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1989 MID-TERM EVALUATION of the FARMING SYSTEMS DEVELOPMENT PROJECT Eastern Visayas, Philippines (Project No. 492-0356)

Prepared by

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In association with

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Attention: Mr. Robert Resseguie
Project Officer, FSDP-EV

Dear Gentlemen,

We are pleased to submit twenty (20) copies of the final report entitled "Farming Systems Development Project, Eastern Visayas, 1989 Mid-Term Evaluation." We trust this incorporates the comments and covers the questions raised in the September 15 meeting of members of your staff and representatives of the DA and VISCA.

On behalf of the team, thank you very much for giving us this opportunity to be of service.

Very truly yours,

EUGENE F. PILGRAM
Team Leader

Noted:

ELPIDIO L. ROSARIO
President

FARMING SYSTEMS DEVELOPMENT PROJECT, EASTERN VISAYAS, 1989 MID-TERM EVALUATION

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ACRONYMS

AAPP	-	Accelerated Agricultural Production Project
AAPP-ROSP	-	Accelerated Agricultural Production Project Research and Outreach Sub-Project
ADS	-	Agricultural Development Specialist
AES	-	Agricultural Experiment Station
AID	-	Agency for Agricultural Development
APT	-	Agricultural Production Technologist
ARD-R	-	Assistant Regional Director - Research
ARD-O	-	Assistant Regional Director - Operations
ARD-SS	-	Assistant Regional Director - Support Services
ATI	-	Agricultural Training Institute
BAR	-	Bureau of Agricultural Research
BAPSI	-	Barangay Council - Agriculture
CSR	-	Center for Social Research-VISCA
CARP	-	Comprehensive Agrarian Reform Program
CRO	-	Chief Research Officer-DA
DA	-	Department of Agriculture
DDTE	-	Diagnosis, Design, Testing and Extension
DENR	-	Department of Environment and Natural Resources
DOST	-	Department of Science and Technology
ESSC	-	Eastern Samar State College
FARMI	-	Farm and Resource Management Institute
FS	-	Farming Systems
FSDP-EV	-	Farming Systems Development Program - Eastern Visayas
FSR	-	Farming System Research
FSR/E	-	Farming System Research and Extension
FSRDN Network	-	Farming System Research and Development Network
FSSRI	-	Farming Systems and Soil Research Institute
GNP	-	Gross National Product
GOP	-	Government of the Philippines
HIREC	-	Hillylands Regional Experiment Center
IRRI	-	International Rice Research Institute
ICLARM	-	International Center for Living Aquatic Resources Management
LRAP	-	Leyte Rural Assistance Program
MAO	-	Municipal Agricultural Officer
MDA	-	Municipal Department of Agriculture
MAPSI	-	Municipal Council Agriculture
MREA	-	Municipal Research and Extension Area
NAREA	-	National Agricultural Research and Extension Agenda

NEDA	-	National Economic Development Authority
NGO	-	Non Government Organizations
ODREX	-	Office of Director of Research and Extension - VISCA
ORAD	-	Office of Rural and Agriculture Development
PAO	-	Provincial Agricultural Officer
PAPSI	-	Provincial Council Agriculture
PCARRD	-	Philippine Council for Agriculture, Forestry and Natural Resources Research and Development
PTWG	-	Provincial Technical Work Group
PDO	-	Project Directors Office
PDA	-	Provincial Department of Agriculture
PCA	-	Philippine Coconut Authority
PVO	-	Private Voluntary Organization
RACO	-	Regional Applied Communication Office
RAPSI	-	Regional Council-Agriculture
RAO	-	Regional Agricultural Officer
RAREA	-	Regional Agricultural Research and Extension Agenda
RD	-	Regional Director
RDA	-	Regional Department of Agriculture
RRA	-	Rapid Rural Appraisal
R/E-SA	-	Research and Extension, Systems Approach
RIARS	-	Regional Integrated Agricultural Research System
RRDP	-	Rainfed Resources Development Project
RTWG	-	Regional Technical Working Group
SALT	-	Sloping Agricultural Land Technology
SMS	-	Subject Matter Specialist
SRMU	-	Site Research Management Unit
SCU	-	State Colleges and Universities
TA	-	Technology Adoption
TG	-	Technology Generation
TWG	-	Technical Work Group
UEP	-	University of Eastern Philippines
UPLB	-	University of the Philippines at Los Banos
USAID	-	United State Agency for International Development
VICARP	-	Visayas Agricultural Research Program Council
VISCA	-	Visayas State College of Agriculture

1.0 EXECUTIVE SUMMARY

A mid term evaluation was conducted for the Farming System Development Project - Eastern Visayas (FSDP-EV). It encompassed the first half of phase II, (1988-1991). The evaluation was done from August 16 to September 23, 1988 by a team of three specializing in; Farming systems research, extension/training and economics/management.

The purpose was to assess implementation of plans and progress toward objectives and goals and to provide suggestions for further development or application to other areas.

Eastern Visayas, DA Region VIII is the designated project area. It is 80 percent rural with a high incidence of poverty. Because of population and land scarcity pressures in the lowland, people have moved to the hilly upland, encroaching on forested areas. Now, they are attempting to make a living under very adverse conditions. In terms of upland agriculture, the traditional technology and research/extension methods have not served the individual family or national public interest needs.

Initiated in 1981, the FSDP-EV project was to utilize a farming systems approach targeted to the people and problems of the hilly uplands. Phase I established the FSR/E infrastructure but concentrated on the introduction of existing technologies on a commodity or cropping pattern base. Project staff and a 1985 evaluation indicated these methods were not meeting the challenge.

Phase II was redirected to place primary emphasis on farmer involvement in FSR/E, and to firmly institutionalize the FSR/E system in the region. By design, the technologies introduced were directed toward stabilizing the environment before major efforts are undertaken to improve productivity and income. Involving low-resource farmers limits the interventions to simple, inexpensive but incremental steps. Phase II project staff determined that farming systems in hilly uplands are fragile with marginal soils, erratic weather and resource poor farm families. Intensification of cropping may further exacerbate the problem. Solutions have been sought to work under the existing realities.

Three stated objectives of the project for Phase II are as follows:

1. Development and dissemination of appropriate upland technology.
2. Strengthening the farming systems approach in the region.
3. Institutionalization of the process and programs into the DA and VISCA.

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To reach conclusions on how well these objectives have been met, the team was asked to analyze four component features of FSR/E, that is; Research, Extension/training, Economics/ Management and Institutionalization. The report elaborates on each of these in some detail while a capsule summary is provided here.

1.1 Research

Three research units form part of FSDP-EV. The DA the project office (SRMU's) and VISCA FARMI.

The DA has 69 staff, five experiment stations, and is conducting 128 researches, some directly related to FSR/E. VISCA-FARMI has 10 project staff and 250 potential back-up faculty. It has conducted 52 farming systems related researches in 1988/89. FSDP has a total staff of 54, works through 6 established SRMU (plus 15 expansion) and is conducting 111 FSR/E researches. VICARP is the regional joint institutional coordinating mechanism. It inputs to the RAREA on research planning. This RAREA is function oriented rather than programmatic. Budgets for conducting research and hiring FSDP/EV trained staff are inadequate. Much of the on-going research is dependent on special funding and no plans have evolved for replacing such.

Research has supported the project by assisting in preparing technology profiles and supplying technical input in the design and testing phase of FSR/E.

A strong support unit exists and is well established in FARMI at VISCA. This linkage is solid, but will likely ebb and flow with levels of funding.

The project has proven the potential for research by APT's and farmers. However, it has also shown that strong research back-up is needed.

Recommendations center on: strengthening the research planning process (RAREA); incorporating existing FSDP-EV personnel into the DA; creating multi-purpose units of five experiment stations modeled after HIREC; developing more technology packages and profiles; more social science research including diffusion methodology and economics; and developing stronger team effort and more congruent FSR/E approaches by the research and operation divisions of RDA.

1.2 Extension/Training

There are over 600 APT's in the region. MAO's now are in key positions to foster R/E-FS through MREAS. However, they critically need managerial, program development training. Through the first half of phase II, 1655 farmers and professionals have been trained in RE-SA. Farmers have adopted 1614 hilly land technologies developed by the project. There are two ATI units in the region and they can assame the FSR/E training function, with the excellent in-depth training materials resulting from FSDP-EV.

Farmer-to-farming training has proved very successful and has resulted in over 1600 neighbors adopting hilly area technologies.

Major recommendations center on: expanding the methods used in extension and strengthening the DA communications unit; developing MREA teams by training (both technical and managerial) for the MAO's/PAO's; protecting field staff from extraneous duties; strengthening the extension program development process; expanding the successful farmer-to-farmer method; and turning FSR/E training over to ATI.

1.3 Economics Management

Phase II was designed with priority on stabilizing the upland resource base. This make cost/benefit analysis very difficult and it was not within the scope of the project or this evaluation exercise. Individual technologies in the "economics of the farmer," were positive, such that he adopted very quickly. Individual technologies were studied and many had positive economic indicators. There is a decided lack of farm management economic training among the DA staff. SRMU staff economists have done very little analysis or comparison of existing and introduced technologies.

Tenancy did not appear to be a major obstacle to practice adoption and marketing was not identified as an immediate constraint. Management of project funds continues to be a problem but is beyond the scope of this evaluation.

Basic recommendations center on: training economists in data collection, simple budgeting, analysis of research, proposed technologies, and soil and water management practices/studies; the inclusion of more components as alternatives in the responses to farm family identified systems needs; and the conduct of a feasibility study on providing farmer inputs by experiment stations.

1.4 Institutionalization

R/E-SA has been institutionalized in Region VIII. This is evidenced by the general awareness of FSR/E in interviews throughout the region. The creation of FARMI as a solid partner with DA is indicative of institutional stability. The mechanisms employed to build FSR/E (such as VICARP, RAREA) including the training sessions for Agriculture School Administrators conducted by PDO all serve to institutionalize FSR/E. There are several facets in maintaining this momentum that need attention. For instance, the linkage between DA-VISCA should go beyond the agreement and be fostered by regular interaction of key officials. Within DA, the disparity between perception of R/E/FS from research to operations must be corrected. A new look at the SCU's role is also in order. For the maintenance of the R/E/FS growth, strong managerial leadership will be needed in the RDA as well as VISCA. The base has already been developed. The systems approach must be incorporated in all DA programming. Most importantly, adequate budget should be provided.

Recommendations center on: making RE-FS the focus for all planning efforts on Research/extension in the hilly upland; strengthening the DA organization through an organizational renewal process to cope with decentralization; promoting the successes of FSDP-EV into the national spotlight as a model for similar situations.

1.5 Summary

Most of the above can be accomplished by the project staff, DA staff and FARMI units during the remainder of the project. However, funding will present some limitations.

The team proposes that small grant funding be sought (example AAPP or others) to effectively carry out those items feasible during the lifetime of project. Examples are; expanding communication support; the management training for MAO's; developing effective field programs with the MREA units; and multi-purpose station feasibility study.

More ambitious recommendations suggested for donor support are:

1. An organizational renewal process (2-3 years) to follow the FSDP-EV base and provide for DA to maximize the decentralization concept.

2. Management training of DA staff.

3. Overall program development training to maximize effectiveness of MREAs and the institutionalized R/E-SA now in place.

4. Assistance to the DA in converting experiment stations to multi-purpose units and emphasis on providing farmer production inputs.

5. Strengthening the ATI (VISCA and Alang-Alang) to handle all training programs relating to R/E-FS.

The above summary is elaborated in detail in the body of the report and is supported by relevant appendices.

2.0 MAJOR FINDINGS AND CONCLUSIONS

2.1 Relating to Research

1. Research can be done in an FSR/E mode as evidenced by 111 FSDP on-farm trials in this phase of the Project

2. Six major research sites staffed by an interdisciplinary team and supported with back-up researchers in FARMI and DA have carried out the processes of RE-SA in the region. An added 15 expansion sites are being established by FSDP. These should all form the base for MREA's now under development.

3. Farming systems related research projects conducted in the region are; DA 128, VISCA-FARMI 52, FSDP-EV, SRMU's, 111. The mechanism exists to provide the research input with 79 DA researchers, 10 FARMI coordinators, 250 VISCA academic back-up staff and 54 FSDP staff. Through training field APT's, totaling over 600 can provide an on-going field R/E-FS resource.

4. VICARP is the regional planning and coordinating mechanism for research, representing research institutions of the region and providing input to RAREA. VICARP has a TWG and seems to have a FSR/E orientation. There are minimal linkage to other SCUs through this system.

5. The adoption and packaging of technologies to respond to upland farmer problems has been well demonstrated in the project. Known technologies could be assessed by inter-staff researchers/extensionists and be introduced to speed up the process. These can be done while continuing the search for new hilly area low-resource farmer technologies.

6. The process for developing the RAREA is in place but the product to date is inadequate. The format for the agenda needs to be charged to fit RE/SA and should be developed around programs and program components. The DA could utilize some help in this process. Budgets are not necessarily associated with programs. A weakness of the RAREA research planning is the time lag (or gestation period) from proposal preparation to approval of about two years.

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7. The five regional research stations and provincial sub-stations present a good opportunity for developing multi-purpose facilities. These will consequently increase the number of localized research and training projects while providing for the production inputs of farmers. Stations are well staffed and equipped. The HIREC is an excellent model.

2.2 Relating to Extension/Training

1. Through the first half of the FSDP-EV projects, 1653 farmers and professionals were trained in R/E-SA in sessions of 3 days to 3 weeks. Farmers trained have adopted 1614 hilly land technologies developed by the project during this time. This is a commendable base for developing further R/E-SA.

2. There are two ATI units in Region VIII. The national center at VISCA and the regional facility at Ilang-Ilang. These are staffed to conduct training of professionals and farmers. Unfortunately the regional ATI is not under the RDA, thus sets the stage for linkage/coordination problems.

3. ATI, with the adequate preparation of its training staff, is capable of and should provide the training conducted in the region on FSR/E. This can be facilitated by the FSDP a transition of duties during the remainder of the project.

4. The MREA concept is a logical follow-through to the SRMU's. With current project experiences, the 8 areas being developed should move rapidly into the R/E-FS pattern. Strong support for the MAO and APT staff will be needed, particularly managerial training and effective extension program development. Project and consultant services can strengthen this process.

5. In-depth FSR/E training support materials have been developed and used. These should now be used as an ATI resource.

6. Farmer-to-farmer training has proved to be an excellent extension training method. Farmers receiving training from farmer trainees have adopted practices rapidly. This should be a priority extension method in the hilly uplands.

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7. Field staff do not have program or plans of work that are well developed to serve as a blueprint for action. Specific work plans should be developed under the guidance of the MAO. These work plans should include: situation statement; farmer involvement plans; farmer identified problems; proposed educational activities; work calendar; support needed; and budget. The MAO will need assistance and training to initiate effective program development.

8. Group tours and on-farm meetings have proven to be effective extension methods. They provide for the efficient use of limited staff resources.

9. The A-V media and support communication program of the project is very weak. Radio nor video documentaries have not been used. More initiative is needed to package appropriate leaflets and teaching materials for extensionists. Inter staff unit communication is a problem. Perhaps two-way VHF radio can be a solution.

10. While the regional DA has strengthened its research through FSDP, the same cannot be said of extension, which is a part of its operations. The operations unit needs to be included in the R/E-SA and research/extension planned and carried out jointly. The team found two distinct approaches to developing their work - (RE/SA) in the Research and operations units of RDA.

2.3 Relating to Economics/Management

1. Research/extension is difficult in hilly uplands compared to lowlands, i.e. travel, remoteness, lack of farmer resources, limited technical alternatives, etc. This results to slower progress, contact with fewer numbers and difficulty in measuring economic benefits. Hence, by design, the project did little on economic analyses, choosing first to work on resource stabilizing technologies. It is a constant challenge to program managers to respond to the question - What are the costs/benefits?

2. Providing of farmer production inputs at a minimum level would greatly speed-up practice/adoption. This is a public policy issue that should be considered. Research stations could easily be equipped to handle inputs.

3. Phase II did not treat the farm family in a true systems sense. The work was purposely designed to focus on the resource base stabilization i.e. erosion control, fertility enhancement, shortening the fallow, etc. As follow-on, regional leaders may want to look at the broader base of the farm system; off farm employment, new enterprises, home management, enterprises, family nutrition etc.

4. There is a decided lack of economic data and apparent need for training project economists on how to collect, analyze and use farm management information to assist farmers and staff in decision making. An outside consultant could be of assistance.

5. Tenancy may impact on practice adoption but the team did not encounter farmers expressing this problem. Also markets for expanded production will not be a problem in the foreseable future.

6. The question of "economics for who?" should be raised. Farmers of the uplands appear to adopt technologies they deem an improvement over the present. No justification of cost/benefit is needed. There is, however, a time when extension workers need to know the alternatives when resources are in scarce supply and decisions are needed on a cost/return basis.

2.4 Relating to Institutionalization

1. Through training of most professional DA staff, FARMI and VISCA faculty, SCU administrators and key farmers, there has developed a strong awareness and appreciation of R/E-SA in Region VIII.

2. A national network is in place to coordinate the FSR/E activities of all SCU's and DA agencies. While new, it should be capturing the experience of Region VIII. However, recently, an initial national farming systems training effort-region by region failed to coordinate with Region 8. This indicates a disparity in thinking at various levels on the meaning of farming systems, and knowledge of where there may be strong local programs, such as FSDP-EV.

3. Fifteen former DA staff are detailed to FSDP-EV and eight contractuals have moved to DA regular appointments. This provides a good base of FSR/E support in the DA. However a sizeable number of the 54 project positions have not been integrated due to civil service restrictions or lack of funds.

4. Generally, objectives of Phase II of the FSDP-EV have been met to date. Farmers contacted research done and practices adopted for the remainder of the project will fall short of Phase II targets. The lesson learned is the slow progress with upland low-resource farm conditions compared to traditional market oriented agriculture.

5. Intra-inter linkages and mechanisms exist to foster institutional relationships regarding RE/FS. The challenge is to manage these linkage points for optimum results.

6. There is a strong commitment for and firm institutionalization of FSR/E at VISCA. Some internal questions on interdisciplinary work, additional support funds needed, department-center and center-center relationships need to be worked on by VISCA administration. FARMI and its back-up staff are essential to the regional FSR/E in the DA.

7. FSDP-EV lessons learned in Region VIII may be applied to other hilly upland regions of the Philippines. To continue developing Region VIII, R/E-SA staff should remain in the region and have others come for training and/or observation. There is danger of diluting a good program underway by dispersing its staff.

8. While decentralization is a reality, it has yet to be internalized and operationalized in the DA. There are still concerns that are purely "Manila-based" Regional people are made to cope with these situations. Administration must learn a new style of decision making. It appears management training should be a high priority item for MAO, PAO, RAO. Consulting assistance may be useful here.

3.0 RECOMMENDATIONS SUMMARY AND ACTION RESPONSIBILITY

3.1 Relating to Research

1. Retain FSDP-EV trained staff within region VIII, concentrating their efforts to make impact. Let other regions come to Region VIII for FSR/E training through ATI with FSDP staff as back-up for training. Responsibility: RD

2. Initiate, during remainder of project, plans for developing the six regional experiment stations into multi-purpose units modeled after HIREC. Responsibility: RDA, PDO.

3. Foster the team (interdisciplinary) approach to problem solving and job satisfaction. Such groups resulting from planned programs with budget can work very effectively. Responsibility: DA managers (MAO, PAO, RAD, RD).

4. Immediately develop stronger ties between the extension (operations division) and the research division in relation to the R/E-SA to be used in the region. Research by field staff is effective but must be recognized and coordinated with supervisors. Responsibility: ARD-operation, ARD Research under RD.

3.2 Relating to Extension Training

1. Develop the 8-10 MREA's during the remainder of project with in-service training provided for each MREA team. Training in FSR/E to be conducted by PDO staff. Outside consultant on management for MAO's and Program development for teams needed. Responsibility: PDO.

2. Develop during the remainder of the FSDP-EV, additional technology profiles and technology packages to serve farmer problems identified to date. Responsibility: FARMI Director.

3. Expand farmer-to-farmer training in 1990/91. Responsibility: PDO and MAO's.

4. Relieve field staff from extraneous duties as they serve the R/E-SA functions. Establish a goal of having the experienced trained APT and PAO MREA specialists devote 100% of their time to the FSR/E program. Responsibility: RD with the two ARD's (Research/Extension).

5. Allocate the major role in R/E-SA training to ATI. Provide added training on FSR/E for ATI staff. Responsibility: ATI, RD, PDO.

6. During the life of the project initiate a strong program of managerial training for MAO's PAO's RAD (involved in management coordination). This should include: the extension program development process; work plans; job description; performance appraisal; effective supervision; etc. Responsibility: RD (consultant services required).

7. Expand support materials (communication) and strengthen the unit. Responsibility: PDO, RACO.

3.3 Relating to Economics/Management

1.. During the remainder of the program, develop a strong in-service training program for all economists of the DA. Content should include: practical farms management economics; data collection and analysis; and economic evaluation of technology. Responsibility: PDO FARMI (services of outside consultant required).

2. Consider inclusion of additional components of the system in FSR/E such as, home and family management, family nutrition, home industries, off-farm employment, cooperative development, supplemental farm enterprises,, etc. These can be identified in the diagnostic stage or by RRA. R/E-FS staff should be aware of these alternatives as they work with farmers. Responsibility: PDO, VISCA.

3. Establish a system of data gathering, and analysis of technologies to be introduced. Assess technology profiles and impacts of technology packages to be used. Responsibility: PDO, FARMI, (possibility for consultant services).

4. Coordinate appropriate social science research regarding factors that impact on technology adoption. This should include the study of effective strategies in working with upland low-resource farm-families. Responsibility: FARMI.

5. Conduct research on soil and moisture run-off from terraces or contours and measure changes in fertility, soil structure, crop yields, etc., over a period of several years. This information will establish a basis for estimating cost/benefits of these practices. Responsibility: VISCA.

3.4 Relating to Institutionalization

1. R/E-FS should be fostered as the base for all research/extension programs and activities of the hilly uplands. Responsibility: RD, VISCA President, ATI Director.

2. Incorporate all qualified FSDP-EV staff into R/E-SA work. Seek funding and support of local councils. Responsibility: RD.

3. Strengthen VISCA-DA agreement by leadership team doing interactive management work. Propose monthly meetings and establishment of a management task/work group. Responsible: Director ODREX, CRO-DA.

4. With an outside the region consultant, develop a format for a program-oriented RAREA for 1991. Utilize this format throughout - i.e. Barangay, municipality, province and region. Establish budget request (on a priority basis) in the R/E-FS mode. Responsibility: RDA, RD.

5. Strengthen threlationship between research and extension by developing a strong working team at the Asst. Director level (Research, operations). Both should follow the R/E-FS established in the region through FSDP-EV. Responsibility: RD, PDO.

6. With assistance of an outside the region consultant, go through an "organizational renewal" exercise in the RDA. Analyze the situation under decentralization from a structure, function, process viewpoint. Move the organization toward a motivated, well-managed system with effective FSR/E based program. Administrators should facilitate this organizational development. Responsibility: RD and key managers.

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4.0 FSDP-EV 1989 MID-TERM EVALUATION

4.1 Introduction

The FSDP-EV was initiated in 1981. Following a 1985 evaluation, Phase II was implemented drastically modifying the FSR/E approach. Phase I had employed cropping pattern technologies and processes that were found not generally adapted to fragile hilly upland conditions nor acceptable to the farmers involved.

Phase II set out to do FSR/E from the farmers perspective and with his participation throughout. Project leaders designed phase II to strengthen the R/E-FS and to build a strong institutional base for the ultimate development and dissemination of technologies appropriate to Region VIII upland farms. By design, priority was placed on stabilizing the resource base of the upland farms. Thus erosion control, fertility regeneration and weed control become primary components, Broad based aspects of farming systems i.e. alternative use of family labor, family nutrition and management, supplemental enterprises etc. while important, were delayed. The choice of direction of the project makes difficult a short run mid-phase economic or cost benefit analysis. However Phase II project objectives are clear and subject to evaluation.

This mid-term[1] evaluation will document progress made in implementing FSR/E approaches, analyze the key elements of the program, draw conclusions and make recommendations. The purpose is to assess what has been learned for future use in the project area regarding the farming systems approach as a means of meeting the technology needs of low-resource upland rainfed agriculture farm families.

The FSDP-EV Program objectives of Phase II centered on:

1. Training a core staff in FSR/E methodology;

2. Implementing the farmer centered research/extension process involving farmer/researcher/extensionist in: Diagnosis, Design, Testing and Dissemination of Appropriate Technology;

3. Testing technology dissemination to farmers;

4. Creating a critical mass of research/extension staff resources from regional research/extension/ training units and creating lasting linkages and institutional arrangements;

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[1]Mid-term implies one and one half years of Phase II project activity

5. Integrating the process and staff into the DA and VISCA;

The scope of work for the evaluation focused on three project designed objectives:

1. Development and dissemination of appropriate technology;

2. Strengthening the FSR/E approach to research/extension;

3. Institutionalizing FSR/E into the Regional Department of Agriculture and Visayas State College of Agriculture;

The statement of work charges the evaluation team with observations, analyses and description of lessons learned from FSDP-EV and with providing recommendations to the GOP and USAID in current and future planning relating to the farming systems approach.

The team was asked to address some key issues listed under the four topics:

1. Research
2. Extension/training
3. Economics/Management
4. Institutionalization

4.2 Profile of Eastern Visayas

Eastern Visayas is one of the most depressed regions in the country. The profile of Eastern Visayas prepared by the Economic Research Division of BAECon in 1985 describes Eastern Visayas as narrow coastal lowland, hilly and its interiors mountainous.

EV has a total land area of 21,432 square kms. It belongs to type IV climate - rainy season throughout the year 1 1/2 months of dry season. The annual rainfall is 2,265 mm with an average of 193 rainy days/year.

Of a total population of 2,799.543 (1987 data) 78% are rural, 22% urban.

EV is basically an agricultural economy. Agriculture's share in the Gross Regional Product is 56%. The agriculture sector has 50-70% of the region's total employed labor force.

Leyte and Samar have a total farm area of 645,711.4 hectares with an average farm size of 1.2 to 1.5 has./farmer.

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Statistics show that the average family income for the urban sector is P5,283, while for the rural sector it is only P2,886 World Bank reports an incidence of poverty of 56% in urban and rural areas in EV. Of this 80% come from the rural area.

Coconut, rice and abaca are the major crops of the region: 42% of the cultivated area is planted to coconut and 24% is planted to rice and abaca. The common cropping pattern is coconut usually intercropped with root crops, corn and rice.

In 1971, the tenurial structure is as follows: Full ownership - 64%; tenant - 24%; part-owners - 10%.

There are six provinces, three cities, 143 municipalities and 4412 barangays in Region VIII.

4.3 Evaluation Methods and Procedures

4.3.1 Introduction

An intensive study of the project was made from August 16 to September 23, 1989. Team activities are listed in Appendix 7.4

The evaluation team consisted of:

Dr. Don Bostwick
Economics/Management

Dr. Rogelio Cuyno
Extension/Training

Dr. Eugene Pilgram
FSR/E Research and Team Leader

4.3.2 The methods used were:

1. Assessment of the situation and progress made through reading numerous reports and documents;

2. Personal interviews with key project related people;

3. Site visits where work is underway;

4. Farm visits to view end results

5. Visits, interviews and tours; University, DA, experiment station/and extension sites. (A complete listing of sites visited groups and persons interviewed is in Appendix 7.4.)

4.3.3 The written report:

The report is organized as requested in the scope of work presented to the team. Through the findings and analysis section, supplemented by expanded Appendix reference, an attempt is made to form a basis for conclusions and recommendations.

Recommendations stand alone in (Section 5.0) on each of the four topics of the study. In Section 6.0 conclusions are made in specific reference to the three main objectives of the FSDP-EV Project paper.

Individual team members brief reports were asked for and appear in Appendix 7.1.

4.4 Findings and Analysis

4.4.1 Research

1. Introduction

Agricultural related research, which ultimately is an integral part of FSDP, is conducted primarily by the Department of Agriculture (DA), universities and state colleges (SCU), with some non-government organization input (NGO). A new Bureau of Agricultural Research (BAR) was established in August of 1987 within the DA to facilitate the work of PCARRD and to coordinate all agricultural research. BAR is purely coordinative, has no technical staff and serves a research management function. Under the government decentralization thrust there is a bottom-up approach to planning research, with the region being the field unit having responsibility for programs. The planning process, starting at the Barangay level moves through municipal, provincial and regional bodies or citizens councils, (BAPSI, MAPSI, PAPSI, RAPSI), resulting in a regional plan termed, Regional Agricultural Research and Extension Agenda (RAREA). See Appendix 7.6. The composite RAREAS, coordinated through BAR, becomes the National Agricultural Research and Extension Agenda, NAREA. Of interest to FSDP and its follow-on is the Region VIII RAREA. This can set the stage for FSR/E growth both in concept and budget when translated into plans/programs and proposed budget needs.

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2. Background Situation - for Research

National. On a national basis funding support for Agricultural Research is at 0.3 percent of GNP. Research managers feel a minimum of 1.0% of GNP is needed for an effective program. There is a national commitment to Farming Systems Research and farmer orientation in research. Quality, well trained staff is a basic need expressed by DA officials. The team observation however is that Farming Systems mean different things to different people, depending on their experience and position. An understanding and appreciation of the nature of research/extension under hilly uplands with low resource farmers, is not universal.

Regional (RDA). The Region VIII Department of Agriculture 1989 revised organization is shown in Appendix 7.2. It is headed by a regional director (position presently vacant) and three assistant directors; Research, Support Services and Operations which includes extension. The Region VIII budget for 1989 is $102,358,000 of which four percent is allocated to Agricultural research. It should be noted that the research budget has remained constant the past two years. Other than the staff assigned from FSDP-EV, the region has not developed a strong budget support base for FSR/E. It does however have staff, the organization and the will to do research in the R/E-SA mode.

The RDA has 79 regular research personnel composed of 53 BS and 26 MS degree holders. These are in the regional office, in five research stations (see Map 7.2.3) and in the provinces. Seven additional Agricultural production technicians are detailed to assist provincial research. FSDP-EV has 54 contractual positions, eight of which have been integrated into the permanent structure. This research effort is supported throughout the region by 142 Municipal Agricultural Officers (MAO) and 615 APTs in the barangays. These staff have a built-in research responsibility, though they report to the operations director, RDA.

As of 1989, the RDA region VIII is conducting technology generation and verification with 72 projects at its stations and provinces. In addition, the FSDP-EV is conducting 31 on-farm studies. The relatively new AAPP-AROS has been implemented in Region VIII. Technology development and research is one component of the AAPP. However, programming has not been well integrated into the activities of the FSDP-EV.

The Region VIII RAREA states "The Farming Systems approach to research and extension should be the basic strategy of agenda Implementations".

In the region, RAREA development zones are identified for research/extension activities i.e. uplands, aquatic and lowlands. Priorities are to be set by sectors within development zones i.e. crops, livestock, socio-economics and farm resources. Finally commodities are prioritized within such a specific crop or livestock enterprise.

As an example priority research thrusts within Region VIII upland areas have been listed:

- Soil and Water Management
- Cultural Management
- Crop Protection Studies
- Varietal Improvement
- Preparation Techniques
- Post Harvest Handling
- Cropping Systems
- Seed/Plant Production/Distributions
- Biotechnology
- Support Services
- Breeding Stock Improvement
- Animal Health/Feeding
- Assessment of Technology Transfer Mechanisms
- Impact Assessment of Technologies
- Marketing Strategies
- Resource Management

The Research topics listed are then designated for type of research/extension activity namely, technology generation (T.G.), technology adaptation/verification (TA/TV) and technology dissemination (TD).

In keeping with the national emphasis on FSR/E, the NAREA/RAREA can provide for active participation of target clientele. The mechanism is in place, the leadership in DA must now make it fully operational. An observation of the team is that these planning efforts still retain single problem and commodity emphasis. The process should be directed towards developing research/extension broad based programs under a FSR/E approach and prioritizing these program efforts consistent with the resources available. (See proposed example Appendix 7.5.4.)

Regional and provincial research specialist personnel are as follows: at the region level there are 16 specialists consisting of 1 chief ADS, 1 Supervisor ADS, 5 Sr. ADS and 9 ADS of various disciplines. These regional staff; formulate and develop methods/schemes for on farm research, monitor, evaluate and coordinate on-going research and strengthen/linkages within and outside D.A for both research and extension.

At the provincial level, regular research staff consists of 1 Supervisor ADS for research, 1 Sr. staff 2 ADS and 1 ADS. In some provinces the research staff is being complemented by research oriented APT's. There are six regional research facilities or units (Abuyog, Bobotugon, Molitbog, Guirian, FSDP (Region Wide), and RIREC, Villaba). Three provincial sites (Salcedo, (2) and Tarangnon) are in place. (See map Appendix 7.2.3.)

There are six FSDP-EV research sites (SRMU). A proposal to locate 8 MREAS in the region with a local staff (MAO, APT's and provincial support totaling 8-9 people per MREA) is being implemented. These units will be doing R/E-SA modeled after the experience of FSDP-EV. (See Team Proposal Appendix 7.5.2.)

VISCA/FARMI. Located at Baybay, Leyte VISCA (See Map 7.2.3) is a major Philippine Regional Agriculture University, with functions of research, instruction and extension. A key partner in Region VIII FSR/E development from the start, VISCA provides the necessary technical back-up research support. These are 250 agriculture related staff, 60 B.S. 130 MS and 60 Ph. D. degree holders. These staff are in 13 academic departments.

VISCA has established a Farming Systems Center named FARMI, (1987). This is a technical group, interdisciplinary in nature and drawn from several academic departments. The director of FARMI describes a typology of research. The technical work done by FARMI as follows:

On Farm Research SRMU Staff	Linkage	On Station Research VISCA
- Service function	Technical Group of VISCA	- Applied Research
- Adaptive Research function		- Basic Research
- Feedback function		- Support function

FARMI consists of regular staff of VISCA and presently receives a University core budget. FARMI promotes long term linkage between on-farm research and experiment station research. Members of the technical group become part of the SRMU program in the field. They also do training and back-up research. Generating farm level needs for research are essential for effective on-station research. FARMI is operational and strongly supported by the administration. The structure is shown in Appendix 7.2.2.

3. Summary of Research Done

A listing of the major FSR/E related research being done in Region VIII by various institutions is shown in Appendix 7.3. A brief summary here shows the nature and magnitude of Region VIII research. (Note: additional research by NGO's and other SCU's were not available at this writing).

a) Regional Department of Agriculture (RDA)

There were 128 research studies all carried forward from 1988. Fifteen new proposals were approved but not funded. Table 1 and 2 show on-going research by sector classification.

Table 1. On-going Research- RDA

Research Facility/Unit	No. of Projects	No. of Studies	No. of Farmer Cooperator
a) Regular DA-funded			
AES	8	11	on station
RES	5	10	5
RGSPRTC	3	7	9
GFC	1	1	-
PROVINCES			
Leyte	3	9	48
S. Letye	4	13	52
W. Samar	2	3	15
E. Samar	4	6	22
N. Samar	1	7	35
Biliran	2	3	9
b) Special Projects			
FSDP	7	47*	162
RRDP	3	9	20
c) Realigned Project			
RCPC	1	2	-
TOTAL	44	128	378

* Research Semi Annual Report Dept. of Agriculture Region VIII January-June 1989. p2.

Table 2. Research by sector and by classification RDA

SECTOR	NO. OF STUDIES
Crops	
TV on Cropping Patterns	37
TA on Varietal Improvement	6
TA on Culture and management	5
TV on Farming Systems	4
TG on Varietal Improvement	9
TG on Culture and Management	7
TG on Farming Systems	1
TG on Pest & Disease Control	1
Livestock (6)	
TV on Animal Nutrition	2
TG on Animal Nutrition	2
TG on Animal Production & Management	2
Fisheries (2)	
TV on Mariculture	1
Resource Assessment	1
Multi-sectoral (50)	
Socio-Economics	3
Farm-Resource & Systems(FSDP)	47
TOTAL	128

In support of decentralization, the 41 Regional Integrated Agricultural Research System (RIARS) studies formerly done by RDA-AES core staff, are now being handled by provincial level researchers.

b) VISCA-FARMI

A listing of 38 on-going back-up research projects are being conducted by FARMI. All but two were started in 1988-89. These specific FARMI efforts are augmented by an added 12 VISCA College Department FSR/E related back-up projects. A description is provided in Appendix 7.2.2.2 and 7.2.2.3.

c) FSDP-EV

This special funded program has generated over 111 FSR/E studies at SRMU's on farmers fields. FSDP-EV is closely linked to VISCA-FARMI and is being integrated into the RDA. The FSDP director is also the Chief Research Officer in the RDA.

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Research is being accomplished by the FSDP in an FSR/E approach. An over-simplified example of work done by the SRMU at Jaro will serve to illustrate the concept. It shows how various elements of the system are handled by research/extension staff (Table 3).

Table 3. Example of FSDP research /extension process

Diagnosis (Farmers, Extension Researcher)	Design (Farmers, Extension Researcher)	Testing (Farmer Extension	Extension (Farmer Extension)
(Problems)	(Options)	(Feedback)	(Dissemination)
- Cogon Infestation	- Farmer legume options	- Slow control	- Farmer training
- Infertile Soil	- Kudzu centosema	- High cost	- Farmer to farmer
- Poor pasture	- Establishment method	- Revised methods	- Meetings
- High recultivation cost	- Fertility through organic content	- Burn broadcast Slash/broadcast	

The key is diagnosis with the farmer, then getting the best technology known to resolve the problem, designing experiments with the farmers, assisting in experimentation and feedback, and using appropriate extension methods to extend proven systems.

In 1981 the site staff conducted a detailed 5 months benchmark survey which was followed by putting out varietal trials and later cropping pattern trials. Feedback by 1986 indicated these were not meeting farmer needs. A more client-oriented, farmer involved diagnosis was conducted by the researchers. Problems surfaced and research designed with input from site staff and farmers.

FSDP emphasis has been placed on the design and testing of resource stabilizing practices. Farmers have accepted the technologies tested and are assisting in dissemination through the farmer- to-farmer training. Research at the six sites are summarized in Table 4.

Table 4. Summary of completed and on-going researches conducted and implemented by the SRMUs as of 1989.

Site Research Management Units (SRMU)	Number of Researches		TOTAL
	Completed	On-Going	
Basey, Samar	14	4	18
Bontoc, So. Leyte	7	6	13
Jaro, Leyte	6	18	24
Gandara, Samar	10	3	13
Matalom, Leyte	14	10	24
Villaba, Leyte	6	13	19
TOTAL	57	54	111

Appendix 7.3 gives a listing of FSR projects by unit and title.

4. Research Coordinating Mechanism

Pre-decentralization PCARRD did much of the research coordination and direction. In Region VIII, presently (VICARP) is the means of getting institutions together. Members are, VISCA (Chairman), RDA, Eastern Visayas University and other SCU's. Annual work sessions provide major inputs to RAREA. Research planning and reporting are two functions of VICARP. This body can be a key to future coordination and linkages in FSR/E.

5. Observations/Conclusions on Research

From an understanding of the research component of FSR/E as described above, the team made the following observations, analysis and conclusions.

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a) The Nature of FSR Research.

Traditional more capital intensive research has proven (experience of Phase I) irrelevant in much of the hilly uplands. From a research viewpoint, the FSR approach may be the only way that appropriate technology will be generated and used by farmers of these areas.

Compared to more traditional research, FSR requires a large commitment of staff time and support resources. Measurable output results come very slowly. Staff must not only internalize the FSR approach but must get their personal satisfaction from this activity. Not all academic people have this ability. Work by researchers and extensionists in the uplands is difficult. However if the will to help low-resource upland farm families exists, the technology can be generated and real improvement in levels of living will be made over time.

Farming systems research is dynamic. Technology profiles or research designs of today will be modified and improved tomorrow as farmer-researcher-extensionists identify and test new possibilities.

b) Project generated research

The FSR/E approach where farmers are involved with researchers/extensionists in diagnosis, design, experimentations and dissemination has proved successful in Region VIII. Some specific technologies evolved are:

- Hedgerow contouring
- Improved follow
- Use of local lime (rejected)
- Livemulch improved fallow
- Goats under coconuts
- Cogon Control Methods
- Improved chicken breeds
- Coco-fruit potential

Technology profiles based on research are being developed by researchers. Providing for wider application of FSR/E developed technologies.

c) Capacity to do research

The well developed linkage of DA and VISCA set the stage for a strong research component at basic, applied, adaptive and demonstrational levels. With proper training (in-service) and back-up availability of VISCA and DA specialist staff - most APT's will be very effective in R/E-SA. The perceived limitation is time available to do a very staff-intensive FSR/E process. Maximum use must be made of analyzing homogenous agro-ecological areas, developing technology profiles and taking known technology to the appropriate farm situation.

d) Organizational Considerations

Administration must continue to foster and clarify "decentralization". Too many staff are getting in the middle of conflict from perceived central sources.

It is essential that key leadership positions in D.A. research and extension have strong management/programming capabilities. This is at the region, province and MAO levels. An outline for a DA organization/management project is presented in Appendix 7.5.

For effective FSR/E programs the ARD research and ARD operations must function as a team, planning mutual programs. Strong RD leadership will foster this aspect linkage.

Roles of field staff doing FSR/E need to be clear, (Province, Municipality, APT) to protect from outside duties such as regulatory and control functions.

As FSDP-EV staff are integrated, opportunities exist to do field support work and not administrative tasks only. There appears danger of losing some well trained FSDP-EV Staff.

RAREA to be effective needs an action-oriented program emphasis. Budget priorities should shift to FSR/E if the commitment is realistic. FSR/E should be funded on a program basis not on function or commodity criteria (Appendix Example)

Regional research sites are an under-utilized resource and could be multi-purpose: research, training and production of farm inputs (seed, cuttings, etc.)

e) Additional research needs.

Production technology has been the mainstay of the FSDP research. A critical need is for data gathering and practical farm management economics research. Also social science research furthering knowledge of how to work the FSR/E process more effectively with farmers. VISCA-FARMI has capabilities in this area.

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f) Linkages and coordination.

Many reports read by the team emphasize the need for improved research-extension linkage and DA-University-College ties and coordination. Our observation is that mechanisms are in place i.e. memoranda of understanding, task forces, coordinating committees, councils, joint conferences, split appointments, etc. We feel that continued efforts to foster effective working relationships is needed. However, the burden is on top level management to see that the aforementioned processes are activated and reinforced. As an example, the director of ODREX at VISCA and RDA should be meeting regularly to review what is happening within their working relationships. In the research area some of the most effective work is done by professional colleagues of different disciplines or institutions jointly pursuing their task.

6. Research Area Strengths

There is a very functional research system in place incorporating the FSR/E method throughout -i.e basic, applied, adaptive, demonstrational. Linkages exist between the major institutions doing agricultural research. There is a dedication among research/extension staff to attack the problems of hilly upland farmers through FSR/E. A sizeable staff exists in the region with a good level of training. There are 128 RDA/FSR/E projects underway, 52 in VISCA and 111 at SRMU sites. Through the FSDP-EV, project researchers have found opportunity to design and test technologies that have resulted in some on-farm application. A major strength is in involving farmer, researcher, extensionists in the DDTE process and the discovery that both extensionists and farmers can do research when properly assisted.

7. Areas Needing Improvement

Funding for research is inadequate. Support needs to be acquired to continue and expand the work started by FSDP. Experiment Stations need to serve agriculture in a broader manner. The five stations should allow the HIREC model of research, training, and providing farmer inputs. Research programming needs to move to a programatic mode as regards the RAREA. More effective planning, priority setting and budgeting are needed. The VISCA-FARMI as well as the VICARP will need to continue strengthening research coordination and linkages. Organizationally the DA must strengthen the workings between its research and operations divisions.

Training is needed in program management to move forward the MREA concept and deal with decentralization challenges in the DA. There is danger of loosing key FSDP trained staff. The FSR/E process must be nurtured.

The progress in Region VIII research in FSR/E has been due in large part to special funding. The DA and VISCA must through regular channels or new funding sources, provide the continuation of the program.

4.4.2 Extension and Training

1. *Introduction*

The Training/Extension activities in the project were increased up in 1988 as recommended in the redesign of FSDP. Following the FSR/E process of Diagnosis - Design - Testing - Extension, project officials decided on the training/extension emphasis after about five years (1982-'87) of the first three (i.e, Diagnosis - Design - Testing.)

This portion of the report will show what has been done in training/extension from 1988 to the present, determine their strengths and weaknesses. It also identifies the lessons learned that the DA and VISCA (FARMI) could use in its research and operation programs.

2. Training

Training here includes any organized group learning opportunity be it a short course, workshop, or an extended conference . The degree-training for project staff and VISCA faculty, which were funded out of the project funds is excluded in this review. Table 5 gives type of training of Phase II.

Training activities actually started from the initial years of implementation of the project. Trainings then were mostly for project staff and officials.

The following were the items of review in training: The course elements of the training system, inter-agency linkages, administrative issues and the training outcome.

a) The courses

The various training courses were designed to achieve the purposes of dissemination and institutionalization of FSR/E. The summary of the training outputs is presented in Table 5.

The responsibility for organizing the different courses were mutually agreed upon and split between FARMI (VISCA) and RDA. FARMI's Organized courses had 511 total participants to 1,072 of RDA's. Over the three year period a greater proportion of the courses were done by the PDO.

Table 5 Summary of List of Trainings and Number of Participants by Year.

Title	Duration	No. of Participants	Venue
I. FARMI TRAINING			
1989			
FSR/E Short Course	3 weeks	44	NTC, ATI, VISCA
On-Farm Experimentation (2)	5 days	43	NTC, ATI, VISCA
Farmer Innovators' Workshop	5 days	7	NTC, ATI, VISCA
Technology Profile Development	3 days	25	NTC, ATI, VISCA
SUB-TOTAL		199	
1988			
Mobile Training on FSR/E (6)	5 days	133	Malitbog, Catbalogan Lilo-an, BNAC & Calb
FSR/E Consultative Conference for Agricultural School Administrators	2 days	16	NTC, ATI, VISCA
FSR/E Short Course	3 weeks	31	NTC, ATI, VISCA
Technology Profile	4 days	24	NTC, ATI, VISCA
FSDP-EV Research Review and Planning Workshop	5 days	50	NTC, ATI, VISCA
Training of Trainors (Trng Specialist)	5 days	20	NTC, ATI, VISCA
Upland Research Extension Training Workshop	5 days	55	NTC, ATI, VISCA
SUB-TOTAL		329	
1987			
Mobile Training on FSR/E	5 days	20	Catbalogan
FSR/E Short Course	3 weeks	43	NTC, ATI, VISCA
SUB-TOTAL		63	
TOTAL		511	

Title	Duration	No. of Participants	Venue
II. FSDP-EV TRAINING			
1989			
Mobile Training on FSR/E (II)	5 days	279	Macrohon, Almeria, L Calbayog, FSDP-EV Du Guiuan, Dolores, Bor and Catarman
Farmers Field Day		20	VISCA
Farmer to Farmer Training on	3 days		
Salt		18	Matalom
Goat Production (3)		57	Jaro & Mac Arthur
Vegetative Contouring (2)		31	Villaba
Hedgerow Contouring		15	HIREC
Improving Fallows		77	Jaro & Sulat
HALT		62	Calubian
Plant Propagation & Nursery Mgt.		15	Mercedes
Cogon Control		57	Gandara
Live Mulch		20	Basey
Upland Rice Production		25	Bontoc
Observational Tour to	5 days		
HALT & SALT Projects		40	Regions XI & XII
HALT Projects		8	Cebu
SALT Projedts		35	Region VIII
DA Progressive Areas		16	Region XII
Keseo & Pastillas Producers		18	Gandara & Carigara
Goat & Sbeep Production Projects		15	Leyte & So. Leyte
Vegetable Production Projects		20	Leyte & So. Leyte
SUB-TOTAL		828	
Farmer to Farmer Training on	5 days		
Improving Fallows (4)		84	Jaro
Income Generating Potentials of Coco & Fruit Processing		27	Jaro
Observation Tour to	3 days		
SALT Projects (2)		12	Davao & Cebu
HALT Projects (3)		36	Basey, HIREC, Cebu &
Mindanao (2)		13	Davao, So. & N. Cota
		172	

Title	Duration	No. of Participants	Venue
1987			
Farmer to Farmer Training on	3 days		
Live Mulch		41	Basey
Improving Fallows		31	Jaro
SUB-TOTAL		72	
TOTAL		1,072	

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The total number of trainees during this three-year period is 1655. Eight hundred and seventy two were farmers and 783 were professionals. The professionals included extensionists, project staff, trainors, researchers and administrators.

The courses range from 3-5 days. The conferences, review and meetings generally lasted for 1-2 days.

Following the FSR/E principle of end-user participation, courses were identified and scheduled from the "ground up". The training needs for the courses involving farmers, extensionists and RDA staff are identified and discussed at the field among those who will be participants and those who will manage the courses. Funding was through the PAO.

b) Trainors/resource persons

While the organization and management of training in the FSDP were divided between VISCA and PDO, the two groups used each other's trainor resources. In the FARMI managed courses, 16 of 67 resource persons were staff of RDA (Table 6, Appendix 7.8) while in the PDO managed courses, 9 of 57 resource persons were from FARMI (Table 7 Appendix 7.8).

In participant evaluation of the mobile training and the short course, the resource persons were rated between excellent and very good for mastery of subject matter, effectiveness in presentation and rapport with participants.

c) Curriculum

Due to their frequency and importance to the FSDP and to the dissemination and extension thrust of the project, three courses will be highlighted. There are FSR/E short course, mobile training and farmer to farmer training.

In the short course, the participants in this course were project personnel/MAC's VISCA staff and other students of farming systems. The objective of this training was to teach knowledge and philosophy of R/E-SA. There are four major modules or teaching units in this course: principles, tools and practice of FSR/E; diagnostic process; on-farm experimentation; and extension and research linkages. In the participants' evaluation over a five-year span, all modules were rated as very useful by participants. The methods used in this course are a combination of lecture, workshop, discussion, open forum, reporting and practicum.

Mobile Training, a compressed short referred to above or the compressed start courses on FSR/E approach. The intent of this course was to create awareness among the RDA staff (MAO, APT and SRMU staff) of the FSR/E principles and practices to fully operationalize the process at the field level. Courses were held in the various municipalities where training facilities are available.

Mobile training content includes the major modules in the FSR/E short courses such as: introduction to principles, tools and practices of FSR/E; learning from farmers, cause-effect diagramming and systems diagramming.

As in the short courses, the instructional methods used lecture, open forum, group reporting and practicum. The practicum is on the diagnostic process (rapid rural appraisal) which was done in the field.

In the evaluation of this course, the modules were rated by about half to 2/3 of the participants as very useful on a three point scale (not useful; useful and very useful). Final appraisal of the value of the course is how participants apply the modules in their work.

The farmer-to-farmer training is a three day non-formal course for farmers who come from the same village. The intent of this activity is to show agricultural practices that have been successful on the farm. After the visit, the participants individually report to their peers what they want to try in their own farm. Those following the recommended practices become the farmer trainors.

Another form of farmer-to-farmer training is the observation tour. Here a group of farmers from the same locality (and accompanied by the SRMU and APT staff) went on a 5 day educational trip to Cebu and Davao where successful contouring and soil conservation projects are in place. During the tour projects on farms were visited.

F/F training has four components:

1. Seminar where introductory concepts and principles are presented;

2. Observation and visit to different sites;

3. Practicum to learn the use of the "A" frame.

4. Group discussion and reporting. The common recommended practices were: contouring using ipil-ipil, madre de cacao and plaminga as hedge plants, enriched fallow using kudzu and the use of creeping legumes.

d) The training management

There are two sets of courses in FSR/E. Those managed by FARMI and those by the PDO staff. FARMI courses are being managed by their training staff with administrative support by FARMI staff. The ATI facility serve as the venue. Funding is provided by the PDO.

In the PDO trainings the activities were managed jointly by the PDO training staff, the SRMU staff and the concerned MAO and APT.

In both cases the training management group serve as organizer, and course designer.

Interagency linkages. The various trainings of the FSDP provided opportunities for interagency collaboration and mutual assistance among VISCA departments, PDO, DA operations people and external consultants.

The external consultants (both the long term and the short term) in collaboration with VISCA technical people were helpful in formulating the operational tools, concepts, processes, mechanisms the FSR/E approach. These became the content of the various training courses.

Other assistance of external consultants and VISCA technical staff was in preparation of the training manual. Consultants (external and VISCA) organized workshops with VISCA and PDO module writers for the preparation of the training manual. This manual is now being used in the short course on FSR/E, in the mobile training and as a text for ATI staff use.

The outcome. The trainings in FSDP are functional. They are for the purpose of meeting the strategy and programmed activities in the project. Participants most often cited FSR/E concepts, principles and practices learned as follows:

1. The Diagnoses-Design-Testing-Extension FSR/E process
2. On-farm research extension
3. Systems diagramming
4. Rapid rural appraisal (tool for diagnosis)
5. Bottom-up planning
6. Farmer participation
7. Site specification of technology
8. Sustainability and soil conservation
9. Farmer-to-farmer teaching.

In the farmer-to-farmer training, participation by farmers had led to immediate adoption of recommended practices such as contouring using ipil-ipil and madre de cacao hedgerows, use of kudzu for enhanced fallow and desmodium creeping legume to minimize soil erosion.

Table 8 shows a total of 1614 farmer adoptors from the original SRMU and expansion sites. Hillside farming or contouring using ipil-ipil top the technologies adopted with 772 , followed by enriched follow using kudzu with 410 adaptors, village goat production had 152, live mulching (desmodium) 101 and village sheep raising had 94 adoptors.

3. Extension

Several extension mechanisms are being used in the FSDP sites. The farmer-to-farmer process was the most significant project strategy. While described earlier as a training activity, it was more of an extension of technology mechanism.

While training for professionals is aimed at effective performance of the various roles in the project (Project Staff, SMRU, researchers, trainors, administrators, etc.), the farmer-to-farmer training was designed to achieve an extension purpose - to promote adoption of recommended practices.

The on-farm research/extension is a mechanism to test recommended technology/practices on farm involving both extensionist and farmer operator. Minimum amount of data are gathered and the design is a simple comparison of a farmer's existing practice and that recommended. While this is a one-on-one contact, its potential for extension lies in the demonstration effect to neighboring farmers and those who come from other communities brought during farmer-to-farmer training or observation.

Farmers meetings were another educational method used in the project. In the rapid rural appraisal and design phase, an assembly of local residents were called to validate findings and feedback on certain recommended technologies.

The Agriculture and Food Councils, from the Barangays up to the regional level, is a new mechanism in the DA. Councils are a group of private individuals who advise and give inputs to the DA personnel in terms of areas needing attention. These bodies are useful in the process of priority-setting and in extension program development. Furthermore, they have the potential to exercise effective lobbying within the program support-political process.

Data on adoption of recommended technologies in the project, is shown in Table 8. What can not be determined is the second and third levels of adoptors. Project staff believe diffusion is going on through social contact and demonstration effect but cannot document exact numbers.

Table 8. Number of Farmers who Practiced and Adopted Recommended Technology.

Technology/Brgy/Mun/Prov	1986-87	1988	1989	TOTAL
1. HILLSIDE FARMING (SALT)				
- Cagnocot, Cabuanga-an, Casilinang, Villaba	35	68	91	194
- Tabango, Leyte	20	60	20	100
- Calubian, Leyte	39	52	62	153
- San Isidro, Leyte		26	15	41
- Leyte, Leyte		23	17	40
- Isabel, Leyte		26	15	41
- Gandara, Basey, Daram, Motiong, Daranas, Samar		49	69	118
- Bontoc, So. Leyte		13	32	45
- Matalom, Leyte		18	22	40
				772
2. ENRICHED FALLOW TECH.				
- Daro, Tuba, Bukid, Hiagsam, Hibacauan, Ugyao, Jaro	22	75	94	191
- Balante, Basey, Samar		27	32	59
- Gandara, Samar	16	32	75	123
- San Vicente, Sulat E. Samar			37	37
				410

Technology/Brgy/Mun/Prov	1986-87	1988	1989	TOTAL
3. VILLAGE LEVEL GOAT PROD'N UNDER COCONUT				
- Daro, Jaro, Leyte	17	20	27	64
- Casuntingan, Mac Arthur, Leyte			49	49
- Mercedes, Oras, Can-avid, Balangkayan, E. Samar			39	39
				152
4. VILLAGE LEVEL SHEEP PRODUCTION IN THE UPLAND				
- Villaba, Leyte	27	10	14	51
- Mercedes, Sulat, Can-avid, Oras, Balangkayan			43	43
				94
5. LIVE MULCHING				
- Balante, Basey, Samar		35	66	101
6. WHITE CHEESE "KESEO" AND PASTILLAS PRODUCTION				
- Jaro			18	18
7. COCO BY PRODUCTS & FRUIT PROCESSING				
- Jaro, Leyte		30	37	67
TOTAL BY YEAR	176	564	874	-
TOTAL ADOPTORS	-	-	-	1,614

4. Analysis and Conclusion

In this section strengths and weaknesses will be drawn from the findings and observations described above in the area of training and extension.

5. Training

Strength. The training approach/strategy used has been effective because; participant selection, content selection, programming, educational design, methodology, resource persons, teaching and training materials used were appropriate and tailored to the needs of the participants. The strengths were:

1. Courses and training activities were provided to target groups who had common needs, concerns and real life situations. Learner involvement in the process leads to greater learning of both content and process.

2. Participant needs were matched with training and instructional inputs through needs analysis and previous contacts of the staff with participants.

3. Training (content) was systematically organized and packaged into a training manual and handouts. The project personnel had a series of workshops with the aid of consultants to prepare the format and content of the training manual.

4. Teaching by resource persons were highly rated in terms of mastery of subject matter, technique of presentation, communication skills and rapport with participants.

5. The design of the curriculum of the courses employed sound pedagogical principles. Training of the trainors on content/subject matter and techniques of teaching helped in insuring high effectiveness of teaching.

6. The Combined trainors of VISCA, RDA and farmer leaders, including the training specialists at ATI in Alang-alang and in VISCA make the whole of Region VIII virtually the national center for training in R/E-SA.

7. The training management staff of PDO, FARMI and ATI have shown high levels of professionalism, dedication and competence in planning and implementing training activities for all levels of participants. The exception is managerial and executive training.

8. The linkage and functional cooperation between PDO, VISCA, ATI, and the MAO's and APTs facilitated training coordination in programming and operation.

Areas Needing Improvement. Fine tuning to increase the quality and efficiency of the training process are:

1. Streamlining the flow of training funds to insure flexibility, responsiveness and timeliness of fund release. The complexity of doing training activities involving large numbers of people and many institutions make the management of training activities a difficult task.

2. There is a need to improve the planning and communication process among and within the regional, provincial and municipal levels of the DA to improve the efficiency in communicating with field personnel and their clients.

3. In mobile and farmer-to-farmer training, the participants comfort and convenience should not be neglected. The learning process is adversely affected when the training accommodations and facilities are not appropriate.

4. Planning and preparation of the resource persons are important steps in a successful training program. There is a need to plan jointly with both professional and farmer trainors, on overall instructional strategy.

6. **Extension**

Strength. The major contribution of FSDP is its having operatioanlized the process of mutually reinforcing relationship between research, extension and the role of the intended beneficiaries in the process. While this FSR/E approach to extension and research in this project was done with resource-poor upland farmers, the process and organizational implications are transferable.

The principles of; people participation, site specificity of technology, farmer-teaching-farmers, prioritization according to felt need, and organization of learners, have been resurfaced in this project.

More specifically, the following positive lessons in extension were learned from the FSR/E experience:

1. Interdependence and mutual reinforcement of research and extension. FSDP has shown that research or extension cannot make a real impact without the assistance of the other.

2. The Project has used successfully the extension technique of farmer-teaching-farmers. It is an accepted principle that farmers are more credible to fellow farmers.

3. The project has proven that extension in the upland and hillyland is not an exercise in futility. It was earlier believed that no new technology can be extended to solve the problems of soil erosion and the resource-poor farmers. Equally, it was believed that the isolated and resource-poor farmers of the upland and hillyland are extremely conservative and will not respond to educational assistance. These were disproven in this project. While there was lack of technology produced by research institutions there was available conventional wisdom and practical technologies which had been successfully practiced by farmers in other regions (Cebu and Davao). It was then only a matter of bringing the farmers to the sites for them to "see and believe" and be encouraged to try out the practice in their own farms.

4. Farmer involvement in FSR/E is an effective mechanism to pull the professional dominated extension and research systems to reality and allow for a demand-driven process to take place.

5. Group and educational tours and observation, as extension techniques, have shown that adoption of new practices can be speeded up. The behavior of conservative farmers was changed with one educational tour.

6. The R/E on-farm is an effective show case to doubting farmers on recommended practices. Extensionsists can use limited time available in the field to work intensively with lesser numbers of farms by using the farmer-to-farmer method.

Areas needing improvement. For the lessons in FSR/E approach to bear fruit so that they can be propagated to other areas in Region VIII and to other regions, the whole DA structure in research and operation will have to make adjustments.

Some of these required adjustments are as follows :

1. Provision for planting materials. RDA research stations and provincial research facilities with production areas will be good places to mass produce planting materials.

2. Local governments could be tapped to supplement the meager budgets of the APT and MAO.

3. APTs and MAOs, need to prioritize their work based on the number of target beneficiaries, their felt need, problem dominance and available technology. Field staff are confused about DA's pronouncement of decentralization and localization while at the same time issuing demands and instructions affecting their work.

4. The program planning and budgeting process appear to be unrealistic and ineffective. MAO's and APT's are simply stating councils and farmer assembly viewpoints without professional technical analysis and suggestion of options. As a result the budget presented for funding is beyond what the RDA can afford. Direct allocation to MAO, (initially on historical basis but later made more program-responsive) will make for an effective extension operation.

5. MAOs are in dire need of training on practical program development, program implementation management, effective supervisory leadership and extension education techniques. At present the MAOs and APTs plan of work is simply a listing of stereotype activities like - "to make a courtesy call", "to do ocular survey", "to visit farmers", and "to do office and paper work". No details are given on how an educational, communication and developmental program or and activity will be carried out.

6. The A-V media and support communication program of the project is very weak. More initiative is required to package, popularize and distribute materials like leaflets for extensionists. Radio as a channel of disseminating technologies has not been tapped.

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4.4.3 Economics and Management

Introduction

Phase II of the project was not designed for vigorous economic analysis. Objectives and targets relate to; numbers of activities of the project staff, numbers of farmers trained, number of practices adopted and farmers participating.

Through the process of reviewing some of the back-up research interviews with farmers, etc., some indications of the actual and potential economic impact of individual practices or on-farm adoptions can be made.

Several related questions on various aspects of Economics and Management are treated in this section.

Provide Increased Benefits

Problem 1: Erosion Response: Contouring.

Sixty-one farmers have adopted the contour technology, under which various nitrogen-fixing plants (ipil-ipil, Madre de Cacao) are planted in double rows on contours. The objective is to reduce soil erosion on sloping lands with grades of up to about 30%. Farmers learn to use the simple A-Frame to lay out contours, and plant trees using either seed or cuttings. The human labor involved is considerable, and the effects are long-term. This practice falls into the category of a mid- to long-term investment in farming resources. Secondary effects include the nitrogen effect of the hedgerows upon the crops produced, and perhaps water retention during light-to-moderate rains. Another secondary effect is the use of the napier grass, Ipil-ipil, or Madre de Cacao leaves, that can be clipped and used as forage for ruminants.

The practice of contouring has not been analyzed with respect to directly measurable economic benefits to the adopting farmer. Yields of corn on uneroded hill slopes in Villaba were 113 kg/ha and fell to about 24 kg./ha, with erosion. Terracing produced a rise in corn yields back toward the previous levels. However, they have not got all the way back in the two years that have passed. In Calubian, yields of corn on hilly land were around 375 kg./ha. After putting in contour hedgrows of ipil-ipil and spreading the cut leaves upon the terraces, yields are said to have risen to 600 kg./hectare. The current

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recommendation is to space contours 5 to 7 meters apart, irrespective of the slope. Any closer spacing risks a shading effect upon the crop, whilst any further spacing apart loses some of the nitrogen effect in the middle of the terrace. Some work is being done on the erosion and water absorption effects, but no data have, as yet, been published. (FS#57, "Development of a Methodology for Measuring Soil Erosion/Sedimentation in the Farm". On-going research at VISCA, G.J. Galinato, Jr.) Crops planted upon contours remain essentially the same as were produced before.

Some data were gathered on the economic results of Ipil-ipil, cut and fed as a supplemental feed to milking caracow in Northern Samar. (Parilla, et.al. "Economic Analysis of Ipil-ipil Feed Supplementation of Native Caracows in Gandara, Samar". #47, VISCA) Caracows were tethered for normal grazing and fed 2 Kg's of cut Ipil-ipil per day. The milk raised in this area of Samar normally is processed into keso (cheese) immediately after the milking, for longer life. Milk production from the cows fed supplemental Ipil-ipil was somewhat higher than those fed normally, but cheese production was more than doubled. The butterfat content of the treated cows was greatly higher than that of the control group. Measured net benefits of P5,881 per caracow/lactation were observed in this study, compared to P2,879 for control cows. The marginal rate of return on total variable costs was 86% while that to non-cash variable costs was 1,155%.

Problem 2: Lengthy Fallows in Shifting Cultivation : Response Enriched Fallow

Thirty-two farmers have adopted one of several forms of enriched fallow, using kudzu, centrosema, or desmodium species. The basic problem in shifting cultivation has been that soil fertility recovery has been left to the natural revegetation processes. The general pattern has been one of a corn/rice rotation over the four seasons of the fist two years, at which point yields are noticeably declining. The third year is devoted to root crops such as sweet potato, cassava, etc. Cogon grass begins to grow and spread during this terminal phase of the cultivation cycle. During the nine to twenty years following the cultivation phase, cogon becomes a thick mat, with other shrub species gradually appearing.

When the farmer judges that the land has recovered its fertility, he must cut and burn the brush and plow up to ten times before the first planting. The cogon generally persists for a year or two into the cultivation phase, coming up from rhizomes. Enriched fallow practices in Jaro led to healthier and more productive coconut trees, due to the nitrogen added by the cover crop; to easier tillage in preparation for the new cropping phase, and to a greatly shortened fallow period due to the complete elimination of cogon grass. There undoubtedly is a nitrogen effect upon the crops following the enriched fallow.

Teresita J. Lago, the economist on the SRMU team at Jaro is collecting economic data on a control group, and on farmers who are going into the cultivation phase following enriched fallow. Plowing and underbrushing/burning costs have averaged P203 for the two farmers so far observed. Costs incurred by two control farmers averaged P.568. The fallow period for both farmers who had practiced enriched fallow was three years, whilst that for the two farmers using traditional methods was ten years. There are no data yet that would reflect the net benefit in crop yields. A farmer with two hectares of land under the enriched fallow system could expect to get crops on 13 hectares each of corn and rice, and three of sweet potato, over a thirteen-year period. A farmer with two hectares of land using traditional shifting cultivation practices could expect a total of 2 hectares each of corn, rice and sweet potato over the same thirteen-year period. The benefits, though not yet measured, clearly are substantial.

In Basey, the SRMU staff have estimated a four-year crop phase followed by a three-year fallow, using desmodium to control cogon and to put nitrogen into the soil during the fallow period. The system under trial there is to establish a solid desmodium cover, then to leave a 1-foot strip of desmodium and to crop 2 meter strips. The shifting cultivation then moves across the field with the desmodium moving in to cover the previously cropped strip. Yield data for corn/upland rice were gathered but have been misplaced.

Problem 3: Lack of Small Stock
Response: Goat/Sheep/Chicken Upgrading

The expressed need for added or more productive livestock arises both from the desire for additional sources of occasional income, and from the addition of forage from hedgerows and enriched fallow. In the latter case, it is a derived adoption, as in the case cited above of feeding Ipil-ipil to caracows. There have been 8 adapters of livestock under the FSDP, (not necessarily all separate individuals). At Jaro, goats were introduced to a few farmers, mainly to utilize forage newly available from enriched fallowing under the overstory of coconut. The original adopters have progressed past the point where the loan of two goats has been repaid, and are now selling or putting surplus goats out on a lease basis. There are no economic data, but the monetary rewards appear to be both modest and certain for individual farmers. Recently, a program has been started at Jaro to upgrade the milk producing capacity of the

goats, mainly looking toward increased family consumption. There are no data of returns yet. Sheep have been introduced at Villaba, with cooperators rising rapidly from 12 initially to around 64 at present. The sheep can be tethered out to graze, and fed cuttings from hedgerows on a cut-and-carry basis. It is too soon for economic analysis of this activity, but lambs are said to reach market weights of 13-15 kg. at five months of age. The sheep are tethered to graze on fallow, or are confined and fed cuttings from contour hedgrows.

A study involving upgrading native chickens is underway at Villaba. (FS#64, "Upgrading the Native Chickens at the Village Level"; Dr. W.F.Floresca, VISCA - a report of research in progress.) Table 9. This experiment began when a farmer visited VISCA, and requested a purebred rooster. The problems identified were those of fall cholera (at the end of the monsoon season) low market weights and slow gains in weight. Faster gain allows the young chickens to be marketed before the fall cholera season. In this experiment, young Cornish, New Hampshire or White Rock roosters were put with native hens, one per cooperating farmer. The chickens and F1 chicks graze randomly, and are sometimes given cracked corn - native practices. The F1 and control chicks are weighed every two weeks upon a gram balance. As of the current date, the New Hampshire cross has gained an average of 4.16 grams per day from hatch weight to age 16 weeks, the rate of daily gain being the usual increasing curve. The Cornish cross was started later, but appears to be gaining faster thru the first six weeks for which there are data. The cost of these gains is very low, as only a minimum of non-cash childrens labor, and farm-raised corn, are input.

The average was an 85% increase in value added over native chickens in the first six weeks, and this margin is likely to increase as the F1 chicks mature. Crossbred chicks look like achieving a market weight of 1.5 Kg. in 28 weeks or less, whilst native chickens often never achieve this weight, or achieve it only at age one year and above.

Problem 4: Weed Control Response: Live Mulch

Thirty-five farmers have adopted live mulch as a solution to the problem of weed control on the ground under coconut. Materials used include kudzu, centrosema, and desmodium. These plants all are nitrogen-fixers, and the kudzu is effective in smothering cogon grass . A study carried out by VISCA found that even the rhizomes were killed after two to three years of kudzu cover. The practice also allows grazing by carabao, goats, and sheep, or supplemental feeding by the cut-and-carry method. There are no known economic studies of live mulch experiments as yet. At Basey, the rotation under standard shifting cultivation was two years of crop, one year of a root crop, and up to twenty years of fallow. With the introduction of desmodium live mulch, the rotation will be four years of crop and the three years of fallow.

Table 9. Gain of Upgraded Chickens at Villaba
(After Floresca, FS# 64, VISCA)

	Rate of Gain (Grams/day)				
	Native	Cornish	Cornish x Native	New Hamsphire x Native	F^2 Gross
Hatch Weight	29.2	46.7	35.5	34.1	41.2
Gain at:					
2 weeks	1.63	2.86	2.37	2.09	2.13
4 weeks	0.64	1.13	3.29	1.99	2.50
6 weeks	1.36	3.39	2.87	3.67	2.60
8 weeks			4.82	5.73	
10 weeks				7.89	
12 weeks				4.23	
14 weeks				11.34	
Weight at 6 weeks	20	150	155	143	142
Weight at 16 wks				500	
	Gross Value Added/Day (Pesos)				
2 weeks	.062	.109	.090	.079	.081
4 weeks	.024	.043	.125	.076	.095
6 weeks	.052	.129	.109	.140	.099
8 weeks			.183	.218	
10 weeks				.300	
12 weeks				.161	
14 weeks				.431	
Total Value Added 6 wks	3.04	5.70	5.88	5.43	5.40
16 weeks					
% increase in value over native		88	94	19.00 79	78

Technology Adoption

The question asked is whether the Project targets of farmer adoption will be met?

The project target is 590 farmer-cooperators in 1989, 3,230 in 1990, and 5,850 by the end of the Project. The data show that a total of 874 farmers have adopted new technology in the first half of 1989. There were 1,438 farmers adopting technology in the last year and a half. A total of 1,614 farmers have adopted technology as a result of the FSDP since 1986-87. It would appear that, at the present rate of adoption, the accomplishment will fall about 740 short of the cumulative target for the end of 1989. One then would expect that, if the present pace is maintained, the achievement will be short of the Project target by perhaps several thousand by the end of the Project in 1991. This projection must be tempered by the observation that technology adoption almost follows a rising curve, not a straight line. Many things affect the rate of adoption both positively and negatively.

As an example, farmers at Calubian were running short of grazing land due to population pressure upon available land area. Fodder production from ipil-ipil in the introduced contour hedgrows allowed a cut-and-carry supplementation of caracows and small stock. After an infestation of leaping mites threatened ipil-ipil, farmers began to switch to Madre-de-Cacao. Subsequent work by Villacarios at VISCA found certain spiders and beetles who are predators of the leaping mites, and has identified properties of certain native plants to control aphids on cereal crops.

A second Project target is to have 3-4 new technologies tested and disseminated each year of the three years of Project life. Four were in process at the beginning of 1988. Two more were added in 1988, with one addition so far in 1989. The rate of new technology testing and adoption is therefore about one-half of that needed to achieve Project goals. At least one known new technical process, that of liming acid soils in Matalom, was tested and essentially rejected by farmers, and no longer appears upon the list. Data were not collected that might indicate high priority farmer-identified problems for which an appropriate technology might be available for testing. Several technologies are being investigated at VISCA that may get into the farmer testing and dissemination process in the next year.

A study in progress at VISCA, "A Study in the Adoption of Enriched Fallow During Technology Verification in Jaro, Leyte and the Implications to Extension", is being led by C.D. Villanueva. One significant finding has been the strong inverse correlation between the number of parcels that a farmer operates, and the rate of adoption of enriched fallow. The mean fallow period was 4 1/2 years, with 31% in the range of 1-4 years, 57% of farmers interviewed falling in the range of 5-8 years, and 12% in the range of 9 and more years of fallow, (evidence of distribution skewed to the left) Thus, with a mean of 3.28 hectares of land the average farmer in Jaro can crop only about 1/10th of a hectare in any given year.

In Jaro, about 55% of the adoptors applied the enriched fallow technology in less than a month after their first knowledge of the idea. Another 10% adopted within three months, 2% within a year, and one-third of the farmers after more than one year. Reasons given for quick adoption included the need to control cogon grass, and for the value of the forage produced. Reasons given for slow adoption included off-farm commitments and a "wait and see" attitude.

Proximity and readily available technical assistance was the dominant reason why 64% of adoptors relied upon the SRMU Team. Ninety percent of adoptors used the site team followed by talks with other farmer-cooperators as a channel while 12% reversed this consultation process. Five percent of adoptors relied only upon consulting other farmer-cooperators, being cases of pure farmer-to-farmer extension activity.

An earlier study by Dolores L. Alcober, et. al; ("Acceptance/Rejection of Introduced Cropping Practices and Approaches by Farmer Cooperators in Four FSDP/EV Sites". VISCA #60, March 1987), sheds further light upon the still-partial mystery of farmer adoption of new technology. "The introduced cropping patterns generally were rejected by the farmer cooperators .... {because} a fixed schedule of planting specific crops {had to be} followed. There was a conflict in the use of family labor, erratic climate, and unavailability of planting materials" (p.24)

"Although the cropping patterns generally were rejected, there were certain components ... that were accepted by farmers". Reasons given for acceptance/rejection of various crops and cultivars included cooking and storing characteristics, interaction with weeds, production levels (yield), input and cultivation requirements, and the timing of planting and harvesting; all compared with these characteristics or parameters of traditional crops/cultivars.

The gains in adoption of new technology that have been made are thought to be solid by both farmers and Project people in the field. This is a vindication of the FSR/E model of soliciting the statement and ranking of problems from the farmers themselves. Farmers interviewed were quite obviously sold on the adoptions that they had made. It is safe to surmise that, given this level of confidence in the change agents, the farmers will continue to adopt technologies that are relevant to their perceived problems.

Land Tenure

The question raised for the evaluation Team was that of the extent to which land tenure modifies the rates and kinds of technology adopted by farmers. The natural presumption is that owners will be willing to invest in technology with positive returns, even if the returns will be collected over several years. The related presumption is that farmers under the several varieties of tenancy common in the Visayas Region would be slow to adopt technology requiring intermediate or long term investments, even if they are non-cash requiring. The land owner might take the land back, and the technological improvements with it. Investments in technology with medium or long-term payback periods are thought to be of a high order of risk for non-owners of the land upon which they are made. In some areas, such as Matalom, there has as yet been no effective land reform, and most farmers upon hilly lands are squatters, or tenants. A part of the problem is that a good deal of these lands are officially classified as "forest land" to which the current land reform law cannot be applied.

The application of locally available "anapog" lime to the highly acidic soils of Matalom, was the subject of a study by M.M. Mesorado of VISCA. The average farm size of all categories of tenant was 1.95 has. while that of owner-operators was 3.1 has. Despite this difference of scale, the total value of farm product was nearly identical for the tenants and the owner-operators.

Fifty-two percent of the farm income of owner-operators came from coconut, 21.9% from upland rice, with the remainder distributed over a number of sources. The tenants averaged only 26.6% of their farm product from coconut, with 23.7% from abaca and 13.9% from rice, the rest being distributed over the range of other farm products. The total value of farm product per hectare averaged P 1,529 for the tenant group against P 716 for the owner-operators, but the per capita income from farming were nearly the same for both groups.

All 40 farmers in the survey were aware of the anapog technology. Half of the owner-operators adopted the practice while 36% of the tenant operators did so. Half of the owner-operator non-adopters gave lack of knowledge of the technology as their reason, while the other half said that the area cultivated was still productive. For the tenant group, 21.6% gave lack of knowledge of the technology as a reason for non-adoption, 27.9% said that lime application did not give good results on farms, six point one percent said that lime application was a laborious practice. An equal percentage said that the source was too far away. Thirty one point four percent of the non-adopting tenants were just not interested. The expense in time, transport, and labor was not mentioned by any of the 40 farmers, (or perhaps was not asked by the interviewers}. ("Tenure Status and Farmers' Perception on Local Lime ("Anapog") Application for Acidic Soils", FS-62, analysis still in progress).

As of mid-1989, a total of 716 farmers in the Region have adopted contouring, and 410 have adopted enriched fallow technologies. It is not known what proportion of these were owner-operators and what proportion were farming under one or another type of tenancy. But it is known that a minority of farmers in the Visayas uplands are owner-operators.

Why would so many tenants make the investment in these middle-to-long-term investments? This certainly flies in the face of the conventional wisdom. The only potential explanation that has been suggested is that tenants, by custom in the Philippines, have a relatively secure usufruct right in the land they rent. Certainly, the tenant farmers interviewed in the course of this evaluation expressed no concern over the risk that they might lose their investment to a land owner reclaiming use of his land back from them. It would be bold indeed to suggest the technological innovation in the Eastern Visayas Region of the Philippines is tenure-neutral. That, though, is the appearance with respect to terracing and enriched fallowing practices, if not exactly so in the case of liming acid soils.

Project Fund Availability and Flows

THe flow of funds from USAID, thru the Department of Agriculture, and to the field implementing agency has been slow. One study showed 169 calendar days from the time that USAID gave a check to the Bureau of the Treasury, until the field implementing agency received the credit advice in its local bank. An estimate based upon ideal conditions, including telegraphic transfer, would require about 21 calendar days to cover the same ground. The time appears to be taken up by the complex series of warrants, covering letters, notices, and releases that must be issued by officers in the Department of Budget and Management, Department of Finance, Central Project Office, and the one or more banks that are involved. Once the credit advice is issued by the bank with which the project deals, only a day or so normally is required to push funds on down to the level of disbursement - in general the PAO.

In the case of funds supporting back-up research at VISCA there is a further complication. Currently, funds for second quarter operation at VISCA/FARMI (Beginning April 1), have not been received from the RDA. It is two weeks until the beginning of the 4th Quarter, October 1st. The difficulties are thought to be in the transfer of DA funds to VISCA, which is not administered by DA. At present, there is a proposal for USAID funds to be disbursed directly from DBM to VISCA, with an advisory notice to the RDA. This would shorten the delivery time considerably. The proposal has not yet been acted upon by RDA.

Some difficulties are encountered in disbursement of funds because not all of the field officers are bonded. If a person is not bonded, he/she cannot receive Official funds for disbursement toward field expenses. In these cases disbursement must wait upon the availability of a bonded person to come out from the provincial office to the field site.

Under the new system of decentralization, funds will be sent directly to the Regional DA's Office under "block" allocations by functions, and these are to be transferred on to the Provinces in the same manner. Allocations and re-allocations within the Province will be made by agreement of the staff in occasional meetings. This would appear to allow sufficient flexibility for the adjustments inevitable in field operations. The staffing at RDA, Project Management Office and VISCA appear to be adequate, and adequately prepared to manage the flow of funds thru the operations, down to SRMU's. Major improvements in the flow of Project and DA funds will await streamlining of management within the Bureau of the Treasury and the Department of Budget and Management.

Enterprise Development Component

Questions raised in this sections include the promotion of on-farm income generating activities in the Region, and the involvement of women in both on-farm and off-farm employment and enterprise development. The only evidence of activity by Project people in this general area is a beginning discussion in Matalom of the cropping of bamboo for sale as construction material. It is estimated that each clump of native bamboo yields about 80 poles per year of the required 10-12 meter lengths. At P8m per pole, the indicated gross revenue is about P640 per clump per year. It is estimated that about ten clumps could be grown on a hectare, for an indicated gross revenue of around P6,400 per hectare per year. If the farmer allocates land to bamboo, it must be retired from all other uses. The problems upon which SRMU people work are defined in collaboration with the farmer-clients. On and off-farm income generating activities seem not to be high on the priority lists of these farmers, as yet. Site staff and FARMI people doing back-up research appear to have full plates, and perhaps have not the time to add enterprise development activities to their work loads. Also by design the Project placed priority on technologies to stabilize the land resources of farms.

There are some plans to add fruit trees into established hedgerows at one or more SRMU Sites. This will lead to the potential development of non-traditional enterprises for those farm families. There is speculation on the planting of citrus, cacao, and coffee on the terraces themselves, gradually replacing the traditional crops of corn, upland rice, and root crops. This, too, would bring changes in the traditional labor allocations of the farm families.

A.C.Y. Sandoval, at VISCA has some preliminary data from the study, "Role of Women in the Development and Transfer of Appropriate Technology for Upland Farmers in Jaro and Villaba, Leyte". (FS 45). These preliminary results include some interesting and detailed data on the proportion of men, boys, women, and girls that are involved in all the of the various activities of crop and animal production. The land preparation, planting, and weeding of crops, the transporting of produce, and the various activities involved in the care of carabao are done mostly by men and boys. Harvesting, husking, shelling, milling/dehulling and processing activities of crops, and most of the care of small stock (chickens, goats, sheep) are done by the women and/or the girls of the family.

Women's involvement in the Ipil-ipil hedgerow technology in Villaba was primarily in sowing seeds, in keeping stray animals away from the trial areas, and in cutting and carrying the herbage to animals being confinement-fed. They also were involved to a lesser extent in other activities such as surveying the contours. The study notes that women are better than the men at spreading notice of new technologies to friends, neighbors and relatives. They generally are included in the preliminary discussions about whether or not to adopt a new technology, but are not involved in field visits to demonstration sites.

It is safe to conclude that women will play a major role in the development of new on-farm and non-farm enterprises, and in their exploitation, when such activities are undertaken.

Regional Marketing Situations

A study by Parilla, et. al. "Marketing Study of Peanuts in Eastern Visayas", (FARMI #43, December 1985), found that traditional production practices using minimum inputs given, low soil productivity and unpredictability of weather, led to very low yields of peanut. Only small quantities of peanuts were marketed by any one farmer studied in the provinces of Leyte, S. Leyte, W. Samar, and E. Samar. There was little use of formal sources of credit, but some reliance upon "suki" buyers of the product.

The great majority of the cooperating farmers are subsisting upon averages of one to two hectares, or less in the case of those practicing shifting cultivation. Most are hardly producing up to a subsistence level from their farms. The very modest "surpluses" generated may consist of an occasional chicken, or young pig or goat sold locally. In most of the SRMU sites, the overstory of coconut provides what little cash income there is, and the understory of crops is directed entirely at family subsistence. Thus, for the most part, formal marketing questions do not arise. Almost no production inputs are bought for cash, the labor hired being most often obtained on a crop-share or labor-trade basis.

The copra market is a well-organized monopsony, under which farmers have little choice of marketing channels or of product prices. Absent revolutionary break-thru in production technology, or in new products, the present situation is unlikely to change substantially. Some of the SRMU people, notably in Matalom, are aware of the need to monitor farmer production of new crops/products so that market penetration conditions can be identified and dealt with in advance of potential problems.

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If marketing is not now a problem for these early adopters, when will it become so? There is no definitative answer to this question, and certainly, none was elicited in interviews with site staff, MAO's or farmer-adoptors. Given present rates of increase in the adoption of goat-raising in order to utilize enriched fallow in Jaro, for instance, when will the local markets for slaughter goats be satisfied?

The local market for goat meat in the vicinity of Jaro is expanding. As goat meat becomes more commonly available, consumers are learning to add it to their diets. It would be presumptious to predict just where this accommodation of taste to availability will end. But certainly, at some point, there will be more goats offered for slaughter than there are families willing to buy the meat. The prediction of the nebulous point where supply will intersect demand, requires a sophisticated model well beyond the capacities of extant economic analysts available in the Region. But a less rigorous resolution is available. It requires only that economists in the region monitor supplies offered upon the local markets, and the prices at which these supplies are taken. When prices start to soften, it is time to investigate the prospects for putting supplies upon more remote markets. Or, given demand and transport costs there, to suggest that farmers curb their further expansion of goat production. This would be a pragmatic, rather than an elegant solution to the questions of product marketing. It would do until such time as more formal solutions are provided by VISCA, et. al.

Positive Aspects

In general, project staff are young, basically well-trained in their various subject matter disciplines, and work assidously at their assigned tasks. The site people appear to know their cooperating farmers, and the agro-ecological-social conditions under which farming is carried out. Studies by VISCA/FARMI have been appropriate and well reported. The site staff appear to know how to gather farm-level data, and how to apply appropriate solutions to further identified problems. The back-up research goal of FARMI and associated members of the VISCA staff is in adequate response to problems arising at the farm level. Some very interesting and useful data have been collected. The FSDP-EV training manual contains materials adequate for the needed analysis of economic results at the farmer level. It is all clearly and simply explained, and should present no problems of interpretation to site staff, or APT's who refer to these materials.

Cost-Return Data that would allow partial budget analysis of Technological Adoption is being collected only at the Jaro SRMU site. This involves farmers who adopted enriched fallow three years ago, and are now opening up these areas for another cycle of crop cultivation. The site economist there is doing a good job of collecting data from these cooperating farmers, and from farmers following traditional practices in shifting cultivation - thus providing a control group with which the adoption farmers may be compared.

The farmer-to-farmer techniques of spreading the results of adoptions appears to work well, at least on those technologies that are basically sound. The procedures are well worked out by site staff. The process appears to be at the self-sustaining stage.

Areas of Weaknesses

Very few of the site economists encountered have experience in economic analysis; they seem to have been hired from A.B. work within the past few months. A disappointing proportion have little or no formal training in economics. They have formal training in soils, agronomy, animal science, etc. which is fine. However, designating them "Site Economist" does not magically turn them into competent technicians in this field.

There appears to be no direction from program managers at any level that would guide the site economists in their work. This is especially critical given the lack of formal preparation of most of these people. The data required for economic analyses are available, in the heads of the farmers and upon their fields. If nobody tells the site economists to gather these data, and directs them in doing it, the bases for any meaningful analyses of technology adoption will not exist.

The staff of the SRMU's and particularly the APT's assigned to the fifteen expansion sites, lack the time required to gather and analyze field data from adopters and control groups.

To the extent that the agenda of SRMU and APT people in the sites is set by farmer identification of problems, social costs and benefits aspects, or problems that are external to farmer control and concern, may be passed over. Site workers may be poorly positioned to deal with the externalities. Perhaps this is a charge that should be dealt to the researchers at FARMI/VISCA. There was no indication that such had been done, or is anticipated. Funding back-up research on externalities may be more difficult than that for farmer-identified problems, but ways should be found to do this.

In spite of mention in the project document of surveys to gather objective data of the results of technological adoption, only the site staff at Matalom appears even to be considering this activity. Their idea is to repeat the Benchmark Survey at the end of the project, to provide the basis for a comparison of before and after levels at income, employment, etc. There is some questions that this would be adequate in terms of an economic and financial analysis of project benefits. Certainly even this would not be adequate if carried out only at one of the existing twenty one sites.

Although the processes evolved under the FDSP look certain to survive the demise of the USAID supported project, the rate of adoption may not increase for several years. This is a problem primarily of the number of technicians available to work at farmer contact, and the necessity to train many of them in the FSR/E approach. Each of the fifteen expansion sites is manned by a single APT, who typically is responsible for four or five Barangay, including the one designated as an FSDP site. This constitutes a severe limitation of the manpower necessary to continue the job of technological adoption.

4.4.4 Institutionalization

1. Evidence of Institutionalization

Institutionalization is the process by which the disparate activities of the several agencies in the Region come into a common focus, and internalize this focus into their on-going operations. Institutionalization has it's first best at the level where agencies meet and communicate ideas. It has its' final test in the field, where people from various agencies work together to identify and solve farmer-identified problems.

Institutionalization is working when solutions proposed by one or another agency are put into practice by the end-users of information - the farmers. The approach of the FDSP is that of finding acceptable solutions to problems identified by farmers. The solution in place is that of the FSR/E, with which several agencies are involved. Examples of the internal and external institutionalization relating to FSR/E include the following units: PDO, SRMU, RDA (Stational, Research, Operations, Support), VISCA, (Departments, Center) FARMI, SCU's, NGO's.

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The following activities related to institutionalization have resulted directly or indirectly from the FSDP.

1. PDO, RDA, VISCA, SRMU staff have attended courses (compressed FSR/E course and mobile training). Many of whom are now regular trainors/resource persons on FSR/E.

2. FARMI was created in Jan. 1987 and now receives regular core allocation from the College. Nearly a dozen professional staff have joint appointments with technical departments. FARMI now enjoys some USAID, IDRC and PCARRD grant to conduct collaborative projects with other VISCA units.

3. Only eight FSDP personnel were absorbed into RDA since the rest lack civil service eligibilities.

4. ATI and FSDP have had collaboration in FSR/E-related training.

5. VISCA and SRMUs have developed direct linkage for mutual cooperation on FSR/E work.

6. A national network on Farming Systems (FSRDN) involving 32 SCUs and DA has been created. DA finances its secretariat, research, and extension activities.

7. There is an existing research consortium of institutions in Region VIII (VICARP). This consortium PCARRD created to improve research coordination and management mechanism for research and development. Within this body is a Regional Technical Working Group (TWG) which draws up the research agenda of the region. The members of this consortium are: VISCA, DA, DOST, DENR, NEDA, FIDA, PCA, ESSP and UEP. Regularly, VICARP organizes in-house research reviews, planning workshops and reporting of completed work as well as progress of on-going researches.

8. A regional conference for Agricultural School Administrators was participated in by 10 institutions with FSR/E as the focus.

9. Inter-disciplinary teams, are being fostered for R/E-SA at VISCA, FARMI, Provincial and MREA levels.

2. Project and Region VIII DA

Under the recent reorganization, some Project staff have been, and are being transferred to DA. The Project Director is also head of RDA Research. There is little doubt that the farmer-based problem agenda, and the research/extension linkage developed under the FSRD Project will continue after the USAID support ends. The Regional DA staff are solidly imbued with the FSR/E approach, and will continue to use it as one of the bases for programming their activities. The same may be said of the DA staff in the Provinces and Municipalities, and to a certain extent, in the Barangay. The further growth of R/E-SA programs will be dependent on the organization, management and resources secured.

The FSR/E approach to farmer-based agricultural development already is being used in several other Regions besides the Eastern Visayas. The approach can be expanded to other regions given the requisite manpower, time, and budgetary support from the Department of Agriculture. One can hardly assess the impact of FSR/E upon nationwide Regional Development and Planning. The basic notions are very much evident among top officials of DA in Manila. This certainly is a necessary condition to a positive and far-reaching impact.

The original SRMU sites was expanded to fifteen in 1989. Existing APT's are being designated to act in MREAS. The question of continued separate functioning of Site Staff addresses the problem of present specialization versus the phasing out of the Project in a year's time. The staff of the original six Sites are in the early stages of shifting emphasis from on-farm and related research, to extension of known and locally validated technology for widespread farmer adoption. This is a crucial phase in the life of the Project. The Site staff should be left to function as integrated teams for as long as possible under the aegis of the FSRD Project support, so that the base for farmer adoption can be widened. There will be, of course, need for switching over retained staff to DA towards the end of the Project, but this should present no great difficulty nor time requirement.

3. Project and VISCA

The principle of interdependency is firmly established in the relationship between DA and VISCA. FARMI was established several years ago as a direct outgrowth of the connection between the Site team requests for back-up research at VISCA, and the felt need for VISCA to maintain a small liaison staff to process such requests. The benefits to farmers are in the ability of FARMI to draw upon whomever is best qualified on the VISCA staff and to address each problem referred to it from Site people. The system of referral of identified problems from the farmers, thru Site team, thru FARMI, to qualified researchers at VISCA appears to be ideal for the purpose. The Director of FARMI intends to keep his staff purposely small and agile, partly to keep the growth of bureaucracy to a minimum, and partly so that the FARMI staff will remain firmly integrated as part-time staff in their respective subject matter Departments in the College.

4. Project and Other Agencies

An example of the linking of the FSR/E to other Agencies is its' on-going relationship with the Leyte Rural Assistance Program (LRAP). This NGO has established a Center for appropriate technology, and approaches solutions to farmer problems from the organic farming point of view. They have used the training resources and technology base of the FSDP in their own work with farmers on Leyte.

The advantages seen by LRAP over the DA/FSR/E complex are that it has a very small bureaucratic overburden and so can make quick decisions. LRAP offers a better salary than the Civil Service, or than the Project, and promises a more rapid processing of travel and other expenses than does the DA. They also are able to grant credit-in-kind to their farmer participants.

DENR and the Department of Agrarian Reform have as yet had no significant institutional relationships with the Project in the Eastern Visayas. The reason with respect to DENR may be that the resource areas of interest have little overlap. With respect to CARP, much of the hilly and upland areas where the Project is operating is still in a kind of nether state. To the extent that this land is legally defined as "Forest Lands", it does not fall under the aegis of CARP. Resolution of this situation can only come about thru the national legislative process.

5. Liaison with Agricultural Colleges in the Region

FSDP has had a close tie to VISCA, a major State College. Because of creation of FARMI, the special project funding to VISCA-FARMI, more emphasis went to this institution.

There are however ten (see Appendix 7.7) Agricultural Colleges or schools in the region. While many of these are primarily teaching institutions, some do research and often this research is R/E-SA related. The principal project activity during this phase has been organizing a Consultative Conference for Agricultural School Administrators, PDO staff and FARMI did the teaching. It appears FSR/E is a part of the curriculum in many of these units and that there may be opportunities for further linkages and relationships in R/E-SA in the region.

A caution to the DA is to assure these other institutions have something of mutual interest to contribute. Much effort can be made to institutionalize where the results may be disappointing.

6. Positive Aspects

The processes of building interdependencies between the Project, and the DA and VISCA, have gone well and appear to be soundly based. The farmers-the ultimate clients of this whole structure-are being well-served, though in small numbers to date. The system appears to be healthy and looks viable, post-project. The personnel of the Project and of VISCA/FARMI appear to have moved well up the learning curve, and to be well-placed to rapidly expand the numbers of farmer-participants on the path to appropriate technological change.

7. Areas of Weakness

There appears to be a problem with the integration of Project staff into the DA. This will result in the loss of trained people - a very scarce and valuable commodity in the Eastern Visayas, as elsewhere. In some cases, present Project people have not established a Civil Service status, and so cannot be hired by DA. In part, there also is a budget constraint upon the DA at Regional and at lower levels, that prevents a full staffing of established posts.

Officials of the Project (PDO, VISCA, DA) feel that not enough recognition has been given to Project successes by FSR/E related groups outside Region VIII. This is evidenced by a region by region workshop on FSR/E being organized from Manila DA (Sept. 1989) which did not contact FSDP for input or recognizing successes.

Many of the successes of Phase I and to date in Phase II have their roots in special funding. If this is not at least partially provided for post 1990, there is danger of some slowdown in FSR/E institutionalization.

5.0 RECOMMENDATIONS

The following recommendations result flow the findings, analysis and observations, and general conclusions reached in each section: Research, Training/Extension, Economics/Management and Institutionalization. Some are general and, where not specified, the responsibility for action on a recommendation is implied at the appropriate administrator, manager or supervisor level. Recommendations go beyond the scope of what can be done on the remainder of this project. They do, however, relate to the charge to evaluators to suggest future directions for the FSR/E approach in Region VIII. Several recommendations are duplicated in the four headings. The writers feel they are important to each category.

5.1 Recommendations on Research

5.1.1 Organization

1. Continue to operationalize decentralization as there are too many perceived or real demands coming from "on-high."

2. Provide management and programming training for key leadership posts in research/extension (Region Province, Municipality).

3. The ARD research and ARD extension positions are key leaders in R/E-SA. They need to function as a team with strong RD direction.

4. To be more FSR/E responsive, organize the regional research facilities (5 sites) into multi-purpose centers for research, training and input suppliers for farmers.

5. Clarify and designate roles of field staff to "protect" and relieve from outside non-R/E duties i.e control, regulatory, census.

6. Bring in an objective consultant expert (from outside the region) as advisor on organization, structure, function process and their implementation. This person should assist local DA/VISCA officials in preparing a plan for training on how to effectively develop and manage R/E-FS based programs of the region.

5.1.2 Staffing

1. Retain all qualified FSDP-EV staff. Integrate them and assign them to the program with minimum administrative duties.

2. Salary-must be fair, equitable and related to competence and performance. Select staff on performance capability only.

3. Designate staff to do regulatory and service work at municipal level, leaving R/E-SA staff to do their work of research and extension education. Avoid conflicting roles in R/E positions.

4. Foster the team approach to problem solving. Interdisciplinary, inter-agency teams of colleagues who are involved in the R/E process will work more effectively than a mandated task force. Provide budget support for this staffing option.

5.1.3 Process

1. RAREA guidelines, although too general, seem to provide a good start. There is a need to translate priorities into action programs: details of work to be done; budget requirements; (presently, only a zone, commodity, problem, topic listing is employed); "wish list" (See Appendix 7.5.4 and 7.6). Develop 1990/91 RAREA in this format.

2. Shorten the D-D-E-T time frame by allowing for more input of the practical researcher who has either experience, ideas or both. This input should be introduced to the R/E SA process immediately at the FSR diagnosis/design stage. Both FARMI and DA staff should be involved.

5.1.4 Programs

1. Increase the number of "Technology Profiles" developed from existing research. These form the basis for technology packages.

2. Utilize the proposed MREA as priority areas to further demonstrate the R/E-SA. Particular emphasis should be given to the involvement of VISCA/DA technical specialists at diagnosis/design phase.

3. Signal key basic or applied research to FARMI VISCA or relevant SCU's to provide feedback to emerging farmer identified problems.

4. Social science research needs to be strengthened to learn more about the hilly upland farmer and his technology adoption patterns. FARMI and the CSR of VISCA should be brought in to incorporate such a program. Eastern Visayas College is a potential resource.

5. Economic research-simple cost/return, partial budget processes to be introduced as part of the program. Incorporate into the R/E-SA work flow and not as an add-on, further diluting scarce staff resources. Consider other SCU's for this work.

5.1.5 Budgeting

1. Budgeting should result from the RAREA process on an annual basis (assuming a long term plan is in place).

2. The RAREA need to be developed in a program mode and allocations made to the prioritized programs.

3. The research extension program and its budget should be developed in the R/E-SA framework.

4. Strategies for securing budget must be a part of the RDA management. Use of the political process and donor funding are part of this. Local citizens councils are a potential venue for such support.

5.2 Recommendations on Extension and Training

1. MAO's and APT's need to have continuing staff development opportunities. This is in both biologic and socio-economic subject matter as well as extension methodology. ATI should provide all training.

2. Training staff of ATI themselves must be upgraded on the RE/FS approach. They must adapt training to hilly upland settings.

3. Region VIII, with the ATI, supported by FSDP trained DA staff, can be a resource for training MAO's/APT's from Region VIII as well as other regions.

4. The provincial and regional training coordinators must reflect DA local needs as training plans are developed by ATI.

5. While the research unit of the RDA has been functioning in the FSR/E mode, the operations unit is on the more traditional extension programming model. The assistant directors must iron out differences and assure teamwork.

6. FSDP-EV trained staff should be made available to train and back-up the MAO's and APT's who will be using the R/E-SA in the MREA's.

7. Development zones of homogenous agro and socio-economic condition form a base for the D-D-T-E process. These should move forward with MREA's as an excellent extension strategy

8. Upland extension programs should consider both sustainability and short run productivity. Productivity technologies should be piloted on the early adoptors (of contouring etc.).

9. Support communication materials should be produced and effectively used. Leaflets, posters, radio, video and press are recommended. The PCARRD communication unit can be solicited for support.

10. Field staff must be "protected" and relieved from other duties so they can concentrate on the FSR/E program in this areas. Job description, and assigning regulatory and central work to other staff are suggested.

11. Same extension components in the D-D-T-E process can be started immediately. Lessons learned on farmers problems and back-up researches response need to be considered in developing a program that would impact on a greater number of families.

5.3 Recommendations on Economics and Management

1. Subject matter specialists and cooperating farmers together explore new ground in the adoption of appropriate solutions to extant problems. The economist follows along behind, mapping the routes taken and the goals achieved. This cartographic activity is not important to those cooperating farmers who already have found a way to new solutions. It is useful to the majority who follow, and to those who administer and fund the processes of induced change.

2. The quantity of this economic mapping so far has been small, and the quality spotty. It is recommended that the Project, RDA and VISCA staff together undertake a thorough survey to collect cost/return data of the various adopted (and rejected) technological systems. These data, if carefully collected and of sufficient volume, could then be used to produce economic/financial analyses of systems adopted, and of the Project impact as a whole. Such a study will require several people and logistic support, and should be underway in no less than six months in advance of the end of the Project.

3. The lead in this work should be taken by VISCA, where the requisite skills in survey research and farm management are most likely to be found. The appropriate procedure might be to hold a workshop with VISCA and Project/RDA economists to sort out data requirements and collection methods. At least a one-week practicum would then be required, during which staff would go to farmers gather production data. These data would then be analyzed and presented to the workshop for discussion. If this is not done, a great deal of expensively generated information will be lost. (See Appendix 7.7 for detailed discussion).

4. Some of the Project people on contract are not yet being transferred to the RDA. Every effort should be made by RDA to absorb these people. The economists know FSR/E process, now need training in on-farm data gathering and analysis.

5. Support for continued back-up research at VISCA/FARMI should be built into the regular budget of the RDA, beginning with fiscal year 1992. Otherwise, this important aspect of the system is endangered when the US AID support ends.

6. Research should be organized to record soil and moisture runoff from terraces, and to measure changes in fertility, soil structure, crop yields, etc. over periods of several years. Such research is necessary in order to estimate the benefits of the terracing systems.

5.4 Recommendation on Institutionalization

1. To operationalize the linkage between RDA and VISCA so that it goes beyond the existing memorandum of agreement, we suggest that the head of the regional research division of DA and the research program coordinator of FARMI be made the contact/interface points to effect program planning, coordination and communication. An annual program of work be jointly prepared under direction of these two individuals indicating for example: (1) mature technologies or technology profiles that need to be video-documented, (2) technology profiles that may be packaged and distributed to extensionist and farmers, (3) messages that need to be broadcast over VISCA radio, (4) trainings to be conducted and (5) researches to be done. The annual plan should be specific on type of activities, outputs, date of completion, person in charge and realistic budgets. The annual plan is not simply a list of activities contemplated. Only that which can be funded should be included in the plan.

2. The regional and provincial research divisions should be given budgetary allocations for their specialists to use in promoting certain kinds of adaptive/verification/on-farm trials at the MREAs and on-farm sites to be coordinated with the MAO's in charge.

3. Some FSDP veterans should be assigned to be resident experts or retainers at ATI centers. They will serve as resources in programming and training on R/E-SA.

4. Within VISCA, an interdisciplinary research program that will incorporate a social science dimension (economics and technology transfer studies) should be developed.

5. The FS systems approach to research and extension should be made a required module in pre-service training of APTs and new MAOs.

6. Region VIII can be a center for FSR/E training of DA personnel from other regions. There are; 2 ATI centers, a large pool of trainers and resource persons and on-farm teaching sites where upland and hillyland technologies are successfully practiced.

7. An "in house" organization renewal program should be instituted immediately with consultant assistance. (Requiring 2-3 years to implement). This is necessitated by the demands placed on administrators under decentralization and the need for building a staff capable of teamwork and effective program development (see Appendix 7.5.1).

6.0 CONCLUSIONS RELATING TO PHASE II PROJECT OBJECTIVES

6.1 Development and Dissemination of Technology

1. No new technology has been developed under the FSR Project, but this was hardly to be expected. New technology is a very scarce commodity, and hardly necessary to the requirements of the FSDP. Existing Technologies have been adapted and packaged in a system context.

2. One major innovation was the planting of hedgerows on contours to reduce erosion. This technology was copied from farmers in Cebu, and adapted to farms in Region VIII. Other innovations, such as enriched fallow, vegetative ground cover, and the use of hedgerow and fallow materials for ruminant feed were adapted in local trials from well-known components.

3. There appears to be no strategic planning for technological innovations, new to Region VIII upland farmers, that are not now of high priority but that inevitably will become so in a few years. For instance, some basic research should be in process on improving yields of corn, upland rice, etc., under minimum input conditions. This is a tougher problem than that solved under the "green revolution," and more apropos of real conditions and needs on these hilly lands.

4. Some technology profiles have been packaged, and these are of use to APT's and other extension workers in the Region.

5. Technology is being disseminated more slowly than was planned. Procedures for more rapid problem identification and design/testing will speed up the dissemination processes. Agro-ecological, recommendation domains can serve the MREA FSR/E process and trials be implemented more widely.

6. Availability of key inputs such as seeds and plant materials has limited the rate of technology adoption by farmers. This can be both physical and economic in nature for upland conditions.

7. Technologies developed/disseminated have been in the area of Soil Conservation, building the productive capacity of soils and dealing with weeds. Project staff set these as a priority and a prerequisite to other technology introduction. It becomes difficult under this situation to assess short run (1-2 year) economic benefit.

8. Benefits are in the perceptions of value held by the individual farmer. Hilly upland farmers rarely evaluate their changes in technology in true economic terms.

9. Dissemination has focused on farmer-to-farmer methods. While this has been successful, other communication methods have not been fully explored. Back-up in communication resources is limited.

6.2 Strengthening the FSR/E Approach, Region VIII

1. FSR/E is well known and internalized by most staff and agriculture related leaders in the region

2. R/E-FS approach is part of the RAREA and appears as a base for agricultural development

3. The core research (FARMI) and field operations of DA are in place and working effectively.

4. Very good training materials have been developed on the FSR/E process. These are being used by ATI and in other regional and national trainings.

5. Plans to shift emphasis from cropping patterns and single commodity work of Phase I have successfully been modified to include the farmer throughout the D-D-T-E, FSR/E process with resource stabilization as the priority.

6. Lessons learned, materials developed and staff trained will be applied to other regions.

7. The local implementation of decentralization is causing some frustrations, with uncertainty as to central expectations. Central FSR/E philosophy differs from FSDP.

8. Time in the diagnosis phase of the process has been shortened from the previous three months to one week.

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9. RAREA of Region VIII, 1989 states farming systems approach to research and extension should be the basic strategy of agenda implementation. This will be an administrative challenge to DA to fully operationalize and build up the base established with FSDP-EV.

10. For sustainability and continued growth R/E-SA must be built into the research and extension annual program plans. All levels APT/MAO/PAO/RAO should reflect action plans with appropriate budget support. This is not evident at the present.

11. Providing farmer inputs (minimal) is essential for the process to show economic impact. A decision on public policy in this regard can be made following appropriate analysis for alternative plans.

12. The FSDP developed process D-D-T-E can be made more efficient at the design/testing stages. MREA staff should identify Agro-ecological zones, APT's organize work within and move directly to known technologies for uplands (technology profiles) all in consultation with farmers.

6.3 Provide for institutionalization of FSR/E, DA-VISCA

6.3.1 Institutionalization defined

Internalization of the systems concept is a first measure of how FSR/E has been institutionalized in Region VIII. This is demonstrated in the acceptance, understanding and promotion of R/E-SA by relevant individuals and groups in the region. Secondly, is structural integration or creating a point of responsibility (unit or person) in the organization to sustain R/E-SA. Finally, the institutional arrangements or linkages to facilitate the objectives of FSR/E, and providing on-going resources (human and support) for growth of FSR/E.

6.3.2 The in-service training of an FSDP-EV staff of 54 is manifested in their knowledge of and commitment to R/E-SA. Many of these are capable trainors of others in FSR/E.

6.3.3 The creation of FARMI with experienced staff and a core budget is evidence of all aspects of institutionalization by VISCA. Additional departmental staff are becoming interested in R/E-SA after visiting the sites.

6.3.4 From an organization and structure point of view, FSR/E is well-established in the DA. Key leaders in FSDP-EV are now also in the RDA-Research. Unfortunately, the operations diversion, wherein lies extension field operations, is not as well-committed to R/E-SA. Inability to place additional project staff in the RDA would be a serious loss of trained people. Those from FSDP, placed in DA need to concentrate on field activity rather than be lost in administrative duties.

6.3.5 There is no evidence that an identified request has been made for a special budget item to continue R/E-SA work in the region.

6.3.6 Greater use of regional experiment stations might be made to strengthen the intended work of RDA. i.e. research, extension and farmer production input producer.

6.3.7 A network of research institutions exists in Region VIII. Through VICARP and the TWG, an annual research agenda was developed. Through FSDP-EV efforts, these institutions have good awareness and support for the R/E-SA. Courses are being developed in FSR/E at agricultural colleges, and there is great potential for inter-disciplinary R/E-SA.

6.3.8 The RAREA-Region VIII specifically states that farming systems is the framework for research and extension activities.

6.3.9 Expansion of research sites from 6 to 21 plus initiation of 8 MREA sites is an indication of follow-up to FSDP-EV activities of Phase I and Phase II to date.

6.3.10 Nationally, the DA Secretary has established an agreement 32 SCU's and a national FSR/E has been set-up. It is to foster FSR/E and provide for coordination among institutions.

6.3.11 Having concluded many positive aspects of institutionalizing R/E-SA above, it should be recognized that this concept must be nurtured, and must be adequately funded, if it is to grow and become productive. As progress in upland conditions is slow, there is danger of losing momentum.

6.4 Lessons Learned and Transferability

6.4.1 In hilly uplands, with low resource farmers and where traditional research is not appropriate, R/E-SA is a very appropriate methodology and in fact may be the only way to do effective research and extension - Transferable.

6.4.2 Farmer involvement, participation in R/E-SA is critical to problem identification, testing solution and disseminating appropriate technology to other upland farmers - Transferable.

6.4.3 The project design decision to set priority on the resource stabilization practices on hilly uplands has proven practical and acceptable to farmers, though benefits are difficult to quantify - Transferable.

6.4.4 Farmer-to-farmer training has proven to be the most effective extension method, as evidenced by actual practice adoptions in the past two years - Transferable.

6.4.5 Hillyland farmers can afford little or no input costs. Where these inputs were provided, technology adoption increased substantially - Transferable.

6.4.6 Inter-disciplinary research - both field and back-up is essential to deal with the varied situations that comprise the farm system. Problems are interrelated - Transferable.

6.4.7 In the RDA, the Research and extension units view farming system differently. There is an absolute need for teamwork and one common R/E-FS program effort - Transferable.

6.4.8 A strong research back-up such as FARMI and VISCA is essential particularly in diagnosing design/testing stage of FSR/E. This back-up must be developed. - Transferable.

6.4.9 Economic analysis in the form of ove-rall cost/benefits of a FSR/E program with low-research upland farmers is difficult. Subsistence level farmers are not interested in economics. Program managers, however, will continually be asked regarding on cost/benefit and economics of certain technologies.

6.4.10 Resource persons for training - both professional and farmer to farmer must be carefully selected. Farmers learn best in group setting and where they have homogenous farm/problem situations - Transferable.

6.4.11 Program management in R/E-FS is being thrust on many staff with little managerial training or background i.e. MAO's. Effective management is the foundation of successful program particularly in a decentralized system - Transferable.

6.4.12 For R/E-SA to be successful in the region, they must be committed and capable of developing a strong program thrust. Under decentralization, the Regional DA is a prime candidate for an organizational renewal process. Local decision making, creating a conducive climate for staff motivation and competency in program development and management is critical.

7.0 Appendices

7.1 Individual Team Members Summary Report

7.1.1 Gene Pilgram, Farming Systems Specialist and Team Leader

Introduction

Terms of references include responsibility of evaluating the research component of the project, as well as its institutionalization. An added responsibility is team coordination and preparation of the final report.

In the FSDP-EV research component observations, analyses, conclusions and recommendations follow a description of the organization, their structure, staffing, budgets, linkages, processes and programs.

The methodology included familiarization of the Philippine Agricultural Research system, focusing on research systems in Eastern Visayas, identifying research being done as it relate to FSDP, assessing strengths and areas needing improvement in the research-extension continuum. This was accomplished by reading numerous reports, interviewing of central and regional research related officials, visiting several research sites, interacting with the project staff in a reporting conference and ultimate interaction with the other team members to confirm observations and reach consensus on conclusion.

Research Institutions

Decentralization within the Philippine government is having an impact on DAO. Regional DA officials now face the challenge of local decision-making. RDA administration is in a transition phase in terms of staffing, areas of responsibility, planning and budgeting.

There are three principal institutions involved in FSR/E in Region VIII namely: DA, FSDP-EV project (now being integrated into DA) and VISCA-FARMI at Baybay. These three units have been working jointly through formal agreements as well as collegial relationships to support FSDP, and to foster the R/E-SA in Eastern Visayas. DA has five regional and two provincial research station sites. The FSDP-EV project had developed six SRMU sites with additional fifteen expansion sites serving as headquarters for site teams do FSR/E. VISCA has thirteen academic departments and has established a farming system center to work in this area. There are two major State Colleges that have research programs relating to FSR/E, but are included primarily in teaching.

Research Staff

There are 69 research appointments within the RDA, 34 of which are at outlying stations. These are trained B.S. and M.S. degree holders. There were 54 contractuals on the FSDP project, many of whom have done research. In general, they have obtained B.S. degrees, with M.S. At VISCA the 250 faculty members have either M.S. or Ph.d degrees while the FARMI units led by a director-coordinator staff from academic departments of seven people. Most of these also have department duties.

There are staff from other Universities/Colleges or private NGO's who could support FSDP in the region. See Appendix 7.7.

Research Programs

Most of the on-farm FSR/E work work was done by SRMU's. These were supported both by DA researchers and the VISCA-FARMI group. Programs were very technical-agriculture oriented. By design, they are directed at problems of hilly upland farms. Actual research projects were directed at stabilizing the resource base of the farmer, i.e. erosion control, weed control, multi-story cropping, live mulch legumes to improve fertility, shortening fallow period, use of lime and introduction of livestock (chickens, goats, sheep). DA research is under the commodity framework. VISCA-FARMI lists 50 projects closely related to FSDP, and FSDP-SRMU has over 111 researches on farmers' fields.

Processes and Linkages

Nationally BAR serves as the coordinating body that views all field researches at DA while PCARRD is the approving unit for budget forwarding. In the project area, VICARP is a research consortium that includes the Colleges, Universities, and DA and DENR. This body has a working task force to carry out the policies and recommend to RDA. Through the system at each level there are local councils having input to research director i.e. BAPSI, MAPSI, PAPSI, RAPSI. From VICARP, with council input the region develops RAREA or agenda for the year's research. Linkages within institution (VISCA multi-disciplinary) (DA research and operations) and between institutions, are handled by Memorandum of Understanding, Technical Work Group, (TWG) councils and informal collegial relationships.

Budget

Due to general financial constraints nationally and little opportunity to raise local funds, budgets have been constant for the past two years. The budget process follows the programming process. Much of the FSDP-EV research has been assisted by donor funding. Under decentralization, the budget management is in the RDA.

Findings and Conclusions

The FSDP-EV projects have developed a good bank of on-farm system oriented research work. FSR/E is well-understood and there are attempts to do research planning within this mode.

In Phase II, the project has definitely moved to ward farmer- orientation and participation emphasis. There is a consciousness of staff at all institutions and levels of the need and challenge of working with low-resource hilly upland conditions. The nature of research on-farm was directed at resource stabilization.

A major achievement was the formal creation of a research back-up at VISCA i.e. FARMI. Equally important is the commitment of funds through a core budget.

Some key FSDP project staff (8) were incorporated into the regular DA research/extension system. These staff are being considered as a valuable program resource, hence, their expertise should be retained.

There are data to support that 1614 farmers have adopted technologies identified in the program, and that they can assist others to adopt through F/F training.

HIREC is a model of what regional experiment station should be: research, extension training and input supplies.

The development of the RAREA leaves something to be desired. It is very zone and commodity oriented, rather than specific FSR/E based program priorities with associated budgets. See proposed example Appendix 7.5.4.

Work under R/E-SA requires a large number of staff and a tolerance for slow progress under the hilly upland low-resource farmer conditions. It will be impossible to effectively reach large numbers of farmers with impact programs in the short-run. The program must be considered as an investment in the region's future as well as a potential discovery of technologies and extension programs that will have wider application and long-term benefits.

There is scant information an economic analyses or cost/benefits or on-farm budgets relating to the work done in the project. Staff must be trained to do simple analyses - both for farmer use and as a program support base. Social science research is deficient. More must be learned about technology adoption.

Leadership and program management capabilities are key essentials to a decentralized systems success. Many people are now in administrative positions who do not have this training or background. Local decision making is a new challenge to DA leaders. See team proposal Appendix 7.5.1.

The R/E-SA process being used has been shortened (example diagnosis for 3 months to one week) but still must be simplified. MREA teams working on research/extension technology profiles and packages can avoid local testing for each situation by identifying homogenous areas of concentration and then developing the R/E-FS approach.

Recommendations

1. The process of developing RAREA need to be more program oriented and FSR/E based.

2. More technology profiles need to be developed by inter-disciplinary inter-staff teams.

3. Establish management/supervisory training for key leader positions i.e., MAO, PAO, RAO.

4. ARD Research and ARD operations must function as a team. Daily planning must be done to ensure research and extension effectiveness. RD shall be the responsible unit.

5. The Chief Research Officer (DA) and Director ODREX, VISCA should function in-close working team to assure that a coordinated program is planned, implemented and evaluated.

6. Five regional research facilities should be upgraded to multi-purpose functions. Use HIREC as the model.

7. Continue to integrate all FSDP qualified staff into DA system.

8. Protect APT and MAO so they can do R/E-SA. Other duties should be assigned to other staff.

9. Strategies for securing budget must be part of RAREA. Utilize local councils.

10. Target FSDP staff to the Region, let other Regions shall be a national model. Other regions should come to Region VIII for training.

11. To maximize research/extension results, a minimum of farmer inputs should be provided. This could be a very efficient use of public funds when working with poverty level people.

12. Do an objective study (outside region consultant) om organization structure, processes, administration, management, and securing resources regional for research/extension.

13. Develop linkage/institutionalization through strengthening the organizations and their management and effectiveness. Review memorandum of understanding, joint agreement, job descriptions - but create a climate for competent people to work cooperatively. Look for points of interdependency.

7.1.2 Roger Cuyno, Extension Training Specialist

After five years of diagnoses-design-testing phase of FSDP, the project decided to step up in 1988 the training and extension phase. The objective is to disseminate and create wider impact of lessons learned and technologies which have been proven to be successful.

This portion of the report shows what have been done in training and extension, the lessons learned, their strengths and weaknesses and the recommendations for the future.

The various training course were designed to achieve the purpose of strengthening FSR/E process, disseminate lessons learned and the tested upland and hilly land technologies and institutionalized FSR/E.

The courses organized were directed to project staff, trainors, researchers, administrators, extensionists and farmers. From 1987 to 1989 the number of professional participants trained was 872 while the number of farmers trained was 872.

The responsibility for organizing and managing the training courses was divided between FARMI and PDO. Starting in 1988, the bulk of the training management responsibilities (planning, mobilizing, day-to-day implementation, facilitating, contacting resource person and evaluating) shifted from FARMI to PDO.

Based on interviews and documents, it can be concluded that the various training courses were effective. Even if the courses were quite different of each other there was some kind of common philosophy, approach, system and touch to them. The objective, content, educational design, instructional style, and training materials were geared to the requirement of the job and tasks of the participants, their sophistication and their actuations.

The design of the various curricula followed sound pedagogical principles such as learning by doing, use of practicum and multi-purpose media presentation.

The experience and expertise in planning and implementing training courses, coupled with a larger pool of competent and field experienced trainors, plus the fact that there are existing sites where some upland technologies have been tested and succeeded, virtually make Region VIII a national center to train other Da regional staff on FSR/E.

Fine tuning is however, needed to further improve the planning and conduct of training courses related to FSR/E. Most prominent is in the preparation of the resource persons. There is a need to sit down with both the professional trainors and farmer trainors to discuss the objective, instructional approach and visual aids to be used. In the case of the farmer-trainor, there is a need to conduct rehearsals to improve content organization, presentation and to build-up confidence.

For both professional and farmer training groups, the results were positive. The professionals who participated in the courses have a good grasp of FS, FSR/E rationale, concepts, tools and processes. In the case of farmer-teaching-farmers training, in many instances the training experience had led to immediate adoption of recommended practices such as hedgerow contouring, enhance fallow, creeping mulch and livestock (goat and sheep). Had it not been for lack of planting materials, adoption of upland practices would have been quicker and there would have been more adoptors.

Extension

A number of extension mechanisms were used in the FSDP sites which led to successful adoption and diffusion of certain upland and hillyland agricultural practices. The most significant is the farmer-to-farmer or farmer-teaching-farmers process. While this is very extension labor intensive, its potential lies in the demonstration effect to neighboring farmers and others who would come as a part of an organized visit. Farmer meetings were used to reinforce field observation or validate perception about farm problems.

The agriculture and food councils are effective in soliciting advise on program priorities and assistance in program implementation. It also has potential in serving as an effective lobby groups to obtain support for extension programs from politicians and higher administrators.

While the target of 9,000 trained farmers through 1990 might not be tenable considering that the project were only last for 1 1 1/2, the expected second generation adoptors will be quite substantial. It was reported that through word of mouth and through "to see is to believe" process, more farmers are being drawn into the program than can be ascertained.

The major contribution of FSDP is its having operationalized FSR/E approach to research and extension in the upland and hillyland areas among the resource-poor farmers. This approach has the following characteristics: interdependence and mutual reinforcement of research and extension; farmer-teaching-farmers; farmers involvement in technology testing and extension; and using farmers farm as showcase to persuade doubting farmers of the efficacy of the recommended practice.

The areas where improvements in extension are needed are: provision for seeds and planting materials; involvement of local government; prioritization in program development; provision of operational funds for APTs and MAOs; training in practical program development, implementation management, effective supervisory leadership and extension education techniques.

Support communication methods using a combination of print, radio, cassette recording, folk and traditional media like drama is good potential for promoting FSR/E messages in enhancing adoption.

Recommendations

1. The gains obtained by Region VIII on FSR/E particularly the focus on upland and hillylands among resource-poor farmers must be protected and maintained. This can be done by not diluting the assignment of APTS in the upland and hillyland with additional duties in the lowland and resource-rice farms. The other is provide funding on a continuing basis a program on upland and hillyland development.

2. ATI centers should be mandated to give support through training, upland and hillyland development. However, their staff must themselves be thoroughly trained in the rational, philosophy, concept, tools and techniques of FSR/E approach to research and extension. ATI can be a key institution to produce multiplier effect to other areas in the region and to other regions.

3. The MREA mechanism appears to be a good extension strategy to spread the FSR/E lessons and adapted technology. In this scheme a manageable area is given more intensive R/E assistance. Over time the results and lessons will spread out to other areas with similar bio-physical and socio-economic characteristics.

4. It is recommended that a balance be achieved among productivity, profitability and sustainability in upland and hilly land development. The impact of FSDP Region VIII has been very minimal on the criteria of productivity and profitability. Great promise is shown on the criterion of sustainability particularly the use of contour hedgerow and creeping legumes for soil erosion. Engaging in more diversified farming systems could led to greater labor productivity and provide additional sources of income.

7.1.3 Donald Bostwick,, Economist and Management Specialist

Four kinds of problems were given high priorities by farmers cooperating in the FSD Project. Erosion of the hillside cropping areas not only reduces soil fertility but also results in social costs to the people living and working downslope. The solution adopted is the planting of hedgerows on contours to interrupt the runoff of soil and water. The use of leguminous plants such as Ipil-Ipil and Madre-de-Cacao results in the secondary benefits to the farmer of adding nitrogen to the soil near the hedgerows, and of providing a new source of high protein forage for ruminants on a cut-and-carry basis.

In areas of shifting cultivation, two years of row crops, traditional corn and upland rice, are followed by a year of root crops such as sweet potato or cassava. At this point, the fertility of the soil usually makes cropping a marginal business, and the land is left to fallow for periods of 10 to 20 years. Cogon grass is quick to re-invade this fallow land from surrounding areas, and is very difficult to control once established. The solution has been to use kudzu or other leguminous, large-leaved, rapidly growing plants on newly fallowed land. Kudzu kills out cogon grass completely within three years, by shading and vigorous competition. it also adds nitrogen to the soil and reduces the necessary fallow period to as little as three years. It is much easier to prepare for planting again than is the usual cutting, burning, and multiple plowing required on traditional fallow land.

In a high-rainfall tropical environment such as the Eastern Visayas, unwanted vegetation thrives, and control of weeds on cultivated land is difficult and labor consuming. The Project introduced live mulch using desmodium and centrosema species. These are not as effective as kudzu in the control of cogon, but are easier to furrow or dibble into when planting corn, rice, root crops, etc. They also are leguminous, upgrading both the fertility and tilth of the soil, whilst controlling most annual weeds and erosion from cultivated surfaces.

Hilly land farm families could handly afford meat, eggs, and milk. The adoption of contour hedgerows, live mulch, and enriched fallow all made significant quantities of high protein forage available. Upland farmers have been quick to use this forage as supplemental feed for carabaos, sheep, and goats. Some have added small-stock enterprises where none existed before. Cornish and New hampshire roosters have been introduced into flocks of native chickens, and apparently are responsible for a doubling of the rate of weight gain in the F1 chicks.

One characteristic common to all of the various technological adoptions is that they require almost no cash outlay to start, or to carry on. An essential factor to adoption of upland farmers who are very short of cash incomes, and whose families eat at or well below the level of long-term subsistence. Except for the study on the upgrading of native chickens, and a study just begun of plowing costs on newly opened enriched fallow, no data appear to have been gathered on either the costs of various practices, or on their net returns. No partial budget analyses have been prepared, and the impacts of these innovations upon farm family incomes and levels of living have not been estimated.

Farmers in the Eastern Visaya are adopting most of the technologies introduced by the FSDP in the last several years, but at a rate below that targeted by the Project in its original plans. Few socio-economic studies have been carried out on the characteristics of adoptors and non-adoptors. Technology has been adapted from other Regions, and from the general body of technical knowledge. Nothing new of a technological nature has been discovered by people in the Project, at VISCA, or in the RDA. The practice of using locally deposited lime to increase the pH of soils was abandoned by farmers in the area, apparently because the practice was not itself effective in eliminating the complex of deficiencies characteristic of the local soils. Researchers from VISCA intend now to go back to the site and validate a more complex treatment system.

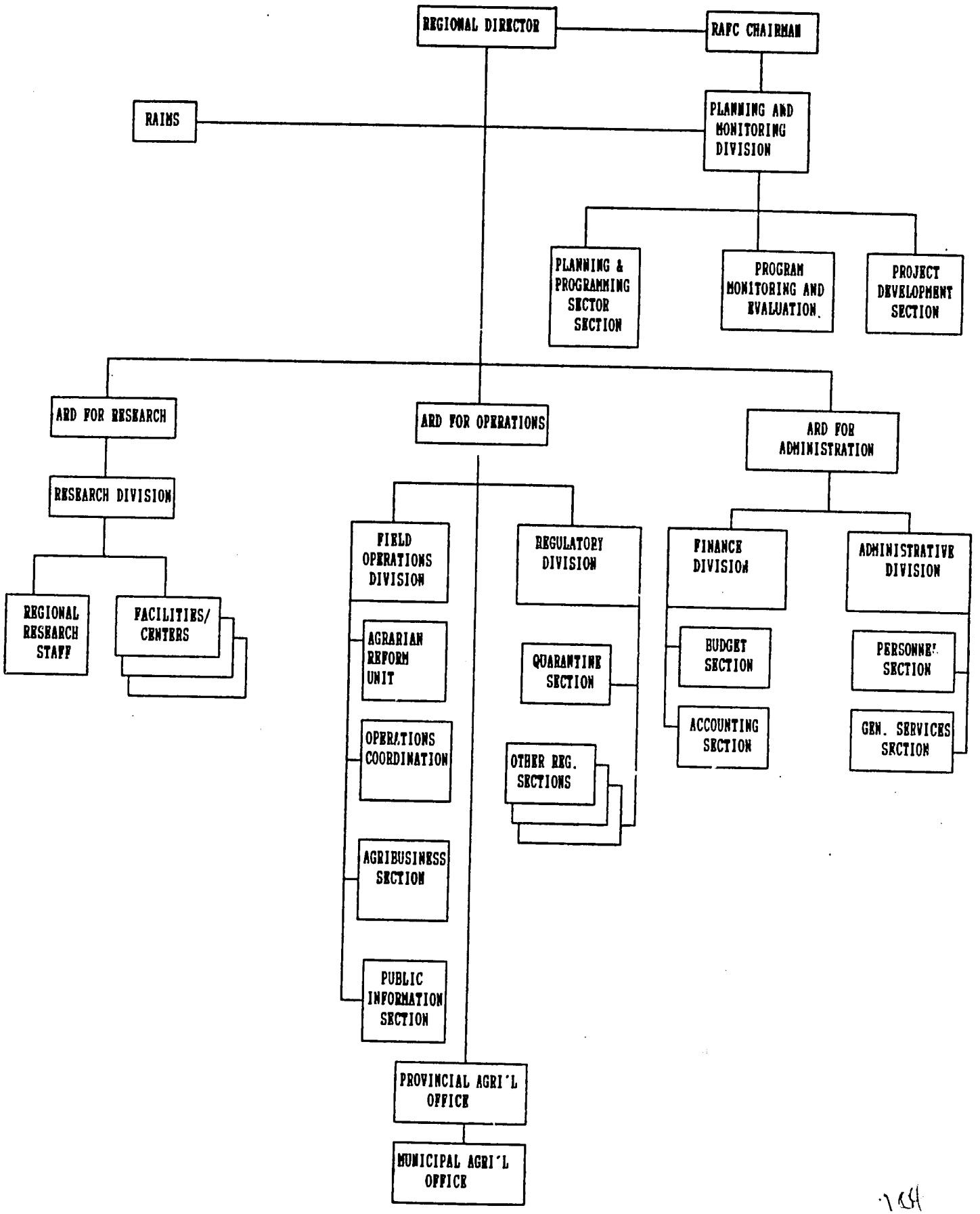
The tenant status of most farmers in the hilly uplands of the Eastern Visayas does not seem to influence technology adoption, even when it involves medium-term investments, (as in contouring and hedgerow planting). One study done by FARMI addressed this issue peripherally.

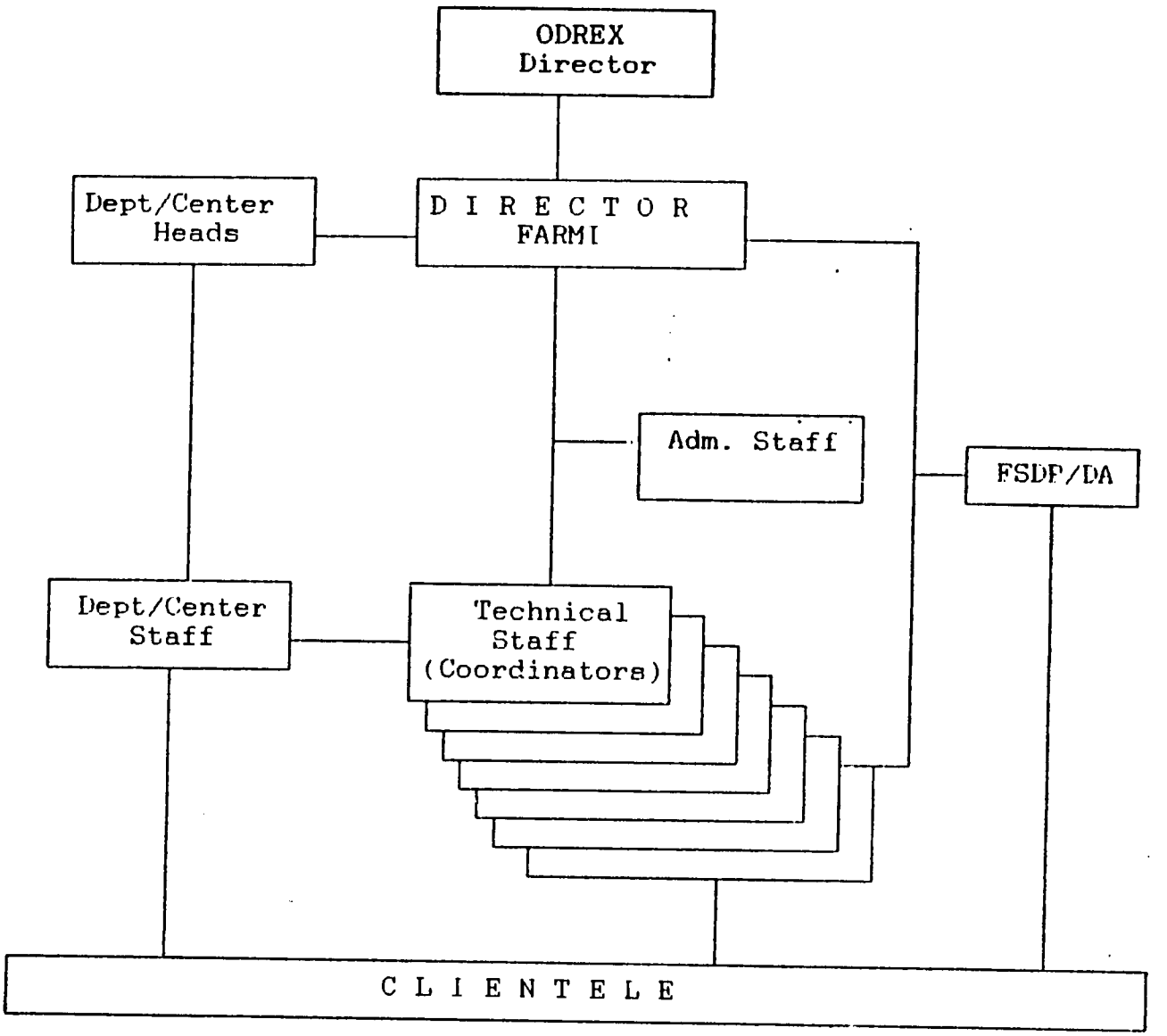
The flow of funds to support back-up research, from USAID through the system to RDA and VISCA, is very slow. The problem has a solution known to everybody, but will require concurrence from RDA, the Departments of Budget & Management and of Finance. This has not yet been obtained.

Almost nothing has been done under Project aegis to select and to validate introduction of non-traditional agricultural products, nor of non-farm sources of supplementary income to farm families. There is some discussion of replacing traditional crops with permanent crops such as citrus, cacao or coffee, especially on the upper slopes of hills. But this is not one of the high priority needs identified by farmers so far. Field trials of these sorts of possible alternatives to traditional land uses need to be started several years in advance of the farmers recognition of need. This illustrates the kinds of problems that may arise in time, if all Project activities are to be taken only from expressed farmer needs. Small-scale cacao production would, for example, employ some of the under-employed female labor on farms, and would generate modest additions to cash family income.

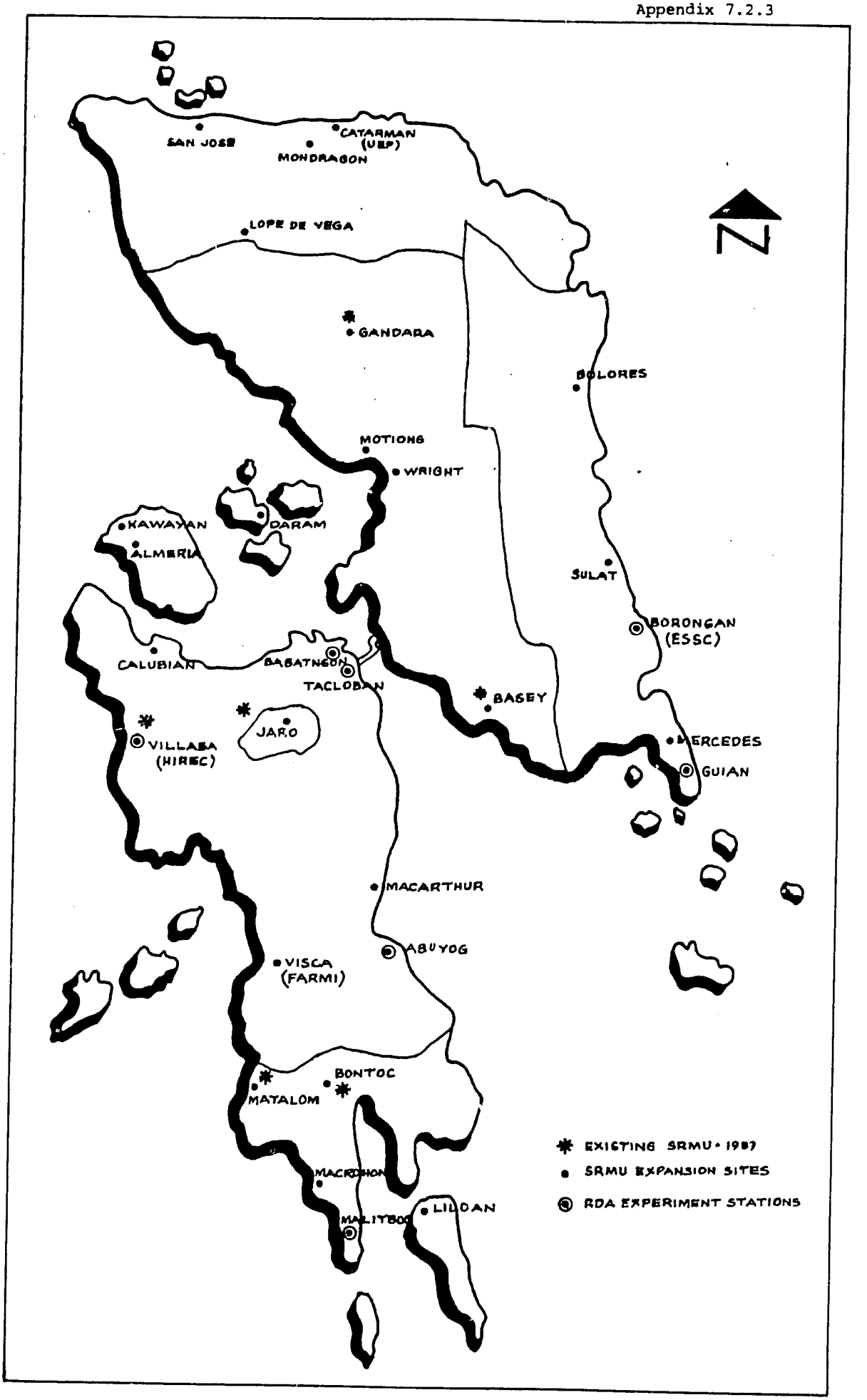
Because most of the farmers upon the hilly lands are producing traditional crops at less than the levels required by their family's subsistence, formal marketing problems do not arise. If the recent past is any predictor of the future, surplus agricultural production will not be a problem later. It will be enough if APT's, MAO's and economist at FARMI/VISCA monitor quantities of products coming from local markets, and their prices, so that market development studies can be mounted in advance of their need.

ORGANIZATIONAL CHART
FOR DA REGIONAL OFFICES
1 JULY 1989





ORGANIZATIONAL STRUCTURE OF FARM AND RESOURCE MANAGEMENT INSTITUTE (FARMI) - Created January 1987


SAN JOSE
CATARMAN (UEP)
MONDRAGON
LOPE DE VEGA
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CALUBIAN
BABATNGON
TACLOBAN
BASEY
JARO
VILLASA (HIREC)
MERCEDES
GUIAN
MACARTHUR
ABUYOG
VISCA (FARMI)
BONTOC
MATALOM
MACROHON
MALITBOG
LILOAN
EXISTING SRMU - 1987
SRMU EXPANSION SITES
RDA EXPERIMENT STATIONS

RESEARCH AND DEVELOPMENT PLANS AND PROGRAMS *

Department of Agriculture (Uplands Zone) Region VIII

Appendix 7.3.1

SECTOR/ COMMODITY	PROBLEMS/GAPS	RESEARCH INTERVENTIONS
CROPS		
1. Spices 2. Fruits 3. Beverages 4. Vegetables 5. Legumes 6. Rootcrops 7. Cereals	- Problem and marginal soil - Adverse climatic conditions - Prevalence of pest and diseases - Unavailability of good quality seeds/seedlings of lack of adaptable varieties - Inadequate farming systems design - Insufficient tech-on farm tools/ equipment and post-harvest	- Development of cropping system with emphasis on soil fertility and conservation and prevailing climatic conditions TV, T6 - Alternative sources of fertilizer TV - Pest and disease management TV - Varietal improvement and trials TV - Development of farming systems design with emphasis on cost-reduction TV
LIVESTOCK & POULTRY		
1. Sheep 2. Horse 3. Goat 4. Swine 5. Carabao/cattle 6. Native chicken 7. Turkey/quail	- Low productivity due to: * poor feeds and feeding system * pest, diseases and parasitism - Lack of adaptable breeds and breeding stocks	- Feeds and feeding system T6 TV * forage and pasture development * utilization of farm residues and crop-by-product - Animal health T6 TV * diseases prevention * pharmacological evaluation of indigenous medicinal plants - Animal breeding through upgrading of local stocks
FARM RESOURCES & SYSTEMS	- Problem and marginal soils - Underutilization of upland areas - Adverse climatic conditions - Insufficient technology on: * soil-crop system * crop-livestock integration * farm tools/equipment * location specific cropping pattern * low-cost/cost reduction technology	- Development of soil-crop system with emphasis on soil conservation TV TA - Crop-livestock integration system for small farmers TV TA - Varietal improvement and cultural management practices of hedgerows, cripping legumes and annual crops planted between hedgerows TV TA - Integrated farming systems research and development program TV TA

* From 1989 R & D Program Reg VIII

RESEARCH
VISCA-FARMI

I. ON-GOING BACK-UP RESEARCH - FARMI

TITLE	LEADER (S)	DATE STARTED	DURATION (mos)	1989 BUDGET
Introduction of hillside technologies for the production of perennial and annual crops in hilly areas of Gandara, Samar and Matalom, Leyte	SE Abit NM Gloria	May 1985	36	35,868.00
Sustained development of ipil-ipil and madre de cacao in hedgerows under long term clipping at varying height and frequencies	J. Quimio	May 1985	60	11,582.60
Collection, evaluation, and selection of potential introduced and indigenous creeping legume species	SE Abit			
Collection, multiplication, and preliminary evaluation of creeping legume species	SE Abit	Jan. 1988	24	69,164.00
Evaluation of selected creeping legume species as live mulch for upland crops	CG Armachuelo	June 1988	24	133,525.00
Evaluation of alternative legume species for enriching fallowed areas	CG Armachuelo			39,606.00
Evaluation of leguminous species suitable for live mulch or enriching fallowed areas for utilization as feeds to farm ruminants	CG Armachuelo			114,040.00
Role of women in the development and transfer of appropriate technology for upland farmers in Jaro and Villaba, Leyte		Feb. 1988	18	25,969.00
Screening of forages in Matalom, Leyte	SC Bantugan J Germano E Salidaga	Feb. 1988	24	52,809.00
Stabilizing contour hedgerows for sustained crop and animal production	OB Posas	Apr. 1988	36	37,781.00
Field testing of lever type abaca stripper	EE Sudaria	Feb. 1988	12	26,400.00
Improvement and field testing of multicrop dryer	EE Sudaria	Feb. 1988	24	56,830.00

TITLE	LEADER (S)	DATE STARTED	DURATION (mos)	1989 BUDGET
Monitoring of different pests in Desmodium based cropping systems at Basey, Samar	PP Milan L Noriel	Sept. 1988	36	42,866.00
Optimum utilization of primary crop residues	Sc Bantugan			
Improving the nutritive value of rice straw and corn stover by local lime (anapog) treatment	LC Bestil	Feb. 1988	10	13,451.00
Growth and reproduction performance of caraheifers fed "anapog"-treated rice straw and corn stover supplemented with kudzu and kakawati hays and urea-molasses mixture	LC Bestil	Apr. 1989	24	107,589.10
Chemical composition and feeding value of yautia and cassava silages fed to pigs	LC Bestil	Feb. 1988	12	29,586.00
Economic analysis of live mulching in Basey, Samar	BM Ramoneda	March 1988	36	35,065.00
Development of a methodology for measuring soil erosion/sedimentation in the farm	GG Galinato Jr.	June 1988	12	61,335.00
Studies of anthelmenthic values of some local plants	TG Fernandez	March 1988	24	120,907.00
Evaluation of different botanical pesticides used for pest control by upland farmers in Eastern Visayas	LB de Pedro	Apr. 1988	12	38,622.36
Utilization of adaptable legume species as animal feed	SL Sanchez/ LC Bestil			
Chemical and nutritive evaluation of leaf meals from indigenous legume trees and vines	LC Bestil	Apr. 1988	12	46,911.60
Acceptability and digestibility of fresh and dried forages from adaptable leguminous species	LC Bestil	Apr. 1988	15	43,195.00
Growth and reproductive performance of tethered sheep supplemented with legume forages	LC Bestil	Not yet started	24	
A study on adoption on soil conservation methods at the site and its implication for extension	DL Alcober			

TITLE	LEADER (S)	DATE STARTED	DURATION (mos)	1989 BUDGET
A study on adoption of enriched fallow during technology verification in Jaro, Leyte and its implication for extension	AF Abamo	completed		
A study on adoption of live mulch during technology verification and its implication for extension	BM Ramoneda	June 1988	6	22,089.00
A study on adoption of local lime during technology verification and its implication for extension	CD Villanueva	Nov. 1988	6	133,733.20
Tenure status and farmers perception on "anapog" application for acidic soils	NM Mesorado	March 1988	9	8,420.00
Cogon rhizome viability as affected by cover cropping	CG Armachuelo RB Hipe ME Monreal Jr.	June 1988	24	7,803.00
Upgrading native chicken at village level	WF Floresca	Aug. 1988	24	43,407.00
1988 acid upland observational trial (AUOT) and 1988 acid upland yield trial (AUYT)	RB Sebidos	Aug. 1988	4	10,000.00
Effects of legumes (grain and green manure) on the sustainability of cereal crop production of acid upland	BC Agarcia	Aug. 1988	8	45,000.00
Screening of white corn lines/ cultivars to acid soils	DB Capuno	Feb. 1988	36	48,584.00
Mass culture and evaluation of Curinus coeruleus for the control of Leucaena psyllid in Region VIII	LT Villacarios	Apr. 1988	18	38,121.00
A study to evaluate the agronomic benefits from the enriched fallow systems	RP del Rosario	May 1989	48	38,516.00
Improving the milk production of the existing village level goat raising in Daro, Jaro, Leyte	RB Hipe YC Costelo SC Bantugan SB Singzon	May 1989	36	16,000.00

II. ON-GOING BACK-UP RESEARCH-VISCA 1989

PROJECT TITLE	DURATION	FUNDING AGENCY
Development of coconut-based cropping systems involving field legumes, root crops and cereals in young coconut plantations	01/01/85 12/31/89	VISCA PCARRD
Agronomic studies of promising coconut-based cropping systems involving field legumes, rootcrops and cereals in young coconut plantations APARRA, NARCISO O.	01/01/85 12/31/89	VISCA
Socio-economic studies of four coconut-based cropping systems involving field legumes, rootcrops and cereals in young coconut plantations PASCUAL, NERELITO P.	01/01/85 12/31/89	PCARRD
Intercropping coconut with some biennial and perenial crops in Leyte Sab-a Basin areas APARRA, NARCISO O.	01/01/83 12/31/89	VISCA
Economic analysis of the different abaca-based cropping systems BINONGO, SALOME G.	04/01/88 03/31/91	VISCA
Identification of economically important tree species appropriate as shade for abaca variety GONZAL, LELIA R.		PCARRD
Economic feasibility of intercropping selected abaca varieties with annual crops in flat, open lands GLORIA, NESTOR M.		PCARRD
Establishment and maintenance of an abaca-based cropping systems demonstration farm VALIDA, ALBERTO		VISCA
Effect of cattle grazing under yemane plantation over seeded with D. ovalifolium and Sirato GONZAL, DOMINADOR G.	04/01/88 03/30/92	VISCA

PROJECT TITLE	DURATION	FUNDING AGENCY
Development of soil management schemes in root crop based cropping systems of the Philippines BAUTISTA, ANABELLE	04/01/88 04/30/92	PRCRIC
Effect of Desmodium ovalifolium of the growth and yield of root crops in hilly lands GONZAL, DOMINADOR	07/01/85 12/31/90	VISCA
Socio-economic constraint on the adoption of improved cropping method by upland farmers in Leyte VILLANUEVA, CAMILO D. PASCUAL, NERELITO P. PARILLA, LEONILA S.	06/01/86 06/30/89	ACIAR

RESEARCH

FARMING SYSTEMS DEVELOPMENT PROJECT-EASTERN VISAYAS

I. List of completed researches of FSDP-EV

1. Cropping Pattern Trials:

   a. Corn + peanut - upland gabi + upland rice (ipil-ipil based)
   b. Mungo + upland rice/sweet potato (ipil-ipil based)
   c. Relay planting of gabi
   d. Corn + peanut - corn + mungo
   e. Upland rice - sweet potato (ipil-ipil based)
   f. Corn + peanut - upland rice
   g. Mungbean - upland rice - green corn + peanut
   h. Peanut - upland rice
   i. Corn + mungo - upland rice
   j. Banana + pineapple + peanut - sweet potato
   k. Peanut relayed with cassava
   l. Corn + peanut - sweet potato
   m. Upland rice - corn + peanut
   n. Corn + peanut - upland rice + mungbean (ipil-ipil based)
   o. Corn + peanut - sweet potato (ipil-ipil based)

2. Project title: On-farm Research for Upland Sloping Areas in Basey, Samar

   Study 1: Reduction of soil degradation and labor use in cultivating upland areas
   Study 2: Improving the health of swine through the development of alternative feed supplements
   Study 3: Farmers' evaluation of sweet potato varieties

3. Performance tests on:

   a. Promising cultivars of cassava
   b. Promising cultivars of gabi
   c. Promising cultivars of gabi under coconuts

4. Soybean varietal trial under newly established coconuts
5. Yield response of gabi to different levels of fertilizer
6. Diagnostic study on shifting cultivation
7. Abaca rehabilitation study
8. Rejuvenation of old abaca plantation

9. Project title: Integrated Upland Farming Systems Research and Extension Programs in Bontoc, So. Leyte

Study 1: Introduction of leguminous trees as contours in hillsides
Study 2: Influence and acceptability of improved swine husbandry practices and utilization of on-farm feed sources on swine performance
Study 3: Ipil-ipil contours: their socio-economic effects

10. Project title: Farming Systems Research for Upland Farmers in Gandara, Samar

Study 1: Increase productivity of existing hilly areas through the introduction of legumes
Study 2: Understanding farmers' indigenous techniques for cultivating cogonal areas to design a test cogon control measures
Study 3: The effect of existing caracalf husbandry practices of their growth and health and the potential for improvement by feed supplementation

11. Caracow/calf milking performance as supplemented by ipil-ipil leaves

12. Growth and milking performance of upgraded caraheifer (native x murrah buffalo) supplemented with rice bran and ipil-ipil

13. Multi-storey cropping pattern

14. Project title: Utilization of Local Lime (Anapog) for Increased Crop Production

Study 1: Effects of lime on the production of upland crops in Maasin Clay Soil
Study 2: Economic analysis of lime application

15. Project title: Introduction of Leguminous Forage on Fallowed Areas

Study 1: Growth of leguminous forage crops in fallowed areas
Study 2: Performance of carabao or cattle tethered on fallowed areas seeded with leguminous forage crops

16. Monitoring farmers' use of ipil-ipil herbage in established contours: A case study

17. Performance test of promising cultivars of upland rice

18. On-farm varietal performance of promising corn cultivars under Matalom condition

19. Performance test on promising cultivars of sorghum

20. Performance test on promising varieties of peanut

21. Cultural management of annual crops planted in-between ipil-ipil hedgerows

22. Improvement of existing ipil-ipil hedgerows through planting of madre de cacao

23. Introduction of forage grasses/legumes to existing ipil-ipil based farms and a management technique for integrated livestock and crop production

24. Farmers' screening of promising IRRI upland rice lines for conditions of minimal inputs on marginal acid soils

25. Effects of vaccination at varying levels on the health performance of native chickens

26. Effects of vaccination at varying time on the health performance of native chickens

27. Effects of vaccination at varying levels on the health performance of native pigs

28. Effects of vaccination at varying time on the health performance of native pigs

29. Potential and profitability of raising mallard ducks

30. Deworming effects on the growth of native hogs

31. Project title: Replanting and management techniques of existing hedgerows for soil erosion control and improved production of crops and livestock

    Study 1: Improvement of existing ipil-ipil hedgerows through planting of forage grasses and madre de cacao to withering hedgerows

    Study 2: Introduction of forage grasses/legumes to existing ipil-ipil based farms and a management technique for integrated livestock and crop production

32. Farmers' evaluation on the quality of cheese produced from milk of carabaos with and without ipil-ipil supplementation.

7.4.1 List of Team Activities

Sites Visited

Thurs. Aug. 17:	Arrival in Manila
Fri. Aug. 18:	MADECOR Briefing USAID Briefing
Sat. Aug. 19:	Background reading Team meeting
Mon. Aug. 21:	USAID Interviews DA/Manila Interviews
Tues. Aug 22:	DA/Manila Interviews (CARP, DAR, ATI)
Wed. Aug 23:	DA/Manila Interviews (Office Spec. Concerns) AARP
Thurs. Aug 24:	Arrive in Tacloban, Leyte Interviews, PDO & Staff
Fri. Aug 25:	Visit SRMU site office, Jara, Leyte ROA interviews Interviews farmers & APT's, N. Leyte site
Sat. Aug 26:	RDA & Project Staff Interviews
Mon. Aug 28:	Visit SRMU site office, Basey, W. Samar visit HIREC station, Villaba, Leyte
Tues. Aug 29:	Visit SRMU site office, Villaba, Leyte
Wed. Aug 30:	Visit MAO Office, Calubian, Leyte visit Project field site, Calubian, Leyte
Thurs. Aug. 31:	Arrive VISCA, Baybay, Leyte Briefing by FARMI Staff

Fri. Sept 1:	Visit SRMU site office, Matalom, S. Leyte Interviews with VISCA & FARMI Staff
Sat. Sept. 2:	Interviews with VISCA & FARMI Staff
Mon. Sept 4:	Interviews with VISCA Researchers
Tues. Sept 5:	Arrive Abuyog Experiment Station, Leyte Meeting with Project Staff
Wed. Sept 6:	Mid-evaluation Report & Discussions Arrive in Tacloban
Thurs. Sept 7:	Arrive in Manila Discussions with Lightfoot at IRRI
Fri. Sept. 8: Sat. Sept 9: Mon. Sept 11:	Team meetings and report writing
Tues. Sept 12:	Finalize draft report
Wed. Sept. 13:	Deliver draft report to USAID, DA, etc.
Thurs. Sept. 14:	Editing report
Fri. Sept 15:	Final report and discussions, USAID, DA, etc.
Sat. Sept. 16:	Rewrite of final report
Mon. Sept 18: Fri. Sept. 22	(Pilgram only) Prepare & print final report, deliver to USAID, etc.

7.4.2 Groups and People Interviewed

Place	Unit	People
Manila	USAID Offices	Robert Resseguie Project Officer
		Precy Rubio, Project Manager Ken Pruessnes ORAD
		Program Officers Staff and CARP Liaison Person
Manila	BAR Office	William Dar and Staff
	ATI Office	Staff of Dr. Segundo Serrano and Manuel Bonifacio
	Office of Special Concerns	Mr. Carlos Fernandez Director
	AAPP Office	Mr. Don Taylor Director
	ICLARM	Mr. Clive Lightfoot (former FSDP staff)
Tacloban	PDO Office	Mr. Felix Quero & Staff
	RDA Office	Mr. Lorenzo Ultra Assistant Director Support Services
	RDA Office	Mr. Jose Gerrado & Staff Assistant Director Operation
	RDA Office	Dr. Balagapo Assistant Director, Research
	FS Hostel (Duplex)	Northern Samar APTs & Farmers Interview

Tacloban	Leyte Provincial Office	Simeon Maniego PAO Leyte
	Leyte Provincial	Mr. Alfredo Guevarra Supv. ADS-Research
Tacloban	No. Samar DA	Mr. Leoncio FSR/E Provincial Coordinator
Tacloban	PDO Office	Mr. Ray Almenario LRAP Coordinator
Tacloban	PDO Office	Paul Cabahit ATI Regional Director
Tacloban	PDO Office	Nedine Tabiongan Rutno Ayaco Jr. Training Officer-FSDP-EV
Jaro	SRMU	Epimaco Soto-Leader and Staff and Farmer Visits
E. Samar	Samar Provinces	SRMU-Review Work Plan-APTs
Basey	SRMU	Deonaldo Apora-Site Leader and Staff Farmers Visits
Villaba	HIREC	Eute Qui Sallas MAO R.S. Abamilla and Site Staff Visit Station
Villaba	MDA	MAO and Staff Visit Farmers
Barangay Cegnecot	SRMU	Abraham Pasayloon Site Leader and Staff
Villaba	PDO-Meeting	Felix Quero and Staff
Celubien	MDA and Expansion Site	MAO-Juanito Bering and Staff and Farmer Visits

Matalom	MDA	Ben Germano-Site Leader SRMU Staff
Baybay	VISCA-FARMI	Dr. Ly Ting and Staff Orientation to FARMI Sergio Abit
	VISCA-FARMI	Dr. Marianito Villanueva President VISCA Dr. Federico Flores-ATI Dir. Dr. Eliseo R. Ponce-ODREX
	VISCA-FARMI	Dr. F. Alensa RACO S.M. Suplico-Economist VISCA D.L. Alcobar-Rural Sociologist VISCA C.D. Villanueva-Economist VISCA A. Israel - ATI A. Flores - ATI VISCA
	VISCA-FARMI	Agroforestry, Livestock Entomology, Economics, Crops Departments and Field Research Sites
Abuyog	FSDP-EV Staff Conference	All project staff Conference & Team Reporting
Abuyog	Aboyog Exp Station	Danilo Palang, Superintendent
Manila	IRRI	Dr. Clive Lightfoot
Manila	USAID/DA Reporting	Mr. Bob Resseguie Mr. Ken Pruessner USAID Program Staff DA-BAR, ATI, VISCA- PDO; PCARRD, FARMI
Manila	IRRI-MADECOR	Report Writing

TEAM PROPOSALS FOLLOW-ON PROJECTS

7.5.1 Strenghtening the Regional DA Organization

(An outline)

I. The Situation

Agriculture, the major economic activity in Region VIII employs about 70 percent of the people and has 80 percent of the regions incidence of poverty. Nearly 3 million people, mostly from low-resource hilly uplands are employed in agriculture. There are six provinces and 143 municipalities in the region. DA, among its responsibilities has been assisting farm families through research and extension. There are over 600 professional research and extension workers to do this task. The RDA organization consists of a central administrative/program unit, provincial units, experiment stations, municipal agricultural offices and front line extensionists. Relationships and linkages exist within and between these units as well as with public and private agricultural institutions.

The GOP has recently instituted decentralization of organizational structure. DA then, will now manage its own staff, budgets and program.

II. The Problem or Opportunity

Administration and management have shifted to the RDA director and his staff. The functions of management (planning, organizing, directing, coordinating, reporting, budgeting) have not been a part of the training and experience of many of the Regional, Provincial and Municipal DA Officers. Basically, people have been trained in technical agriculture then thrust into administrative and management positions unprepared. Managers establish the environment for effective programming, teamwork and linkages in any professional organization. By appropriate organization, training and processes, effective management can be the base for successful programs in Region VIII D.A. The challenge is to identify organizational development and managerial training needs then implement research and extension programs with the learned administrative management skills.

III. Proposed Course of Action

1. Through internal discussion establish awareness among staff is needed for this "organizational renewal"
2. Appoint inter-staff planning committee
3. Bring in an outside consultant or team to work with committee and RD in the process
4. Develop strategy for: analysis, problem identification and need for modification of structure, function or process in the RDA organization
5. Develop plan for staff involvement, training and building program teams
6. Specialized training for key managers-MAO, PAO etc. in effectively developing and managing programs and staff

IV. Some Products of the Process

1. A responsive organizational structure
2. A mission statement or long range plan
3. A process for program development in Research and Extension (RE-FS)
4. Position descriptions, clear definition of tasks to be performed
5. Individualized job descriptions
6. A performance development/review appraisal process
7. Establishing of organized and/or ad-hoc work teams
8. Annual work plans (unit and individual) with objectives, staff roles, calendar, resources needed, budget, etc.
9. Interagency-institutional linkages established
10. Budget requests based on plans and the performance expected

V. Expected Outcome

Going through this organizational renewal process will strengthen the total program output by providing clear definition of expectations of staff and management. Managers will administer their units on a program basis with measurable results. All staff in the organization know what is expected of them and others. Teamwork becomes the blueprint for strong programs and provides for motivation and personal satisfaction at all staff levels.

The manager should be a facilitator of the process where staff, plan, implement, coordinate and evaluate what has been done.

Through sound program development involving farm family clientele, front line research and extension staff and DA managers, the concept of decentralization can be effective, maximizing the talents, skills and capability of professional R/E staff, and fostering productive linkages to related institutions.

VI. Calendar for the Process

The organizational renewal process requires leadership and time. To go through a cycle involving all staff (who have existing duties) will take two to three years. Guidance of experts in organizational development (particularly Research/Extension) should be made available as the need arises throughout the process.

Footnote: If GOP is serious about attacking on poverty through decentralized DA activities, then Region VIII with a high incidence of upland farm families, poverty and agro-ecological problems, can serve as a model for developing a strong, responsive and effective RDA organization. The FSDP-EV program provides a basic framework for DA working in the field with their relevant clientele. Developing an effective organization and staff is the next logical step.

7.5.2 Operationalizing the Municipal Research and Extension Area (MREA)

MREA can be an effective extension strategy to diffuse recommended farming practices to a wider area and to more farm families. The strategy starts with the selection of a general area in a municipality, may be 10 contiguous barangays that is representative of a development zone.

This area will be a recipient of a more intensive FSR/E assistance from DA. Principles and techniques used in FSR/E will be applied in this area such as: farmer involvement in diagnoses, design, testing and extension; on-farm trials; farmer's meetings and farmer-to-farmer training and observation visits. The assistance of the provincial and regional research divisions will be solicited in designing appropriate technology to be tested. Supplementary funding may be provided by the research division at the province/region. Regular visits of staff of the research division will insure that technical problems are identified and dealt with.

MAO will have direct responsibility to supervise this intensive extension area which will involve deployment of three to five APTs depending on the number of APTs that MAO supervises.

In time, farming practices, if appropriate would have proven themselves in the field. When this happens, APTs should start organizing farmer-to-farmer trainings in area where bio-physical and socio-economic characteristics are similar within the MREA. The successful farmer operators would have been trained or taught how to present his experience with the recommended farming practices.

Through the years, more MREA could be established and the member of APTs assigned to them could be reduced up to one.

7.5.3 Economic Analysis of Technology Adoption and Training Proposal

When the FSD Project was redesigned circa 1987, it was decided to adopt an approach that began with the farmer identifying his problems, and helping to design their solutions. This approach has resulted in the adoption of various technologies by farmers. The highest priority was given to the stabilization of the sloping land environment upon which farming in the uplands takes place. Without this stabilization, an infusion of crop intensification technology would have been pointless, or even dangerous to continuing production.

The control technologies selected for adoption were local variations of contour hedgerows and live mulching. These produced subsidiary benefits in the control of cogon grass, nitrogen fixation, production of forage, shorter rotation cycles, and cheaper ground-breaking. The costs were the labor and plant materials required, and the loss of 20 percent of the cropland area. It was decided to lay aside record keeping and enterprise analyses in favor of an all-out pursuit of the primary goal of erosion control, a reasonable allocation of effort under the circumstances. However as a result, data that lend themselves to economic analyses are existant but scarce.

But economic analysis is useful to several sets of people. Very simple partial budgets can be used by farmers and extension people to inform the choice among alternatives that are equally feasible from a technology and environmental standpoint. One could choose between the supplemental feeding of ipil-ipil cuttings to lactating caracows for the production of cheese, or to young goats raised for slaughter. Administrators at several levels can use aggregations of farmer benefits to support budget allocations between areas, between research and extension functions, or to support requests for budget increases. Donors and leaders can use Project financial and economic analyses to evaluate the success of current or previous activities, and proposals for future work.

The data gathered for enterprise budgeting at the farm level are used to build up the aggregate benefit/cost analyses of interest to administrators, and to lenders and donors. Investigations done in the course of this Project Evaluation indicated that the data necessary for economic analyses are present in the field, but for the most part, have not been gathered. The Evaluation Team recommends that the available data be gathered and analyzed, prior to termination of the FSD Project, lest it be lost through neglect.

The most efficient way to initiate the process is to organize a workshop where technical and procedural questions can be discussed, and a field practicum used to prepare participants to carry forward the effort. A proposal for such a workshop follows:

Objective:

To train economists in the gathering and processing of data for enterprise budgets, and for benefit/cost analyses of technology adoption by upland farmers in the Eastern Visayas.

Participants:

Staff economists of FSDP and Region VIII DA, SRMU economists, VISCA, selected APTs.

Venue:

VISCA, and SRMU Sites (Matalom and Bontoc, probably).

Agenda:

1. Review and discuss statistical and mathematical techniques; budget and program analysis; discounting/compounding over time; yield/product estimation; sampling and field enumeration.

2. Discuss Validation Methods such as;

   a) Farm gate values of crops, livestock and products, labor;

   b) Value to crop production of nitrogen fixation at equivalent rate of 50 kg./ha., direct and indirect;

   c) Feed value of forage from hedgerows, mulch, and fallow, as value of gain added to ruminants;

   d) Erosion control valued by discounted future value of crops made possible, value of labor and materials investment as an insurance premium compounded over investment life, etc.;

3. Developing and pre-testing farmer interview guides;

4. Practicum, collection of data through field sampling and field interviews;

5. Analysis of data gathered, with discussions of procedures and results;

6. Writing report of findings of group.

Time Requirement: 4-5 weeks

Constraints:

1) Require decisions by FSDP, RDA, VISCA, USAID, that economic evaluation of technology adoption is worth doing;

2) A commitment of staff economists to this task over the remaining life of Project, by staff and administrators of FSDP. RDA.

3) USAID (or other) funding of:

a. Consultant to organize and supervise course;

b. Per diem and travel costs of participants;

c. Transport for field practicum;

d. Reproduction costs of interview guide, and of workshop report (handbook).

7.5.4 Example Proposed Program Component RAREA - 1990 (Developing RAREA in a Programatic Mode)

Program Component X - R/E-FS through eight MREAS

Purpose: Direct Research and Extension for eight locations through R/E-FS approach

Program objectives:

1. Organize a field R/E program in eight MREAS to conduct R/E program for 800 upland farmers.
2. Implement the D-D-T-E process by area APT/PAO teams under MAO direction in 16 homogenous agro-ecological sites
3. Have 400 farmers adopt one or more appropriate hilly upland technologies
4. Provide for planting materials to support the practice adoptors.

Activities:

1. Training of MREA team, training MAO's in management of programs.
2. MREA team develops a 1990 work plan with objectives, organization, plan for farmer involvement, meetings on-farm diagnosis, on-farm trials, training plans, output expected, staff responsibilities, support resources needed.
3. Implement the 1990 work plan under MAO leadership (with back-up support from province, region and VISCA).

Calendar and Responsibilities:

Month 1	-	Activate training for MAOs: RD(Research and operations)
Month 2	-	Activate training for MREA teams - PAO/VISCA
Month 3	-	Organize farmer groups - do RRA or Diagnosis - APT
Month 4	-	Design on-farm research - MAO/VISCA
Month 5	-	Implement on-farm research - APT
Month 6-8	-	Train farmer trainers - MAO-ATI
Month 6-8	-	Farmer meetings with neighbors - APT-farmers
Month 9-10	-	Evaluation of 1st stage - MAO - APTs

Resources Needed:

Personnel

1. one quarter time of 4 MAO's $_____
2. three quarter time of 8 APTs, each of 8 sites _____
3. one quarter time of PAO specialists (inter-disciplinary) _____
4. two-two day visits to each MREA by VISCA-FARMI staff as required _____
5. Secretary/clerical, technician Asst - 30 days _____

Total $_____

Support

1. Travel _____
2. Lodging _____
3. Meals _____
4. Field supplies and visuals _____
5. Others _____

Total $_____

Total budget requested for RAREA component X _____

Cost/Benefit:

This program item is an investment in upland agricultural development. Stabilizing the environment for food production is the first priority. Soil/water conservation, improved fertility and renewable resources will be the result.

There will be 800 farmers adopting such practices Benefits, when in place, will provide more food and improved nutrition for families and place 10 percent more food in local households in year 2. Expected return on the $ ____ above will be positive after year 3 or 4.

Appendix 7.6

THE NATIONAL AGRICULTURAL RESEARCH AND EXTENSION AGENDA (NAREA) FOR REGION VIII (RAREA)

I. BRIEF DESCRIPTION

The NAREA is the embodiment of priorities in agricultural research and extension as determined by the very people who are directly involved in R & D with active participation of the target clienteles. Its main objectives is to focus research and extension programs to where they are mostly needed in order to maximize the use of scarce resources as well as to answer farmers problems and concern.

The agricultural research and extension priorities/thrusts are set-up in four categories namely: 1) priority development zones, 2) priority sectors under each development zone, 3) priority commodities by sector by development zone, and 4) priority research areas for each commodity by sector under each development zone. These priorities are further stratified into three levels of activity, viz., technology generation (TG), technology adaptation/verification (TA/TV) and technology dissemination (TD).

The Agenda likewise presents the methodology involved din the prioritization process, the Program of Action and the Implementing Strategy/Approach.

II. RATIONALE

The investments in agricultural research and extension which are the moving force in agricultural development are low (only 0.2% of (GVA) relative to agriculture's contribution to the economy.

Also there was the lack of a systematic or a quantifiable procedure of setting research priorities resulting in either the inefficient use of scarce research resources or an imbalance in the allocation of research funds among different priorities.

The NAREA, therefore is envisioned to redirect research and extension prioritization and budget allocation so that R &E programs can be made more effective and efficient in the development and transfer of relevant/appropriate technologies to farmers.

III. METHODOLOGY

- R & D priorities were determined through the diagnostic approach to planning.
- The coordinated regional consultations were interdisciplinary and multi-sectoral in nature.
- Simple scoring model was used in ranking priorities.
- Prioritization of the land zones was done separately from the aquatic development zones. Rankings in national/regional priorities were based on the total score the participants gave to a particular criterion in prioritization which was further validated at the Regional level.

IV. LEVELS OF PRIORITIZATION FOR THE REGION

4.1 Development Zones

4.1.1 Uplands

4.1.1.1 Upland Plains - areas found in contiguous level with a maximum 30% of land forms having less that 15 degree slope

4.1.1.2 Hillylands - at least 1 sq. km. (100 ha.) of which 70% of land forms have more than 15 degrees slore gradient

4.1.2 Aquatic Zones

4.1.2.1 Marine Waters - encompass the coastal zone; the oceanic zone and the shelf area

4.1.2.2 Brackishwater - pertains to the estuaries and brackish fishponds

4.1.2.3 Fresh Waters - fresh water bodies such as lakes, rivers, reservoirs, swamplands and fishponds

4.1.3 Lowlands

4.1.3.1 Lowland Rainfed - contiguous level area which is dependent on rainwater for agricultural production

4.1.3.2 Lowland Irrigated - contiguous level area which is supplied with irrigation water

4.2 Priority Sectors by Development Zone

4.2.1 Upland

4.2.1.1 Crops Sector
4.2.1.2 Livestock and Poultry Sector
4.2.1.3 Farm Resources and Systems
4.2.1.4 Socio-Economics

4.2.2 Aquatic Zones

4.2.2.1 Marine Waters
4.2.2.2 Brackishwater
4.2.2.3 Freshwaters

4.2.3 Lowland

4.2.3.1 Crops Sector
4.2.3.2 Livestock and Poultry Sector
4.2.3.3 Farm Resource and Systems
4.2.3.4 Socio-Economics

4.3 Priority Commodity Within Each Sector

<u>Upland</u>

4.3.1 Crops Sectors

4.3.1.1 Spices (Ginger, Garlic, Black Pepper, etc)

4.3.1.2 Fruit Crops (Lanzones, Durian, Rambutan, Avocado, Guyabano, Citruz, etc.)

4.3.1.3 Beverage (Coffee, Cacao, Tea)

4.3.1.4 Vegetable (Sweet pepper, Tomato, Eggplant, W. potato, Snap bean, etc.)

4.3.1.5 Legumes (Peanut, etc.)

4.3.1.6 Rootcrops (S. potato, Cassava, Gabi, Ubi, etc.)

4.3.1.7 Cereals (Rice, Corn)

4.3.2 Livestock and Poultry Sector

4.3.2.1 Sheep
4.3.2.2 Horse
4.3.2.3 Goat
4.3.2.4 Swine
4.3.2.5 Carabao/Cattle
4.3.2.6 Chicken
4.3.2.7 Turkey/Quail

4.3.3 Farm Resource and Systems (all commodities)

4.3.4 Socio-Economics (all commodities)

<u>Aquatic</u>

4.3.5 Marine Areas

4.3.5.1 Fishes (Tuna, Anchovies, Mackerel, Groupers, Siganid seabass, etc.)

4.3.5.2 Seaweeds (Eucheuma, Gracilaria, Gelidium)

4.3.5.3 Mullusks (Giant clam, abalone)

4.3.5.4 Crustaceans (Crabs, Prawn/Shrimps)

4.3.5.5 Echinoderms (sea cucumbers, sea urchin)

4.3.5.6 Coelenteratcs (Jellyfish, Coral Reefs)

4.3.6 Brackish Waters

4.3.6.1 Fishes (Milkfish, Seabass, Groupers)

4.3.6.2 Crustaceans (Prawn, Shrimp, Mudcrab)

4.3.7 Freshwaters

4.3.7.1 Fishes (Tilapia, Carp, Catfish)

4.3.7.2 Crustaceans (Prawn, Shrimps)

4.3.8 Socio-economics
(All commodities)

<u>Lowlands</u>

4.3.9 Crops Sector

4.3.9.1 Vegetables (Bitter gourd, tomato, squash, etc.)

4.3.9.2 Legumes (Peanut, Mungbean)

4.3.9.3 Rootcrops (S. potato, Cassava, Yautia, Ubi, etc.)

4.3.9.4 Cereals (Rice, Corn, Millet)

4.3.10 Livestock and Poultry

4.3.10.1 Carabao
4.3.10.2 Sheep/Goat
4.3.10.3 Swine
4.3.10.4 Cattle
4.3.10.5 Chicken (Native)
4.3.10.6 Ducks
4.3.10.7 Turkey/Quail

4.3.11 Farm Resources and Systems
(all commodities)

4.3.12 Post Production
(all commodities)

4.3.13 Socio-Economics
(all commodities)

4.4 Priority Research Areas Within Each Development Zone

4.4.1 Uplands

- Soil and water management
- Cultural management
- Crop protection studies
- Varietal improvement
- Propagation techniques
- Post-harvest processing and handling
- Processing and post production technology
- Cropping systems
- Seed and plant material production/distribution strategies
- Biotechnology
- Support services

- Breeding for stock improvement
- Feeds and feeding management
- Animal health
- Assessment and evaluation of technology transfer system
- Impact assessment of technologies and policies
- Marketing strategies/standards
- Resource utilization and management

4.4.2 Aquatic

- Resource assessment, management and conservation
- Breeding and Culture techniques
- Pest and diseases studies
- Cultural management
- Feeds and feeding management
- Low cost technology development
- "Red tide" blooms studies
- Standardization of processing quality control
- Impact assessment and technology transfer system evaluation
- Institutional building
- Market research
- Infrastructure asessment
- Socio-economic studies
- Limnological studies
- Hatchery development and management

4.4.3 Lowlands

- Cultural management
- Crop protection studies
- Cropping patterns
- Varietal improvement
- Fertilizer and fertility studies
- Biotechnology
- Soil and water management
- Feeds and feeding management systems
- Forage and pasture development
- Animal health care
- Processing and post-production
- Breeding for stock improvement
- Crop-livestock integration systems
- Marketing studies
- Technology transfer system evaluation

V. IMPLEMENTING STRATEGY/APPROACH

5.1 The DA to continue TG, TA and TV activities on areas with priority attention by the region.

5.2 The Bureau of Agricultural Research (BAR) to continue to coordinate, monitor, technically backstop and evaluate research projects conducted by the DA, bureaus, and attached agencies.

5.3 Continue to strengthen selected DA research stations/centers and laboratories to provide the required facilities for an effective National Cooperative Trials program in crop varieties and management practices for crops, fish, livestock and poultry.

5.4 Institutionalize the DA's linkage with state, colleges, and universities (SCUs) and non-government organization (NGOs) to conduct and satisfy a major part of DA's requirement in technology generation research.

5.5 The extension personnel and farmer-cooperators to continue to be involved in doing verification trials undertaken by RIARS to strengthen the DA's linkage between research and extension.

5.6 The barangay Pilot Production Project (BPPP) undertaken by the PTVTs to be expanded to serve as showcases for high productivity, thus generating more multiplier effect among farmers.

5.7 Encourage the formation of farmers' and fishermen's organization in order to facilitate an effective two-way communication between the government and the farmers as well as facilitate the movement of agricultural input from the warehouse to the farmers and marketing processing and distribution of farmers' products.

5.8 The research and extension endeavor should involve the participation of both public and private institutions which are influential in the community (foundation, religious and civic groups, local politicians) to get more cooperations from farmers and fishermen.

5.9 Strengthen the linkage with the media in order to diffuse the information to the public on the DAs research and extension program in order to gain popular support.

5.10 Institute an educational/leadership training program for farmers and fishermen to create a strong value within them to achieve a higher and more secure way of life and relating the application of new technology and farming more intensely as the way to achieve the new values, thus stimulating increased production.

5.11 Create a by-word or slogan in the rural sector in order to inculcate in the minds of farmers and fisherme the importance of their commitment in the attainment of the objective.

5.12 The DA to tie-up with the Department of Public Works and Highways (DPWH) for the construction of farm to market roads to facilitate the efficient marketing of farm products.

5.13 The government to formulate strong policies governing research and development, extension, pricing, credit and other support services in order to provide a conducive environment to all concerned.

5.14 The farming systems approach to research and extension should be the basic strategy of implementation.

APPENDIX 7.7

EVIDENCE OF LINKAGE STRENGTHENING IN INSTITUTIONALIZATION OF FSR/E

SUMMARY OF THE FARMING SYSTEM RESEARCH AND EXTENSION CONSULTATIVE CONFERENCE FOR AGRICULTURAL SCHOOL ADMINISTRATORS

Sponsors : FSDP, FARMI, ATI

Venue : NTC, VISCA

Purpose : To establish a realistic and operational linkage among RDA, VISCA and other agricultural schools in the Region

Participants :

1. Basey National Agricultural School
2. Biliran National Agricultural School
3. Leyte National Agricultural School
4. Ruperto K. Kangleon Memorial Agricultural and Fishery Technology Institute
5. Leyte-Leyte Agro-Industrial School
6. Alang-Alang Agro-Industrial School
7. Samar National Agricultural School
8. Eastern Samar State College
9. University of Eastern Philippines
10. Visayas State College of Agriculture

Training Mgt. : ATI, FARMI, PDO

Resource Persons :

1. Dr. Clive Lighfoot
   Consultant, Farming Systems
   Development Project (FSDP-EV)

2. Engr. Felix V. Quero, Jr.
   Director, FSDP-EV

3. Dr. Ly Ting
   Program Coordinator
   Farm and Resource Management
   Institute (FARMI)

4. Mr. Raul T. Repulda
   Senior Staff, FSDP-EV

   Dir. Agapito C. Tauro
   Assistant Regional
   Director for Research

5. Dr. Marianito R. Villanueva
   President, Visayas State College
   of Agriculture and
   Director, FARMI

Panelists :

1. Director Servillano de la Cruz
   Regional Director
   Department of Education, Culture and Sports

2. Director Agapito C. Tauro
   Assistant Regional Director for Research
   Department of Agriculture

3. Dr. Marianito R. Villanueva
   President, VISCA and
   Director, FARMI

Table 6. List of Resource Persons of All Training Conducted by FARMI.

Name	Frequency	Affiliation
1. Dr. D. L. Alcober	A	DAEE/FARMI
2. Dr. S. C. Bantugan	B	DASVM/FARMI
3. Prof. S. E. Abit	A	DASS/FARMI
4. Eng'r R. C. De Pedro, Jr.	A	DAEAM/FARMI
5. Prof. C. D. Villanueva	B	DAEAB
6. Prof. Z. M. de la Rosa	A	FARMI
7. Dr. Ly Tung	A	FARMI
8. Eng'r R. T. Patindol	B	DAEAM
9. Ms. J. M. Guarte	B	DAEAM
10. Dr. V. A. Quinto	B	Vice Pres., VISCA
11. Dr. F. R. Flores	B	DAEE
12. Dr. E. R. Ponce	B	Director, ODREX
13. Dr. J. S. Tan	B	College Sec./DDC
14. Dr. W. T. Alesna	B	DDC
15. Dr. M. R. Villanueva	B	VISCA President
16. Ms. C. M. Oliver	C	ATI
17. Mr. A. V. Israel	C	ATI
18. Mr. R. C. Gamboa	C	ATI
19. Mr. E. A. Balbarino	C	FARMI
20. Mr. V. T. N. Thu	B	CSR
21. Ms. A. M. Suplico	C	FARMI
22. Ms. F. T. Balina	C	FARMI
23. Ms. C. G. Armachuelo	C	PDO
24. Mr. R. B. Ayaso III	A	PDO
25. Mr. R. T. Repulda	A	PDO
26. Eng'r F. V. Quero, Jr.	A	PDO
27. Mr. M. E. Monreal, Jr.	A	PDO
28. Dr. O. M. de Guia, Jr.	B	DA
29. Ms. I. L. Llames	B	DA
30. Mr. D. Palang	C	DA
31. Ms. B. M. Jeanjacquet	C	DA
32. Asst. Dir. C. R. Balagapo	C	DA
33. Dir. A. C. Tauro	B	DA
34. Mr. R. B. Hipe	B	SRMU
35. Mr. E. C. Estil	B	SRMU
36. Mr. F. D. Ocado	B	SRMU
37. Ms. P. Parmo	C	DA
38. Asst. Dir. J. Garrido	C	DA
39. Dr. C. W. Lightfoot	A	Consultant, Cornell
40. Dr. R. Barker	B	Consultant, Cornell
41. Dr. L. Zuidema	C	Consultant, Cornell
42. Dr. J. Caldwell	C	Consultant, Cornell

Name	Frequency	Affiliation
43. Dr. S. Fujisaka	C	IRRI
44. Dr. T. Cornick	C	Consultant, Cornell
45. Dr. L. Compton	C	Consultant, Cornell
46. Dr. J. Gould	C	Consultant, Cornell
47. Ms. D. Perrot	C	US Ph. D. Student
48. Ms. J. Leones	C	US Ph. D. Student
49. Prof. N. M. Gloria	C	DOH
50. Ms. L. S. Parilla	C	DAEAB
51. Dr. A. S. Go	C	DAL
52. Ms. L. Devaras	C	DASS
53. Mr. A. Pasayloon, Jr.	B	SRMU
54. Mr. P. Cobre	B	SRMU
55. M. Pernito	C	IIRR
56. Dr. M. Manapat	C	IIRR
57. Dr. J. Gonzales	C	IIRR
58. C. Navarro	C	IIRR
59. Dr. A. C. de Jesus	C	IIRR
60. Dr. A. Bautista	C	IIRR
61. J. Imperial	C	IIRR
62. R. Custodio	C	IIRR
63. E. Monu	C	IIRR
64. Dayret	C	IIRR
65. E. Sabio	C	IIRR
66. Dr. J. M. Flavier	C	IIRR
67. Dr. E. Gonzaga	C	IIRR

Frequency: A = very often (5+) B = frequent (3-4) C = less frequent (1-2)

Affiliation:

DAEE - Department of Agricultural Education and Extension
DASVM - Department of Animal Science and Veterinary Medicine
DAEAM - Department of Agricultural Engineering and Applied Mathermatics
DAEAB - Department of Agricultural Economics and Agri-Business
FARMI - Farm and Resource Management Institute
ATI - Agricultural Training Institute
DDC - Department of Development Communication
ODREX - Office of the Director of Research and Extension
CSR - Center for Social Research
PDO - Project Director's Office
DA - Department of Agriculture
SRMU - Site Research Management Unit
IIRR - International Institute for Rural Reconstruction
IRRI - International Rice Research Institute

Table 7. List of Resource Persons in the RDA Courses Managed Courses

Name	Agency
1. E. A. Balbarino	FARMI VISCA
2. R. C. de Pedro, Jr	FARMI VISCA
3. R. T. Repulda	DA, FSDP-EV
4. F. D. Ocado	SRMU, Gandara
5. D. L. Alcober	FARMI VISCA
6. G. Pielago	SRMU Basey
7. S. C. Bantugan	FARMI VISCA
8. R. B. Ayaso, III	DA, FSDP-EV
9. M. E. Monreal, Jr.	SRMU, Gandara
10. E. C. Estil	SRMU, Gandara
11. C. G. Armachuelo	FARMI VISCA
12. C. G. Benvidez	FARMI VISCA
13. Z. M. de la Rosa	FARMI VISCA
14. R. B. Hipe	SRMU Jaro
15. F. G. Gabunada, Jr.	FARMI VISCA
16. S. E. Abit	FARMI VISCA
17. C. Bernadas	FARMI VISCA
18. P. A. Palines	DA, Borongan
19. P. A. Pasayloon, Jr.	DA, FSDP-EV (Villaba)
20. A. Almoroto	SRMU Villaba
21. L. Gaylon	SRMU Gandara
22. E. Y. Marquez	DA, Leyte Prov.
23. S. B. Singzon	FARMI VISCA
24. A. Suplico	FARMI VISCA
25. C. M. P. Morante	PDO, FSDP-EV
26. J. G. Aseo	DA, Borongan
27. C. Apura	DA, FSDP-EV
28. A. Gregana	DA, Maasin
29. G. Adora	DA, Catarman
30. J. C. Baldelobar	DA, Borongan
31. N. M. Tambiongan	PDO, FSDP-EV
32. V. Sulad	DA, Jaro
33. M. Orias	DA, Leyte Prov.
34. J. Mecares	DA, Jaro
35. T. Lejas	DA, Jaro
36. B. Lim	DA, Jaro
37. F. Labiran	DA, Matalom
38. L. Verbo	
39. D. Horca	
40. J. Navarra	
41. M. Lego	
42. L. Robel	
43. B. Horca	
44. F. Pedotera	
45. G. Curay	

Name	Agency
46. B. Fallorina	DA, Jaro
47. J. Ruiz	DA, Leyte Prov.
48. B. Terrado	DA, Jaro
49. L. Garrido	DA, Jaro
50. N. Agustines	DA, Jaro
51. L. D. Gerona	DA, Matalom
52. D. G. Pitao	DA, Matalom
53. E. S. Orail	DA, Matalom
54. A. P. Obusa	SRMU, Matalom
55. R. F. Agaton	SRMU, Matalom
56. F. Ruelan	

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