economist, one for a Rural Sociologist and a third for a genuine Farming Systems Advisor, which could include a number of agricultural disciplines but which would serve a key advising, coordinating and networking function. All three of these represent terms of reference for which persons can be found and tasks that can be performed. The third (FSR Advisor), because of its ambiguity, will be somewhat more difficult to fill and runs a greater risk of frustration.

2. Whatever the final terms of reference are, the FSIP Project Paper must ultimately be amended to reflect that. The FSIP team must not be held responsible for FSR/E Advisory responsibilities that cannot be met because of inconsistency within the terms of reference of that position.

3. If the FSR/E Advisor Position remains with FSIP, it would be highly desirable for it to be defined in such a way as to contribute directly to FSIP goals and objectives.

4. Care should be taken to avoid FSR/E becoming a separate and isolated research program at ISAR-Rubona and to avoid its turning into academic "systems" research.

5. When reviewing the situation at ISAR, as the World Bank has done, it seems evident that social science--and probably preferably agricultural economics--should be given high priority in filling this position. Thus, if the choice is to go with an established discipline, with a systems perspective, agricultural economics should be given first priority, and rural sociology next.

FSR/E Advisor

Copy of currently circulated terms of reference for FSR/E Advisor

Nature of the Job

The FSR/E Advisor will be responsible for assisting with the coordination of FSR/E efforts in Rwanda. S/he will supervise data collection and analyses, advise in the design, development and application of farming systems experiments, trials and databases for ISAR-supported FSR/E projects. The incumbent will work closely with the Director of ISAR and other research scientists, providing advice and assistance in coordinating all FSR/E activities in Rwanda and in developing rapport with other FSR/E projects in neighboring countries.

The FSR/E Advisor will be based at the ISAR headquarters at Rubona assigned to the Department of Etude du Milieu et des Systemes de Production but will work throughout the country visiting the various ISAR stations and FSR/E projects.

Duties and Responsibilities

In close collaboration with his/her Rwandan counterpart:

1. Assists research scientists in the collection, collation and analysis of experiments on farmers' fields and on the research stations and coordinates the exchange of the results of this data with all FSR/E projects and with appropriate MINAGRI and other government officials in Rwanda by the development of an ISAR-based network.
2. Participates in diagnostic surveys of the various FSR/E projects to the extent possible and develops area profiles of the different regions of Rwanda to support the projects in realizing the maximum impact in helping small farmers.
3. Conducts on-farm trials dealing with, among other subjects, the effect of rotation and intercropping in traditional agricultural practices; the effectiveness of erosion control techniques, especially those using agro-forestry; and techniques to maintain and increase soil fertility.
4. Assists research scientists in the statistical work related to the replication and verification of research results, identifying, establishing and maintaining databases on experiments and research results from on-farm and on-station trials.
5. Assists research scientists in the design of experiments on farmers' fields and on research stations by helping ISAR develop program directives for FSR/E planning purposes.
6. Assists ISAR scientists in building a rapport with extension personnel in order to develop a sensitivity to responding to farmers' needs and to the dissemination of appropriate germplasm and cultivation techniques to improve farmers' production.
7. Coordinates and prepares reports for the Department, which will collate the results of the various FSR/E projects. These reports will be distributed to all FSR/E scientists and extension personnel and will be the basis for the development of the FSR/E network in Rwanda.
8. Identifies needs for training in FSR/E disciplines including in-service training for research and extension technicians in statistics, experimental design, appropriate extension and farming systems data base concept methodologies. S/he will be responsible for coordinating FSR/E training activities with IARCs and other international organizations as required.
9. Assists FSIP Chief-of-Party in preparing annual work plans and reports.
10. Performs other tasks that may be assigned by the FSIP Chief-of-Party or the Director of ISAR.

Qualifications

The FSR/E Advisor should be experienced in the application of statistical techniques to analyze the results of on-farm and on-station agricultural research trials under the FSR/E approach. S/he should have a Ph.D. in an agricultural discipline, preferably in agronomy or agricultural economics; other academic degrees or disciplines will be considered if the candidate has exceptional supplemental qualifications. S/he should have experience with a multidisciplinary approach to agriculture¹ research as well as with on-farm trials in developing countries. Fluency in French (FSI S-3, R-3) is required. The individual must be familiar with micro-computers.

Relationships

As a member of the FSIP team, the FSR/E Advisor is responsible to the Chief-of-Party for job performance and adherence to AID and University of Arkansas policies and regulations. S/he is responsible to the Director of ISAR for functional responsibilities.

Duration of Assignment

Four years.

Terms of Reference: Agricultural Economist/Farming Systems Advisor

Nature of the Job

In collaboration with his/her counterpart at ISAR/Rubona and with the respective biological scientists and field research projects, gives leadership in carrying out and assisting ISAR to develop the capability to carry out economic analysis of agricultural technology produced by ISAR at Rubona, at ISAR regional research stations and at the respective ISAR projects. In the same collaborative manner, gives leadership to socio-economic analysis of the major farming systems of Rwanda and advises the Director of ISAR on the socio-economic aspects of Farming Systems Research.

Duties and Responsibilities

1. Develops cooperative relationships with station researchers and field researchers so that economic analysis can be performed on, and incorporated into, ISAR research.
2. Participates in the design of researches when necessary, with a view towards including economic analysis as an integral part of ISAR research.
3. Assists in the development and/or introduction of methods of economic analysis applicable to ISAR research efforts (e. g., partial budgeting, marginal analysis, risk analysis and analysis of factor proportions and factor returns).
4. Assists in the training of ISAR staff, especially those with socio-economic research responsibility.
5. Advises the Director of ISAR on issues concerning economic analysis, including methods, the development of institutional capability, training, etc.
6. Assists in the design and implementation of selected ISAR socio-economic studies, including surveys, analysis of existing data on agricultural or rural issues, etc.
7. Cooperates with the College of Agriculture at the National University of Rwanda in the area of agricultural economics.
8. Develops his/her own program of research in agricultural economics, focusing upon selected issues of major importance to Rwandan agriculture (e. g., developing initial commodity budgets).

9. Provides leadership and support for the economics component of FSR/E research among the various projects in Rwanda.
10. Assists his counterpart and the Director of ISAR in the coordination of FSR/E activities.

Qualifications

1. A Ph.D. in agricultural economics, preferably with strong training in farm management/production economics.
2. Several years of experience in farm-management-related research and/or farm management research/extension responsibility.
3. Experience with multi-disciplinary research.
4. Familiarity with FSR as a development process. (This can be obtained in selected workshop experiences.)
5. Knowledge of French at least at the level of FSI R3 S3.

Special Qualifications

It is also desirable, although not essential, that the person have some administrative experience related to research. It is also desirable that the person have experience in third world environments. Finally, it is important that the person have a demonstrated record of working cooperatively with other researchers.

Terms of Reference: Rural Sociologist/Farming Systems Advisor

Nature of the Job

In collaboration with his/her counterpart at ISAR/Rubona and with the respective biological scientists and field research projects, gives leadership in carrying out and assisting ISAR to develop the capability to carry out sociological analysis of agricultural technology produced by ISAR at Rubona, at ISAR regional research stations and at the respective ISAR projects. In the same collaborative manner, gives leadership to sociological analysis of the major farming systems of Rwanda and advises the Director of ISAR on the sociological aspects of Farming Systems Research.

Duties and Responsibilities

1. Develops cooperative relationships with station researchers and field researchers so that sociological analysis can be performed and incorporated into, ISAR research.
2. Participates in the design of researches when necessary, with a view towards including sociological analysis as an integral part of ISAR research.
3. Assists in the development and/or introduction of methods of sociological analysis applicable to ISAR research efforts (e. g., survey research and survey research methods, organizational aspects of agricultural production, labor and labor allocation, acceptability of new technology, etc.)
4. Assists in the training of ISAR staff, especially those with socio-economic research responsibility.
5. Advises the Director of ISAR on issues concerning sociological analysis, including methods, the development of institutional capability, training, etc.

6. Assists in the design and implementation of selected ISAR socio-economic studies, including surveys, analysis of existing data on agricultural or rural issues, etc.
7. Cooperates with the College of Agriculture at the National University of Rwanda in the area of rural sociology and survey research.
8. Develops his/her own program of research in agricultural and rural sociology, focusing upon selected issues of major importance to Rwandan agriculture (e. g., land ownership, allocation of labor, family organization and its relationship to agricultural development, etc.)
9. Provides leadership and support for the rural sociology component of FSR/E research among the various projects in Rwanda.
10. Assists his counterpart and the Director of ISAR in the coordination of FSR/E activities.

Qualifications

1. A Ph.D. in rural sociology, preferably with strong orientation toward production agriculture.
2. Several years of experience in agricultural-production-related research and/or research/extension responsibility.
3. Experience with multi-disciplinary research.
4. Familiarity with FSR as a development process. (This can be obtained in selected workshop experiences.)
5. Knowledge of French at least at the level of FSI R3 S3.

Special Qualifications

It is also desirable, although not essential, that the person have some administrative experience related to research. It is also desirable that the person have experience in third world environments. Finally, it is important that the person have a demonstrated record of working cooperatively with other researchers.

Terms of Reference: Farming Systems Advisor

Nature of the Job

In collaboration with his/her counterpart at ISAR/Rubona and with the respective biological scientists and field research projects, the Farming Systems Advisor is responsible for FSR/E coordination, the development of conceptual and methodological bases for FSR/E in ISAR, and the development of networks among Rwandan Farming Systems researchers and projects, as well as networks outside Rwanda. He/she also gives leadership to the collection, compilation, organization, and making available of key data bases of use to FSR/E researchers and projects.

Duties and Responsibilities

1. Develops cooperative relationships with station researchers and field researchers so that coordination and networking among FSR/E researchers and projects may be achieved.
2. Identifies needs for instruction and in-service training in FSR/E concepts and methodology among ISAR and MINAGRI officials, Rwandan agricultural scientists and project personnel and gives leadership to organizing training opportunities.

3. Identifies institutional resources to support both commodity research and FSR/E concepts and methodology and develops networks within Rwanda and with the outside.
4. Identifies key databases on Rwandan farming systems and gives leadership to their collection, organization and appropriate dissemination to FSR/E researchers.
5. Gives leadership to the development of advisory and coordinating mechanisms in Rwanda to integrate the various farming systems approaches being used and/or proposed.
6. Cooperates with the College of Agriculture at the National University of Rwanda in the area of Farming Systems Research and its application.

Qualifications

1. A Ph.D. in an agricultural discipline.
2. Several years of experience in multi-disciplinary, farming systems or farming systems type of research or research/extension.
4. Familiarity with FSR as a multi-disciplinary process for the design and testing of agricultural technology using on-farm research and farmer involvement as part of the development process.
5. Should be a senior person with extensive experience in organizing and directing research and development activities.
6. Knowledge of French at least at the level of FSI R3 S3.

Special Qualifications

It is also desirable, although not essential, that the person have some administrative experience related to research. It is also desirable that the person have experience in third world environments. Finally, it is important that the person have a demonstrated record of working cooperatively with other researchers.

EXTENSION TRAINER ROLE

Background

The FSR/E team has, as one of its members, an Extension Specialist. Until now, a counterpart has not yet been appointed, and it seems likely that one will not be appointed soon. There appears to be some ambiguity about this role, an ambiguity that has roots in the history of FSIP.

A distinction can be made between extension as a functional activity on the one hand and participation of the institution of extension on the other. During the design of the project, the question of how to develop liaison with extension (the institutional participation issue) was paramount. And it was assumed that the extension member of the team would serve as a technical agriculture member of the team until such time as there was technology to extend. Indeed, technical expertise in animal science was suggested as a qualification for this position. Thus the extension function would not begin until later in the project. At the same time, it was hoped that this position would be administratively tied in some way to MINAGRI to serve the important function of extension liaison.

In reality, the institutional tie with MINAGRI was not accepted, and the extension specialist on the team has strong skills in extension functions such as training, as well as in social science, but is not used optimally as a technical agriculture specialist. Hence, there is currently some ambiguity in this important role.

At the same time, the original project design sought to have a full-time extension specialist in Kigali to work with MINAGRI in strengthening extension functioning throughout Rwanda. This is a position that was sacrificed when the budget was found to be inadequate.

Recommendations

It must be emphasized that these recommendations are not completely new. To a degree they are already being implemented. And the situation is really more of an opportunity than a problem. The recommendations are that, in addition to other responsibility the COP wishes to give the extension specialist (e. g., in the area of socio-economic research and/or analysis), the program be developed in the following ways:

1. That the extension responsibility on the FSR/E Team be viewed as a "process" similar to the overall FSR/E process and that this process focus upon first analyzing and understanding both the extension institutions and their functioning in Rwanda and in the project area and upon general communication patterns.
2. That, consistent with this, the extension specialist focus, during the initial year or two of the project, upon descriptive research and analysis. This descriptive research and analysis would, as is suggested above, focus upon (a) the institutions responsible for extension in Rwanda, their programs, their functioning and their effectiveness and upon (b) patterns of communication inherent in Rwandan society that can, ultimately, be used to extend agricultural technology (e. g., social networks, traditional and customary groups and organizations, etc.).
3. That the results of these descriptive analyses be written up with a view towards making specific recommendations for extension methods to be used by the project when it has produced viable technology, as well as giving the FSR/E team guidance on how most effectively to relate to farmers and farmer organizations during the initial on-farm trial and monitoring stage of the project.
4. That the extension specialist be encouraged to seek opportunities for publication and presentation of these descriptive researches for the benefit of other projects and the agricultural development community in general.
5. That the extension specialist be encouraged to respond selectively to requests for specific training activities within both MINAGRI and other donor projects.
6. As is already being done, that the extension specialist be responsible for issues having to do with the acquisition of extension-related hardware and software, with the development of the training center at the station and--if they are to be built--the building of training centers in the communes, and with the development of the FSR/E team's program of extension and training.
7. Finally, that the extension specialist be responsible for the development of extension and training materials applicable during the various stages of the FSR/E process. The focus should be upon preparing to transmit the technology developed by FSIP. This includes such things as simple visual materials, photos, slides, charges, etc., and focuses upon training agronomes and monitors, as well as farmers, when there is technology ready to transmit.

FSIP LIAISON WITH MINAGRI IN PROJECT COMMUNES

During the Project Paper Design process, the issues of project administrative location and relationships with MINAGRI and the agricultural services in the project communes received serious attention only at the very end. Several alternative arrangements had been suggested and circulated, but they had not been thoroughly aired. The PP team had proposed that FSIP employ its own cadre to implement its on-farm trials, either administered directly through ISAR or administered jointly by ISAR and MINAGRI.

The Design Team was well aware of a tendency to turn extensive MINAGRI responsibilities over to projects in areas designed to them and was concerned that this not occur with FSIP.

The route that was taken, however, both eliminated the majority of cadre from the FSIP budget--replacing them with GOR-employed cadre--and turned over administration of virtually all MINAGRI and

local Commune agricultural services to FSIP, indicating that FSIP/ISAR would sign agreements with MINAGRI that transferred this responsibility.

It is impossible and undesirable for FSIP to take this responsibility. It will be far easier to achieve effective collaboration between research and extension if this occurs gradually and largely voluntarily, after FSIP has gained experience in the project area and had the opportunity to develop some technology that can be "extended."

Thus, my recommendation, which is already under consideration, is that the Project Paper be revised in such a way that FSIP and ISAR can clearly delimit their responsibility in the project communes and their relationships with MINAGRI cadre in those communes. Such revisions should, then, be incorporated in the relevant parts of the Project Paper (e.g., the outputs, etc.)

SOCIO-ECONOMIC PROFILE OF FARMS IN THE FSIP PROJECT AREA⁸

Following is a brief socio-economic profile of farms in the FSIP project region. Depending upon the source used, the data refer either to the Buberuka Highlands agricultural region (see Delapierre, 1982, and Enquete Nationale Agricole, 1985) or to the prefecture of Ruhengeri. None are based upon data unique to the four communes of the project. However, it is felt that these larger regions are fairly typical of the project region.⁹

What has been done is to present average characteristics of the families and households, of the land owned and operated by the household and of the commodities produced on that land.

Household Characteristics

In the Buberuka Highlands region, 75.6% of the households are headed by a male and 24.4% by a female.¹⁰ The comparative national figures are 78.3 and 21.7%. There is an average of 4.6 persons per household, compared with a national average of 5.0 (Enquete Nationale Agricole, 1985). The distribution of household sizes by household numbers is given in Table 1. On average, households are somewhat smaller in the Buberuka Region. The modal category is 2, but 47% have from 3 to 5 persons per household. Only about 18% have more than 5.

Table 2 presents the percentage distribution of households by the number of active members in the household. The majority (55.7%) have 2 active members, which is somewhat higher than the national figures.

Thus, in spite of the relatively high fertility of the Rwandan population, the modal household in the project region is relatively small, suggesting that the project will be dealing with, as a modal pattern, nuclear families of husband and wife with several children.

There is, of course, some polygamy in the project area, and preliminary diagnostic survey results suggest that the presence of polygamy has a strong influence on the attitudes of men toward agricultural labor. In those areas where polygamy is common, men are ashamed to admit to doing agricultural labor, whether they do or not. Table 3, taken from the 1978 National Census, and presented for Ruhengeri prefecture, presents the distribution of married men 15 years of age and over by the number of wives. About 14% of married men, or one in seven, have more than one wife in the prefecture. While this is not a large percentage, it is clearly large enough to warrant consideration in the analysis of agricultural work and its distribution in the project area.

Farms and Farmland

Table 4 shows the percentage distribution of farms and the percentage distribution of total land area by size of farm, for both the Buberuka Highlands region and the national total. As the table shows, land ownership is very widely distributed in the Buberuka Highlands region, with somewhat less than 10% of farmers owning more than 2 ha (and these own only about 23% of the land), in contrast to the national

⁸Data have just become available from Enquete Nationale Agricole (ENA) that are tabulated from those unique samples within the project region. While the number is small (only 70 samples in total, and even then the overlap is not complete), these can be used for at least preliminary checks on the accuracy of the larger data base for the project area.

⁹Data are taken from Enquete Nationale Agricole, 1985, and from Census, 1978.

¹⁰See ENA for this definition. The definition ENA used is somewhat unconventional, and was based upon having major responsibility for a field, or group of fields. This definitional issue also has implications for family size data presented below.

figures, where 16% of farms and about 43% of land is in this larger size category.

Tables 5A and 5B present the characteristics of farms in terms of the number and average size of fields, by field type, for the two planting seasons. Data are presented both on "fields" and "blocks." Fields are homogenous pieces of land, several of which make up the blocks. Fields can have no crops, or several crops in relay or association. Blocks, of course, are units of contiguous fields.

The most interesting features of Table 5 are (1) the average size of farms (1 ha), the average number of blocks (7) and the average number of fields (15.2 or 16.2, depending upon the season). The latter is substantially higher than the national average. Clearly, land fragmentation is a problem in the project area. (Data are also available in ENA publications on the distance of these fields from the household.)

Production of agricultural commodities

Table 6 presents average per-farm production of agricultural commodities for both seasons separately and for the total year. This presents, in highly summarized form, the relative distribution of crops among the seasons and gives a clear idea of how much Rwandan farmers in the project area are able to produce from their 14 or 15 fields that total about 1 ha on the average.

Table 7 presents quite detailed information on the distribution of tasks between men and women by the respective commodities and by season. Unfortunately, the complexity of the information provided makes it difficult to interpret. It would be desirable to have a simple measure of the relative work load of men and women. While one could average across activities and across cultures, because of lack of knowledge about weights, this would be largely meaningless.

What we have done, then, is simply to point out which crops men and women participate in most. Men are involved, in this order, primarily in bananas, coffee, manioc, potatoes and wheat. Women, on the other hand, in addition to carrying most responsibility across the board, are involved most heavily in the production of sweet potatoes (30%-90%-58%-85%) and beans (33%-90%-75%-46%-38%).

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Table 1. Percentage distribution of household sizes in Buberuka Highlands region compared with the Rwandan national distribution.¹

Number of household members	Buberuka Highlands	Rwandan National
1	5.5	3.8
2	8.0	9.8
3	21.2	15.6
4	19.3	16.4
5	14.5	16.4
6	13.2	12.9
7	7.8	10.3
8	4.8	7.5
9	5.0	3.7
More than 9	0.5	3.6
Total	100.0	100.0
Average per household	4.6	5.0

¹Source: Enquete Nationale Agricole, 1985, Section on Agricultural Regions, Table 1.1.2C.

Table 2. Percentage distribution of numbers of active household members in the Buberuka Highlands region compared with the Rwandan national distribution.¹

Number of household members	Buberuka Highlands	Rwandan National
0	3.9	3.4
1	15.5	12.6
2	55.7	49.8
3	12.3	15.9
4	10.2	10.5
More than 4	2.5	7.9
Total	100.0	100.0
Average per household	2.2	2.4

¹Source: Enquete Nationale Agricole, 1985, Section on Agricultural Regions, Table 1.1.2D.

Table 3. Number and percentage distribution of married males 15 years of age and over by number of wives for Ruhengeri Prefecture and Rwandan national total.¹

Number of wives	Ruhengeri Number	Prefecture Percent	Rwandan Number	Total Percent
One	72455	84.5	642245	86.2
Two	10827	12.6	80355	10.8
Three	1170	1.4	8713	1.2
Four or more	203	0.0	1500	0.2
No data	1087	1.3	12156	1.6
Total	85742	99.8	744969	100.0

¹Source: Census, 1978, Vol. II, Table 5, pp. 150 and 155.

Table 4. Percentage distribution of number of farms and total land area for Buberuka Highlands and Rwandan national total.¹

Farm size category	Buberuka Highlands		Rwandan National Total	
	% farms	% area	% farms	% area
Less than 0.25 ha	5.9	1.1	7.4	1.0
0.25 to 0.50	17.8	6.8	19.0	5.9
0.50 to 0.75	24.5	15.9	16.5	8.4
0.75 to 1.00	11.6	10.6	13.8	10.0
1.00 to 1.50	20.2	24.9	15.6	15.7
1.50 to 2.00	10.2	18.0	11.1	16.1
More than 2.00	9.7	22.6	16.4	42.9
Total	100.0	100.0	100.0	100.0

¹Source: Enquete Nationale Agricole, 1985, Section on Agricultural Regions, Table 3.1.1.

Table 5A. Size, characteristics and numbers of fields per farm in Buberuka Highlands and Rwandan national totals.¹ (The first planting season of 1984.)

Characteristic	Buberuka Highlands	Rwandan Totals
Average size of farm (ha)	1.0	1.2
Average number of contiguous "blocks"	7.0	5.2
Average size of blocks (ares)	14.0	23.5
Cultivated fields		
Percent of fields in this category	52.7	61.6
Average size per farm (ares)	46.8	62.1
Average number of fields	9.6	9.6
Fallow fields		
Percent of fields in this category	23.2	11.0
Average size per farm (ares)	20.6	11.1
Average number of fields	2.7	1.4
Fields not cultivated for at least two years		
Percent of fields in this category	18.5	23.1
Average size per farm (ares)	16.4	23.3
Average number of fields	1.8	1.6
Fields with other uses		
Percent of fields in this category	5.6	4.3
Average size per farm (ares)	5.0	4.4
Average number of fields	1.1	0.8
Total field area		
Average size per farm (ares)	88.7	100.9
Average number of fields	15.2	13.4

¹Source: Enquete Nationale Agricole, 1985, Section on Agricultural Regions, Tables 3.1.2 and 3.1.3.

Table 5B. Size, characteristics and numbers of fields per farm in Buberuka Highlands and Rwandan national totals.¹ (The second planting season of 1984.)

Characteristic	Buberuka Highlands	Rwandan Totals
Cultivated fields		
Percent of fields in this category	64.5	64.7
Average size per farm (ares)	54.6	64.0
Average number of fields	11.7	11.7
Fallow fields		
Percent of fields in this category	15.5	9.6
Average size per farm (ares)	13.1	9.5
Average number of fields	2.4	1.3
Fields not cultivated for at least two years		
Percent of fields in this category	18.2	23.6
Average size per farm (ares)	15.4	23.4
Average number of fields	1.9	1.7
Fields with other uses		
Percent of fields in this category	1.8	2.1
Average size per farm (ares)	1.5	2.0
Average number of fields	0.7	0.7
Total field area		
Average size per farm (ares)	84.6	99.0
Average number of fields	16.7	15.3

¹Source: Enquete Nationale Agricole, 1985, Section on Agricultural Regions, Table 3.2.3 and 3.2.4.

Table 6. Average production of various commodities per farm by commodity and by season (in kg) in the Buberuka Highlands Region.¹

Commodity	First Season October	Second Season March	Yearly Total
Bananas	408.9	357.1	766.0
Beans	127.1	50.3	177.4
Peas	26.0	7.0	33.0
Peanuts	0	0	0
Sorghum	6.7	119.1	125.8
Maize	60.6	29.0	89.5
Wheat	3.1	11.0	14.1
Sweet Potatoes	555.3	426.7	982.0
Potatoes	55.5	37.8	93.3
Manioc	21.7	19.6	41.4
Coffee	0.8	4.3	5.1

¹Source: Enquete Nationale Agricole, 1985, Section on Agricultural Regions, Tables 4.1.4, 4.2.4 and 4.3.4.

Table 7. Percentage of persons who carry out different tasks in agricultural production, by commodity.¹
(For all farms producing this commodity, data from the Buberuka Highlands Region.)

Commodity and Activity	Men	Women	Men & Women	Other ²	Did not do this	Total
Bananas (estimated person/days of work is 79)³						
Clearing	24.2	2.0	3.3	0	70.6	100.0
Planting	31.2	1.4	0	0	67.5	100.0
Care and Weeding	59.8	16.2	20.2	3.2	0.6	100.0
Harvest	67.3	17.5	7.3	2.9	5.1	100.0
Work after harvest	46.8	8.8	18.0	3.0	23.4	100.0
Beans (estimated person/days of work is 224)						
Clearing	18.6	33.2	38.8	9.3	0	100.0
Planting	0.5	89.9	4.3	5.2	0	100.0
Care and Weeding	1.0	75.0	14.8	9.1	0	100.0
Harvest	2.0	45.5	38.0	14.5	0	100.0
Work after harvest	2.4	38.2	45.5	11.5	2.4	100.0
Peas (estimated person/days of work is 143)						
Clearing	18.8	37.0	33.4	8.7	2.1	100.0
Planting	9.1	49.7	35.6	5.5	0	100.0
Care and Weeding	1.8	24.4	10.7	9.1	54.0	100.0
Harvest	3.4	41.8	34.3	19.4	1.1	100.0
Work after harvest	2.3	44.9	28.7	17.2	6.9	100.0
Sorghum (estimated person/days of work is 204)						
Clearing	16.7	29.3	44.3	9.7	0	100.0
Planting	7.7	42.4	42.1	7.9	0	100.0
Care and Weeding	1.0	53.8	35.7	8.9	0.5	100.0
Harvest	17.4	21.3	47.2	13.5	0.5	100.0
Work after harvest	1.0	40.6	43.6	13.3	1.5	100.0
Maize (estimated person/days of work is 190)						
Clearing	15.3	30.7	43.6	10.4	0	100.0
Planting	2.1	66.4	24.5	6.5	0.6	100.0
Care and Weeding	0.6	62.9	27.0	8.9	0.6	100.0
Harvest	4.9	43.9	34.3	15.5	1.4	100.0
Work after harvest	1.2	53.2	21.6	10.7	13.2	100.0
Wheat (no estimate available)						
Clearing	32.3	31.0	28.4	8.3	0	100.0
Planting	6.2	55.1	34.5	4.2	0	100.0
Care and Weeding	2.1	18.6	4.2	0	75.1	100.0
Harvest	2.1	35.4	48.2	14.3	0	100.0
Work after harvest	0	23.0	62.5	14.4	0	100.0
Sweet Potatoes (estimated person/days of work is 272)						
Clearing	21.6	30.1	40.8	7.5	0	100.0
Planting	1.5	89.6	3.4	5.6	0	100.0
Care and Weeding	0.5	57.6	4.7	1.9	0	100.0
Harvest	1.6	85.2	0.2	10.4	2.6	100.0

Continued

Table 7 continued

Commodity and Activity	Men	Women	Men & Women	Other ²	Did not do this	Total
Potatoes (estimated person/days of work is 267)						
Clearing	37.1	24.1	31.3	7.5	0	100.0
Planting	11.0	31.3	47.4	10.4	0	100.0
Care and Weeding	8.1	38.7	35.8	4.5	12.8	100.0
Harvest	7.1	24.7	43.1	8.9	15.2	100.0
Manioc (estimated person/days of work is 148)						
Clearing	35.6	25.1	35.3	2.2	1.6	100.0
Planting	48.1	34.4	14.4	1.6	1.6	100.0
Care and Weeding	13.2	50.1	30.7	2.2	3.8	100.0
Harvest	10.4	44.9	10.2	1.6	32.8	100.0
Work after harvest	10.0	38.1	10.3	1.6	39.9	100.0
Coffee (estimated person/days of work is 295)						
Clearing	34.0	0	0	0	66.0	100.0
Planting	34.1	2.4	0	0	63.5	100.0
Care and Weeding	42.5	23.6	24.2	9.6	0	100.0
Harvest	26.6	20.3	24.9	9.6	18.5	100.0
Work after harvest	32.2	23.5	21.0	4.8	18.5	100.0

¹ The source for this table is Enquête Nationale Agricole, 1985, Section on Agricultural Regions, Table 1.1.4(x).

² "Other" here refers to various combinations with children. The table presents considerably more detail, which has been combined for this category.

³ These figures come from a compilation prepared by John Craig of Enquete Nationale Agricole. The table is entitled "Les Besoins en main d'oeuvres (personnes jours-8 heures) par culture: Rwanda, d'apres differentes sources." The figures refer to 1 ha of each culture, for a crop year or season. Perennial crops, such as coffee and bananas, have been converted to a seasonal basis as well. That is, 79 days of labor are estimated to be required for banana culture for 6 months. The averages across the several available studies are used here.