



**Soil Management  
Collaborative Research Support Program**

**Grant Extension Proposal**

**Annex**

**Volume 3**

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# **EXTERNAL EVALUATION REPORT**

## **SOIL MANAGEMENT COLLABORATIVE RESEARCH SUPPORT PROGRAM (CRSP)**

External Evaluation Panel

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December 1999

## EXECUTIVE SUMMARY

There is a strong consensus within the EEP that the SM CRSP will complete its activities on time and within budget. The resulting products and anticipated impacts will be significant, and represent a worthwhile investment for US AID.

In addition to the project-specific recommendations found within this report, the panel offers the following overarching recommendations as a consensus of our best judgements for improving an otherwise excellent CRSP.

### The EEP recommends:

- More leadership be provided by the ME on programmatic direction, leading to more intra-CRSP collaborations;
- Greater focus be given to the integration of biophysical with socioeconomic approaches to soil management constraints, including more frequent face-to-face meetings, more discussion and dialogue among component projects, and more attempts at consensus building, perhaps encouraged by set aside funding from the ME for travel;
- That each SM CRSP project should have a gender analysis component, in recognition of the fact that gender issues in soil management are a non-trivial, and important to sponsors as well;
- More openness on SM CRSP budget matters, and better communication with PIs on budgetary decisions, preferably as written documents containing the rationale for the decisions, rather than as phone conversations or word-of-mouth;
- More consideration to marketing the collective accomplishments of the SM CRSP to donors, clients, stakeholders, including the private sector;
- Greater support from the ME for coping with the "pipeline" management process for reallocating funds within the CRSP, including more assistance from the PIs to the ME as timely vouchering, with an understanding of federal government fund-management practices;
- Planning begin immediately for the next generation of this CRSP, with consideration for:
  1. Moving to more integrated approaches to soil management research activities within the CRSP;
  2. More focus on specific soil management constraints;
  3. Use of the existing network of collaborators (as stakeholders) to help define the next set of constraints, and plan future collaborative research activities; and,
  4. Different perspectives on the organization of soil management constraints that go beyond the biophysical (e.g., nitrogen) to other dimensions (e.g., limits to adoption)

- Development of an implementation plan for the recommendations provided as a result of this external evaluation, with a timetable for activities and a plan for reporting on progress.

The EEP has looked ahead in an attempt to project a next generation of soil management research activities and concluded that the present core of scientists deserves an opportunity to plan its own destiny. This will require of US AID a commitment to honor a proposal for program renewal, under a set of mutually agreed expectations. Among these expectations should be a firm commitment from US AID that a proposal from this coalition will be given direct consideration, in place of another round of competition. In turn, the present SM CRSP should agree to a planning process that will:

- Open the planning and decision making to experts beyond the present membership;
- Allow for appropriate project-memberships, and the project-appropriate allocation of any future funding; and,
- Permit new approaches to identifying a revised set of soil management constraints.

Planning for the renewal of the SM CRSP for another five-year research phase is strongly encouraged by the EEP.

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## INTRODUCTION

This report by the External Evaluation Panel is a mid-term in-depth evaluation of the Soil Management CRSP. The panel evaluated progress to-date and progress toward completing original objectives to see if mid-term adjustments are recommended. Considering its findings the panel made recommendations concerning future activities and preparation of an extension proposal.

The Soil Management CRSP External Evaluation Panel (EEP), ME and USAID Project Officer met in May 1999 to review and agree on US AID's scope of work for an external evaluation, and to prepare logistic plans for visits to overseas and U.S. project sites. EEP members visited five countries (Philippines, Bangladesh, Peru, Ecuador, and Nicaragua) to make overseas site visits to each of the fully funded projects. Each member of the EEP reviewed at least two projects and wrote trip reports. The US AID project Officer accompanied EEP members on each site visit in order to serve as a resource about CRSP history. In addition, one EEP member visited the home institution of both Project 5 and Project 6 to develop evaluations of the scope of their contributions to the SM CRSP. The evaluation process concluded with a face-to-face meeting with all the PIs and the ME December 13-14 in Denver. The meeting served as an opportunity for the EEP to hear to from all the PIs. It was also a time for the PIs to respond to EEP questions raised during site visits, to inform each other about their projects and discuss opportunities for integration among projects. The EEP prepared their report at the end of that meeting.

## MISSION AND PURPOSE

The aim of the Soil Management CRSP is to empower customers by enabling them to apply knowledge captured in decision aids to make better economic and environmentally sustainable choices. Researchers from the biophysical and socio-economic sciences enables this CRSP to form interdisciplinary teams capable of producing knowledge products that will enable customers to improve soil management practices and formulate sound economic and environmental policies. The CRSP has developed a global plan that will produce a customer-focused, results--oriented program.

The goal of the CRSP is to attain food security for all without compromising the sustainability of the natural resource base. The purpose is to improve agroecosystem performance by resolving the integrated nutrient and soil management constraints of nitrogen deficiency, phosphorus deficiency, acidity, water deficiency, and soil erosion and degradation. Its objectives are to enable CRSP customers to implement natural resource management practices and polices that will:

1. Increase productivity of agroecosystems by raising yields and incomes of host country and U.S. families.
2. Increase stability of agroecosystems by reducing fluctuations in productivity by factoring uncontrollable production variables such as weather and climate into prescriptions for managing sustainable agroproduction systems.
3. agroecosystems by prescribing soil management practices and policies that enable the system to recover quickly from externally imposed stresses and perturbations.

4. Increase equitability by enabling women and men to share fairly in benefits derived from the agroecosystems and by enabling women to participate in the decision making process.

To meet its objectives the Soil Management CRSP is guided by a global plan. The key elements of the plan are:

1. Development of globally applicable knowledge products and technologies.
2. Application of a systems approach
3. Development of nutrient management practices in a timely and cost-effective manner and applicable worldwide after this five-year program extension.
4. Customer participation in identification of problems, and design and development of products.
5. Using product development teams as a framework for achieving results.
6. Monitoring performance to manage for results.
7. Creating product demand.
8. Monitoring lessons-learned at end-of program status.
9. Contributing to USAID strategic objectives and results-packages.

## **HISTORY**

The U.S. Agency for International Development, operating under the authority of the 1961 Title XII Amendment to the International Development and Food Assistance Act of 1975, established the Collaborative Research Support Program

(CRSP). Between 1977 and 1982, AID implemented seven CRSPs to address food security problems in developing countries. These programs facilitate collaboration among U.S. universities, Federal agencies, international agricultural research centers, private agencies and industry, developing country universities and other national research agencies. This arrangement brings together the resources necessary to plan and conduct a multi-disciplinary, multi-faceted, international program to solve priority food security and sustainable agricultural development problems in developing countries.

The Soil Management CRSP, established in 1981, was a collaborative effort among USAID, U.S. universities and developing countries to transform "problem tropical soils" into productive agricultural lands Latin America, Sahelian Africa and Southeast Asia. In addition, the Soil Management CRSP increased the human and institutional capacity of developing country institutions. To date nearly 200 hundred students from developing countries received advanced degrees and form a source of talent for their home countries. Many of these graduates are now in leadership positions in national agencies and universities worldwide.

During the last decade of 20th Century the Soil Management CRSP has been confronted with major adjustments in its program. In 1990, the Soil Management CRSP was broadened to include three separate ongoing soil-related AID-funded projects. This presented a challenge to the CRSP to create an integrated global program. In March 1995, AID requested the Management Entity (ME) to implement a restructuring plan to revitalize a CRSP that had been operating for 15 years. The ME convened an advisory panel to identify and prioritize the major constraints to integrated nutrient and soil management in the tropics, and then sent out a request for proposals to the U.S. agricultural research community and developing countries. As a result of this open competition seven

proposals were selected to become the restructured Soil Management CRSP. All of the proposals were designed in isolation of the other projects. They shared only one thing in common and that was to address one or more constraints identified by an external panel. The Principal Investigators (PIs) of the winning proposals voted to make the University of Hawaii the ME and Goro Uehara, became the Director of the CRSP. This was the first time that the ME of any CRSP changed institutions. The restructured Soil Management CRSP began its current five-year extension on February 11, 1997.

## **PROGRAM PORTFOLIO**

The SM CRSP portfolio is currently made up of 6 component projects. A seventh project was never approved for funding, and thus never participated. Two of the projects (Project 5 and Project 6) were funded at significantly reduced amounts, relative to their original request. And additionally, add-on project was made possible through US AID Mission buy-in funding to Project 3. For editorial purposes herein, we are referring to those two activities as Project 3a and Project 3b. The EEP's evaluations of the current SM CRSP portfolio follows in the next section.

# PROJECT EVALUATIONS

## Project 1

### DECISION AIDS FOR INTEGRATED SOIL NUTRIENT MANAGEMENT

**Principal Investigator: T. Jot Smyth**

#### Objectives

Soil acidity and nitrogen and phosphorus deficiencies limit crop yields in many LDCs, leading to food insecurity, poverty and environmental degradation. However the information required to diagnose and offer the best management alternatives for location-specific soil acidity and nutrient problems are both costly and time-consuming to acquire. The constraints of time and cost can be alleviated by organizing existing data into an Integrated Nutrient Management Decision Support System (INTDSS) that simultaneously diagnoses and recommends appropriate management practices.

This project has three objectives:

1. Improve the diagnosis and recommendations for soil acidity and nutrient problems by identifying and resolving knowledge gaps through extensive literature reviews, and when necessary, development research;
2. Develop an integrated, computerized knowledge base for diagnosing and recommending practical solutions to soil acidity and nitrogen and phosphorous problems, which considers location-specific differences in resource availability, soil, climate, crop and management factors; and,
3. Develop auxiliary tools for an

integrated knowledge base to enable agriculturists to diagnose and solve soil acidity and nutrient problems that predominate within the social, economic and agronomic conditions of their regional domains.

#### Accomplishments

Version 1.0 of INTDSS is an interim release of the planned software, intended to elicit feedback from collaborators for future improvements. In its current form, Version 1.0 has three modules, (acidity, nitrogen and phosphorus) each operating independently within the program shell. During the remaining life of the project (about 2 years) the three modules will be integrated into a single interactive system for all three nutrient constraints. Several auxiliary software tools (time, material, and cost integrator; and a nutrient balance calculator) are currently under development with scheduled completion during the project's current fiscal year.

#### Assessment

Overall, the project is being well executed with a cohesive group of collaborators in the United States and overseas. The project activities are innovative and on target with respect to the work plan, which in turn reflects a commitment to stakeholders. The INTDSS would be a useful diagnostic and nutrient management tool for selected crops. Currently, the three decision support systems - Acidity Decision Support System (ADSS), Nitrogen Decision Support System (NDSS) and Phosphorus Decision Support System (PDSS) - are at different stages of completion and testing. Both ADSS and PDSS are going through a developmental stage that provides a good balance between input requirements, understanding of the system, evaluation with data from published/gray literature and field trials and reliability of prediction. The NDSS, on the other hand, is existing

software that was developed for the temperate agriculture of New York State and is being modified to fit the nitrogen management needs of tropical regions. The NDSS, in its present form, requires more site- and user-specific data to determine nitrogen fertilizer rates. For example, the user is expected to know the nitrogen fertilizer efficiency coefficient which is highly dynamic, and site- and management-specific parameter. Refinement of the software would build the confidence in the model by potential users, particularly from the private sector.

## Recommendations

The workshop at PhilRice provided project participants with an excellent opportunity to review progress with the INTDSS and to make suggestions for improvements with the structure and specific details of the conceptual and practical aspects of the INTDSS from a users' perspective. The project leader should be commended for taking this approach and needs now to prioritize and give a reality check to the many constructive suggestions made by project collaborators. Project collaborators were very supportive of the project, although they commented on the need to address more client needs, including policymakers and extension workers.

The following recommendations draw from the free and open discussions that took place at the workshop and a session held *in camera* between project collaborators and EEP members.

- The INTDSS is data intensive and is not as user friendly as needed - e.g. for situations where local advisors are not available. Some shortcut version and/or the use of more diagnostic plant photographs etc. is needed.<sup>1</sup>

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<sup>1</sup> The PPI and University of Queensland (ACIAR) photo libraries may be useful in this regard.

- The INTDSS does not treat nutrient management as an integrated-systems issue and needs to address more the longer term cropping systems aspects, including residual effects and nutrient balance. Consideration should be given to the following points:
  1. Tropical agroforestry systems require a longer-term perspective than annual cropping systems.
  2. The application of a nutrient at an economic optimum may drain soil fertility reserves that, in risky climates, cannot be restored economically, leading to land degradation.
- Potassium is a major problem in many areas of the tropics that the INTDSS needs to address.
- The Nitrogen model appears to be aimed at high-yield systems. Some stratification of the recommendation domains based on socio-economic conditions could be attempted to accommodate the diverse conditions in which crops are grown. The current version of the INTDSS stratifies only on biophysical domains.
- The integrated management of nutrients is an important area relatively neglected by the current INTDSS. The importance of this approach, particularly in risky cropping environments and in low-yield areas, should be recognized in the integrated recommendation module.

- The private sector should be drawn more closely into the process of testing and improving the INTDSS, particularly recognizing the potential benefits that could flow from its use.
- The project leader should seek stronger links with other groups in this field..

production goals versus future-oriented environmental protection and resource conservation goals;

4. Improve education/extension techniques/materials to foster the adoption and diffusion of appropriate technologies; and,
5. Improve integration of farm-level and landscape-level conservation/production options using systems research methods to equip stakeholders to participate in choices among economic and policy alternatives.

## Project 2

### SOIL MANAGEMENT PRACTICES FOR SUSTAINABLE PRODUCTION ON DENSELY POPULATED TROPICAL STEEPLANDS

**Principal Investigator: Anthony Juo (until August 1999 - Thomas Thurow)**

#### Objectives

The project's goal is to develop, evaluate and transfer at a watershed scale sustainable soil conservation technologies for densely populated tropical steplands. Project objectives are to:

1. Improve farmer acceptable erosion control and nutrient management technologies that will increase the implementation of practices required to enhance sustainable production and thereby improve living standards in densely populated tropical steplands;
2. Improve understanding of the technology adoption process used by the peasant farmers who typify stepland farm enterprises;
3. Improve socioeconomic information and economic valuation techniques needed to aid the design and implementation of policies aimed at balancing current subsistence food

#### Accomplishments

Previous and present SM CRSP research conducted at the watershed site in southern Honduras, Nicaragua, and Haiti have generated significant findings in soil and nutrient losses under different land management practices. The project's watersheds have been used by US AID and several government agencies, NGOs/PVOs as a field-training site for stepland management and conservation. Soil and agronomic data collected at the site has been published as a technical bulletin both in English, French, and Spanish and in scientific journals. Technical bulletins are in high demand by NGOs and PVOs as well as international development agencies including the World Bank, FAO, and GTZ.

Soil slumping is a major cause of land degradation for Alfisols on sloping lands in the wet-dry tropics. The combination of stone retention walls and vegetative barriers is most effective for preventing soil and nutrient losses. Results have generated local and national awareness of economic and environmental consequences of upland soil erosion on coastal aquatic ecosystems and commercial shrimp production, and influenced USAID upstream and lower basin development project funding in the post-hurricane Mitch era.

Andisols on the hillslopes in Nicaragua contain restrictive subsurface horizons including silica-cemented duripans and clay enriched horizons that restrict vertical water flow below the high infiltrating surface layers. Results from pedology, tillage and small watershed and erosion plot studies should allow for the testing and validation of U.S. developed predictive models such as RUSLE/WEPP for steepland farming, and provide an important data base for GIS model development.

Agronomic research in Haiti showed that tree barriers (leucaena alley cropping) gave higher maize yield than did rock walls, grass strips and contour canals. Best results were obtained when leucaena was pruned and applied as mulch at 0, 30 and 60 DAP. Species unpalatable for livestock have been identified, evaluated for use as barriers, and are ready for dissemination to users. Information on nutrient deficiencies and soil physical limitation has been developed and is ready for dissemination.

There is widespread recognition that the off-site costs of soil erosion can be significant. As a consequence one of the project's most significant impacts is likely to be on policy makers in Central America. These individuals are clearly in need of scientific information on soil management options for making strategic investment decisions about how to protect and sustain the productive capacities of agricultural industries in post-hurricane Mitch era.

### **Assessment**

The project has qualified PI's with a long history of research on soil conservation in the tropics. Given the potential participation by USAID missions, Inter-American Development Bank, NGOs, and in country partners such as the National University of Agriculture, Nicaragua, etc., and the devastating soil loss caused by hurricane Mitch, the project has an excellent opportunity for making significant impacts.

The project is suffering from a change in leadership and a lack of a clear focus on deliverables at the level originally proposed. It was for this reason the EEP members that visited this project recommended an assessment by the whole EEP of the likelihood of the project's PIs completing the deliverables as described in the original proposal. The current PI was requested to come to the Denver meeting with:

1. A clear description of project's deliverables and their applicable scale, as outlined in the original project proposal;
2. A status report on the progress toward funding from the Nicaragua and Honduras US AID missions;
3. A listing of intra-CRSP, inter-CRSP, IARC, in-country partners (i.e. NGO, NVOs, NARS) with a brief description of the status of those relationships; and,
4. Timetable for completion for each of the above items.

This assignment was not completed.

### **Recommendations**

The loss of Tom Thurow, Amy Purvis Thurow and others from the project, and with the expertise and vision of the remaining PI's it is very unlikely that objective 3 of the current plan of work<sup>2</sup> will be accomplished. It is not clear to the EEP as to who will complete the GIS work, or conduct the policy-relevant regional analyses of land use practices and soil and

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<sup>2</sup> This is, to use the information collected as part of objective 1 & 2 to conduct policy relevant regional analyses of land use practices and soil and water conservation investment options; formulate creative suggestions that may lead to breaking the impasse that currently limits the effectiveness of steep land soil and water management.

water conservation investment options. The EEP is also concerned that the excellent opportunity for enormous social and economic impacts will be lost under the project's current leadership, structure, interest and attitude. It is the opinion of the EEP that if this issue is not adequately addressed completion of all of this project's original objectives is unlikely. This will not only jeopardize present activities but will, as well, threaten efforts to plan for any renewal of program activities in another phase. These concerns need to be addressed immediately by Texas A & M University's leadership, the ME, and the SM CRSP's Board of Directors, and hopefully corrected.

### **Project 3a**

#### **SUSTAINABILITY OF POSTGREEN REVOLUTION AGRICULTURE: THE RICEWHEAT CROPPING SYSTEMS OF SOUTH ASIA**

**Principal Investigator: John Duxbury**

#### **Objectives**

The project has five objectives and each has been addressed through research activities, albeit concentrated in Nepal and Bangladesh due to constraints caused by changes in US AID policy in South Asia. Objective 4 which includes the nutrition and health of farm households received a major boost in activities through US AID Mission support in Bangladesh.

The objectives now listed in project work plans for 1999 are:

1. To identify constraints and opportunities to improve production of rice-wheat cropping systems of the Indo-Gangetic Plain and adjacent hill regions;
2. To develop and promote the implementation of improved tillage,

crop establishment, and water management practices for the rice-wheat systems;

3. To overcome nutrient constraints to crop production in soils of the Indo-Gangetic Plain;
4. To improve the agronomic and economic sustainability of ricewheat cropping systems and the nutrition and health of farm families; and,
5. To use information systems and crop modeling as tools for improving land use and management decision making.

#### **Accomplishments**

The project has:

- Identified soil biology (and possibly fertility) as a major constraint to production in the rice-wheat system through on-farm and on-station solarization trials.
- Identified soil boron deficiency and shading (which reduces boron translocation in plants) as interactive causes for sterility in wheat. Discovered that a major new rice variety released for the rice-wheat system in Bangladesh (BR32) was susceptible to zinc and molybdenum deficiency, and that this could be overcome by seed enrichment with these elements.
- Showed by economic analysis that the high risk of production of pulse crops, coupled with government policies that favored mustard and wheat, were jointly responsible for the drastic decline in chickpea production in the northwestern Indian states of Haryana, Punjab and Uttar Pradesh.

- Undertaken a series of biophysical, socioeconomic, and food systems surveys, monitoring of farms, and integration of information into geographic information systems (GIS) at rice-wheat sites.
- Demonstrated that direct seeding of rice is a viable technology in the context of South Asian rice-wheat cropping systems.
- Demonstrated that deep tillage in heavy textured soils prior to rice can benefit wheat productivity, without penalizing rice productivity.
- Concluded that solarization and Vitavax (a fungicide) seed treatment in the rice nursery provides benefits in non-treated main fields, indicating a practical application for farmers.
- Identified, in Bangladesh, promising new lines of wheat with a phosphorus efficiency trait, and promising new lines of rice with drought resistance for the Aus season.
- Discovered that a surface mulch of straw increases rice yield (by 1 t/ha or 29%) and that the likely mechanism is through lowering of floodwater pH and increased N use efficiency. This research has the potential to have a major impact on N management in paddy rice.

## Assessment

Progress in the following areas is noteworthy:

- The finding that solarization significantly increases rice and wheat yields in farmers fields and on-station, indicates that soil health, especially the problems associated

with nematodes, are probably a major constraint to crop production. The diagnostic field experiments that form the basis for this conclusion involved simple treatments that have many confounding effects on soil properties. For a superficial survey of constraints this approach is appropriate, but more rigorous methods are needed to sort out the causative factors.

- The finding that micronutrient enrichment improves seedling performance and increases yield, like the solarization effects, raises more questions than it answers, since the amount of nutrient absorbed by the seedling is likely to be insufficient for a plant to grow to maturity.
- In both cases the fact that substantial yield increase can be obtained offers promise that cereal yields in the ricewheat system can be substantially improved. The challenge is to understand the underlying causative factors and devise ways to improve yields on a broad scale. The researcher-managed trials in farmers' fields are a valuable device, but lack the experimental control required for more rigorous research. The project needs to clarify the degree of control needed in relation to the level of understanding within the research continuum between participatory and basic research.
- The finding that yields are significantly affected by seed quality and variations in varietal susceptibility to micronutrient deficiencies is important, and provides practical pointers to ways to improve yields.
- Research results indicating that policy is a major constraint to food legume production suggest that

improved technologies will not be adopted by farmers without significant policy changes. This finding also has implications for the diet and nutrition of rural and urban poor whose consumption of pulses is inadequate.

- The research results so far on the management of macronutrients does not offer much promise for improvement, given the economic constraints that limit farmers' use of fertilizers.
- Research on improved management practices (including tillage, crop establishment and residue management) shows promising results (e.g., the Chinese hand tractor has been widely adopted in some areas). However, a more participatory approach to technology development may be required to ensure that such technologies are evaluated in the context of the resource endowment of the farmers.

Great progress has been made in instilling a systems approach in scientists trained as commodity specialists. Scientists collaborating in the project remarked to the EEP that this was one of the most valuable benefits provided by the project. The next step is to involve farmers more fully in the research process, and to engage NGOs and the government extension specialists. This may prove more easily said than done because of the narrow disciplinary training that most NARS scientists have received. Some indication of this difficulty emerged during the Participatory Rural Appraisal activity already performed by Cornell, with the NARS scientists.

## Recommendations

The following recommendations acknowledge that the project has made significant progress in the diagnosis of constraints to the sustainability of ricewheat systems, enhancing the technical capacity of collaborating NARS, and has obtained preliminary data on prescriptions to overcome the constraints. Staff of the Bangladeshi counterpart institutions indicated to the EEP that they appreciate the additional attention to soil constraints derived from the initiation of the project, and mentioned in particular the soil health aspects that had been relatively neglected in the past.

- At this stage of the project, the PI should pay more attention to the mechanism by which the research results from the project will reach clients.
- Considering item 1, and given the complexity of the problems and the extensive collaboration that the project has established, the overall conceptual and institutional framework within which the project operates should also continue to be refined in light of experience to date.
- The diagnostic phase of the project has identified many important areas for follow-up research. As planned, the project should now focus more of its resources on a limited number of the major constraints to clarify the underlying causal relationships. High priority should be given to soil health, tillage/crop establishment and micronutrients, including boron, zinc, and molybdenum.
- The SM CRSP scientists should focus their efforts on the strategic end of the research continuum, particularly in the high priority areas mentioned in the third recommendation above.
- As already planned, the project leaders should work with the

collaborating scientists to review research plans, taking into account the past progress made by NARS scientists in deciding which individuals should be involved in the more specific research activities as the project continues.

- Recognizing the institutional constraints to change, project leaders should encourage the adoption of a farmer participatory approach in which inter-disciplinary teams of scientists from BAR! and BIRRI work closely with farmers in the planning, conduct, and analysis of the experiments. The fact that the participatory approach was introduced in the farm surveys lays the groundwork for such a change in approach, and the survey could provide guidance for the technology-development work.
- The GIS technology should continue to be used to set priorities and gain an understanding of the impact of different current and improved technologies on rice-wheat systems. For example, a nutrient balance of different districts would help pinpoint problem areas. A nutrient balance approach may also be more appropriate for recommendations, given that soil testing is not a feasible option. In this regard, the project should explore links with the decision support project under the SM CRSP and other research at IRRI.
- The soil research component of the project should also undertake studies to respond to the results of the Chakoria Food Systems program. Areas for such research include the relationship between soil nutrient availability and the nutrient content of grains as well as the changes in cropping systems needed to address the human

nutritional problems. In this area, the excellent rapport between the Cornell scientists working on plant nutrition and on human nutrition should prove invaluable.

### **Project 3b**

#### **THE CHAKORIA FOOD SYSTEM PROJECT FOR THE SUSTAINABLE PREVENTION OF RICKETS AND OTHER TYPES OF MALNUTRITION IN BANGLADESH**

**Principal Investigator: Jerry Combs**

#### **Objectives**

Originally this project had five specific objectives:

1. To characterize the food system.
2. To analyze the food system.
3. To elucidate the prevalence and etiology of rickets in Chakoria and elsewhere in Bangladesh.
4. To evaluate and develop home gardens.
5. To introduce new products/techniques and strategies to the food system that can increase intakes of calcium and other nutrients by infants and children.

#### **Accomplishments**

Outputs from the project include the development of data sets (soil/water/farm practices, village C;Ind household practices, food security/health, baseline rickets/malnutrition prevalence), models, intervention processes, support of rickets

consortium and work with NGOs. These were identified and described in the Chakoria Food System Project Progress Report for project year 01 (1998).

## Assessment

Overall this project is going well. The project has generated or catalyzed a number of surveys, research and outreach activities based on newly established and effective partnerships involving Cornell University, and a large number of agencies in Bangladesh or otherwise related to the work of the Project.

The only caution which the EEP notes is that there may be so many activities being implemented that there may be a possibility of losing focus. Project leadership needs to be alert to the fact that the central focus of the project needs to be always front and center in project planning.

This project is firmly established in the local culture and well involved with a variety of supporting groups. With this base the project certainly has the potential for providing critical information about a potentially serious health problem which could impact the economic status of the people. In order to judge this project within the CRSP guidelines the EEP had to pay attention to the potentially global impact of the project. But, the connection between the work of the project and its global significance is not straightforward. However, in this regard the following factors are pertinent:

1. Until a relatively short time ago (less than 20 years) calcium-deficiency rickets was unknown in the area where the number of cases is now increasing; and,
2. Many other pockets of calcium deficient rickets may currently be developing in geographic areas

where reporting of such instances is not done.

With these factors in mind it is important to recognize that if cause/effect and affordable/practical! effective treatment can be developed for the Chakoria area, then this technology can be utilized in other places.

## Recommendations

The following recommendations are based on a relatively short visit with the project, and for this reason there may have been some work or planning that was overlooked. The project should:

- Continue to concentrate on documenting their work and should develop a comprehensive inventory of available publications/films/training materials, etc.
- Give high priority to interactions with the US AID Mission for a number of reasons, including support<sup>3</sup>.
- Develop a formal linkage with the Helen Keller group in order to get information through the quarterly surveys<sup>4</sup>.

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<sup>3</sup> While the project probably does share information with the USAID Mission it is recommended that project leadership develop a system by which the Mission is informed of activities and informational materials distributed to the Mission frequently throughout the life of the project.

<sup>4</sup> In an interview with the Population Office in the Mission it was clear that they are working closely with the Helen Keller group. That group is involved in quarterly survey activities which cover the entire country. The Mission suggested that the project work with the Helen Keller group to include requests for information in the surveys that would supplement and add to the information which the project is acquiring from other sources.

- Continue to provide:
    1. opportunities for meaningful involvement of local groups,
    2. sound technical leadership,
    3. the atmosphere of cooperative ownership of the work of the project,
    4. leadership and a forum for open investigation of the central problem as well as related issues, and
    5. responsiveness to concerns expressed by local personnel.
  - Make a concerted effort to involve (develop interest and support) relevant to Bangladesh government units/personnel in the work of the project.
  - Develop specific plans to ensure the sustainability of the research and outreach activities at the workshop planned in 2000, and involve donor representatives who can facilitate continued funding when the US AID support is concluded.
- leaching, erosion, soil fertility decrease) with the Trade Off Model.
  - 2. To incorporate potato-dairy pasture rotation models into the Trade Off Model.
  - 3. To link crop growth models to the Trade Off Model.
  - 4. To provide the method and basis for regional extrapolation of the Trade Off Model.
  - 5. To develop a Decision Support System (DSS) using the Trade Off Model and quantify impacts of existing and proposed policies and agricultural technologies in the case study sites, and regionally.
  - 6. To develop and communicate recommendations for research priorities for NARS and IARCs, and for national and regional policy.
  - 7. To provide training to individuals and groups in interdisciplinary research tools, including the decision support system and the use and interpretation of integrated economic and biophysical modeling.
  - 8. To provide efficient planning, coordination and management of the project.

#### **Project 4**

#### **THE TRADE OFF MODEL**

**Principal Investigator: John Antle**

#### **Objectives**

This Project's goal is to develop a decision support system for assessing tradeoffs between agricultural production and the environment. The objectives are:

1. To link bio-physical models that describe soil processes (pesticide

#### **Accomplishments**

- The clear advantages the partnership brings to the El Angel Consortium (Ecuador) and the Cajamarca (Peru) groups are the scientific and conceptual bases for the collaborative activities, especially for the NGOs. This contribution empowers others (e.g., non-governmental organizations, government agencies) in ways that allow them to meaningfully engage

the relevant soil management issues.

- The human health tradeoffs that occur between pesticide exposure and potato production are scientifically important, as a new approach to understanding the consequences of choices.
- Understanding the tradeoffs that occur between soil erosion and the economics of production are important to crop management systems over wide areas.
- The innovative Trade Off Model is a significant contribution to the methodology of natural resources management, and will no doubt have applications to many other locations and problems.

## Assessment

The project is making excellent progress toward its objectives. Through partnership activities project tasks are being shared and information is being exchanged. The project is exemplary in its contribution to the desired ends of food security and sustainability. Although too early to measure, the prospects are excellent for major returns on US AID's investments through direct results, and indirectly through the activities of others influenced by the project's discoveries. Prospects for successful completion of the initial objectives are excellent, and the likelihood of major contributions to the protection of human health, sustainable production and environmental protection are exceptional.

## Recommendations

Although the EEP is highly impressed with the activities and accomplishments of this project, the following needs are suggested for consideration:

- Added attention to the strengthening of collaborations with other soil management-related CRSPs in Latin America (e.g., the Steep lands Project of Texas A&M University) would seem to be consistent with the strategies of this project;
- Continued emphasis on the tradeoffs of IPM and pesticides would be done most logically through the IPM CRSP, as planned;
- There is a need to focus on the deliverables of the project, especially in the longer term, and in the conceptual development of the delivery format, from the perspective of the intended clients; and,
- Strategies need to be considered for the next generation of the SM CRSP, with an eye to globalization of the Trade Off Model's conceptual framework.

## Project 5

### IMPROVED AGRICULTURAL PRODUCTIVITY THROUGH BIOLOGICAL NITROGEN FIXATION AND LEGUME MANAGEMENT

Principal Investigator: Paul Singleton

## Objectives

The objective of this project is to reduce the dependency of resource-poor farmers on nitrogen fertilizers by increasing farmers' acquisition of organic sources of nitrogen through biological nitrogen fixation (BNF). In the BNF process leguminous crops such as beans, peas, and soybeans capture atmospheric nitrogen and convert it to protein through a symbiosis with a bacterium (*Rhizobium* and *Bradyrhizobium*).

The original proposal had five objectives: 1) Improve legume inoculant performance, 2) facilitate the production of quality inoculant products, 3) increase market awareness of inoculant products, 4) increase legume yield and BNF through crop management, and 5) improve capacity in less developed countries (LDCs) to implement BNF programs. Budget constraints limited project activities to objective 1, with two specific activities: 1) Develop an inexpensive, high-performance liquid inoculant formulation that can be adopted by LDC manufacturers and 2) improve inoculant quality control technology for use in LDC laboratories.

### **Accomplishments**

The project developed an improved liquid inoculant formulation that is a less costly carrier than peat, and supports rhizobial survival during storage and after application to the seed. The project developed six generations of liquid formulations by evaluating 1) additives, 2) strains, and 3) cell physiological conditioning that enhances cell survival. The fifth generation formulation (G5) is being evaluated in a series of field experiments conducted by 27 collaborators in 16 countries. Initial results with G5 are extremely promising for cell survival. Further, the material cost of this formulation is about 40% of high-quality peat carriers, which have to be imported by most LDCs.

Quality control remains a problem with LDC producers. In recognition of this problem, the project has developed and made available to LDC collaborators 1) an agglutination kit, 2) an enzyme immuno-assay kit, and 3) a rapid assay for peat inoculant quality.

### **Assessment**

Considering that this project is partially funded, it is achieving the desired results.

The project has developed a family of liquid formulations that has the potential for significantly reducing the costs of inoculants in LDCs, making it more affordable to smallholder farmers. This, in turn, will raise household income and access to protein through improved performance of BNF technology. The EEP notes that this project would benefit from regular meetings of collaborators to discuss results from each project site and also to share practical experiences. Effective publicity of achievements of the project through web site, flyers, and presentations at professional meetings and symposiums might help to leverage funds from US AID missions and other donors.

### **Recommendations**

- The project must publicize its activities and achievements to all stakeholders including IARCs, and particularly to US AID missions and other donors.
- The project should hold a collaborators' workshop every 2 years to review results and develop work plans.
- Although not part of the original proposal, it is recommended that as more LDCs move toward commercialization of BNF technology there will be a need for laws to protect farmers from unscrupulous producers/dealers. The NiFT AL Center and particularly the PI has considerable experience to help LDCs to draft laws and develop an implementation plan. Future work plans might include this type of activity.

## Project 6

### GENDER AND SOIL FERTILITY IN AFRICA

**Principal Investigator: Christina Gladwin**

#### Objectives

Fertilizer use per hectare and per capita in sub-Saharan Africa is the lowest of all the developing regions of the world. More alarming are the decreasing trends in per capita fertilizer use from 4.6 kg in 1986 to 3.5 kg in 1995. The result is the lowest per capita levels of cereal production of all the developing regions of the world. Food insecurity is therefore a grave concern and serious threat in sub-Saharan Africa, and soil fertility depletion can be considered a major bio-physical cause of food insecurities in Africa.

In sub-Saharan Africa, women on small rain fed farms produce up to 70-80% of the domestic food supply. They also provide about 46% of the agricultural labor. Yet women lack cash or credit to acquire both chemical fertilizers and organic manure. The overall purpose of this project are to analyze the constraints to use of modern inputs by women farmers in sub-Saharan Africa by analyze and monitor following methods that are being tested by IARCs and development organizations in sub-Saharan Africa:

1. Target women farmers with fertilizer vouchers.
2. Target women farmers with small bags of fertilizer in local markets and shops.
3. Target women with micro credit on the Grameen Bank model.
4. Target grants of fertilizer fertilizer safety nets-at women.

5. Help women improve the soil organic matter on their plots via biomass transfers, green legumes, manures, and/or composts.
6. Improve women's access to biological nitrogen fixation, agroforestry innovations (improved fallows, alley cropping, grain legumes).
7. Target combinations of small amounts of the above.
8. Introduce a cash crop into women's subsistence cropping systems.

#### Accomplishments

The project has generated many trip reports, student theses, conference presentations, and research papers, many of which are either reprinted or summarized on their home page: [www.fred.ifas.ufl.edu/CRSP/](http://www.fred.ifas.ufl.edu/CRSP/). These papers and conference presentations were based on fieldwork using ethnographic, socio-economic, politicalscience, geographic, and/or soil-science research methods, and conducted in the following regions:

- Mbale, U ganda-- surveyed 80 households of men, women in male headed households (MHHs), and women in female headed households (FHHs) in a region of little fertilizer use but with projects/experiments in organic matter use, and women's cash crops;
- Kabale, U ganda-- surveyed 40 women farmers in a region of little fertilizer use but where women experiment with organic matter use, credit use, and women's (foodbased) cash crops;

- Central Uganda and southern Ghana- tested soil fertility indices for gender differences;
- Western Kenya-- surveyed 40 women farmers and build decision models of their agroforestry adoption decisions (hedgerow intercropping, improved fallows, and biomass transfers) in collaboration with ICRAF;
- Casamance, Senegal-- used linear programming analysis of households of different stages of the life cycle in two ethnically-different villages, one of which had no fertilizer or organic matter use, no credit, and no cash crops, while the other did;
- Zomba, Malawi-1) surveyed 80 households in a region with some credit, some organic matter use, some agroforestry experiments, and little marketing of small bags of fertilizer; 2) built linear programming models of the farming system simulating introduction of tobacco credit, and maize and fertilizer safety nets to land-poor female headed households; and 3) studied informal safety nets;
- Dowa, Malawi-- surveyed 80 households with women in MHHs and FHHs in a region where the VEZAIHODESA project targeted women farmers with credit and small bags of fertilizer in shops and diffused information about improvements to soil organic matter and agroforestry innovations;
- Eastern Zambia-- conducted two surveys of 120 and 300 households' (FHHs and MHHs), a region where adoption of improved fallow technology is being diffused by ICRAF and the World Vision/ZIAP project; with Gladwin, Peterson

modeled women and men farmers' decisions to adopt improved fallow technologies and identified the main motivations and constraints of adoption;

- Southern Ethiopia, Malawi, and Uganda-- developed methods for translating human nutritional requirements (in terms of energy, protein, and amino acid) for an individual (man, woman, or child) into specific food quantities and land area required for producing that food.

### **Assessment**

Considering the relatively small budget the project has tested all but two of the eight methods to target women farmers. Experiments in fertilizer vouchers and grants to women farmers have not been monitored yet, due to their low frequency of occurrence in sub Saharan Africa at this time. The other six methods have been monitored and evaluated in at least one and usually two or three different locations covering seven different regions, with differing agro-climatic and socioeconomic zones, often using a 'tool-box' of different methodologies. While such a wide variety of activities are commendable, the EEP feels that the number of activities should be minimized and the resources used to convert the findings of studies into policy options.

### **Recommendations**

Based dissemination and review of activities following actions are recommended:

- Evaluate the effectiveness of vouchers and small grants fertilizer program targeted at women farmers, if such an approach is under experimentation.

- Develop policy options based on findings of studies completed.
- The project should collaborate with IARCs working on integrated nutrient management to study the long-term impacts of agro-forestry innovations on farms cultivated by women farmers.
- The project should study the impact of 'off-farm' income of both men and women on the use of fertilizers (organic and inorganic by women. The project should prioritize its findings, particularly with respect to other SM CRSP projects, and explore opportunities to collaborate with them.

## PROGRAM EVALUATIONS

### OVERARCHING OBSERVATIONS

The panel offers the following overarching observations on the SM CRSP. Our observations are categorized into sets of comments, intentionally generalized across the component projects. For observations that are specific to an individual component project please see the project summaries provided above (Project Evaluations).

**Science Quality:** The quality of the science being performed in the SM CRSP is generally good, but is patchy. Some projects are of excellent quality, while others are weak. The reasons for the scientific weaknesses vary from problems within the project itself to complications stemming from the need to work with national programs at different stages of evolution and funding. In the former case there needs to be more attention to monitoring by the ME, and by companion projects to provide peer pressure for science quality improvements. In the case of complications from working with national program some acceptance of the problem seems justified inasmuch as the contact with NARS is likely helping to raise the science quality level of the participant national programs. Other deficiencies in science quality are mentioned in the individual Project Evaluations.

**Relevance:** The SM CRSP is tackling problems and issues relevant to the intended countries. Additionally, the involvement of the SM CRSP in field testing activities and in-country workshops tends to enhance programmatic relevance. The SM CRSP has in place mechanisms for relevance checking. What is emerging is recognition of the need for new mechanisms as the CRSP considers its renewal. Some attention should therefore be given to a refocusing of activities, attention to a global perspective and attention to developing more synergism among component

projects. Some merging of activities or approaches to maintaining programmatic relevance is indicated.

**Responsiveness:** The SM CRSP has been very responsive to recently identified issues and newly emerging opportunities. Adjustments to evolving science and technologies are evident, with some notable variability among component projects (see individual Project Evaluations). Additionally, SM CRSP responsiveness through partners is seen as a strength. The IARCs have been especially helpful in this area.

**Integration:** Intra-CRSP integration is unfortunately quite weak. This is likely a consequence of the program's origin as a portfolio of independently created and competitively selected project activities. This deficiency needs attention by both the ME and the project PIs, if they hope to capitalize on the opportunities for research synergy. Addressing this point will be a challenge, as the panel notes that the excellent extra-CRSP collaborations that each component project has developed (see next item) may well have resulted from freedom to seek meaningful collaborations unencumbered by CRSP expectations. This observation needs careful consideration prior to moving forward with new expectations for intra-CRSP integration.

**Collaborations:** Excellent examples of meaningful collaboration abound for the component SM CRSP projects. Collaborators are very supportive of the SM CRSP, which the panel sees as a definite plus. These collaborations are characteristically based on need, not some artificial prescription. International contacts by individual component projects are good. In those cases where a project was not seeking collaboration it is often the result of prohibitive transactional costs. However, as noted above, the intra-CRSP collaborations are weak. Moreover, there is apparently no formal mechanism for setting up collaborations within the CSRP. This is compounded by the fact that the PIs do not

see a need to collaborate intra-CRSP, under the present conditions and rules.

**Management:** The management of the SM CRSP is viewed as generally good, given the existing constraints. General satisfaction with the ME's hands-off approach to management was expressed to the panel. There have been issues of timeliness of allocations to the subcontracting institutions. But these problems have been mostly traced to the origin of the CRSP funding, not the ME. There have been problem within the ME on partial or failed communications with PIs, especially on matters of budget. These problems point to the need for individualized communications, given the diversity of experiences the PIs have had in dealing with US AID money management procedures. Moreover, there have been calls by some PIs for more budget transparency, and more complete statements of rationale for allocations to the various component projects (see the recommendations section below).

**Funding:** Substantial funding has been made available to the SM CRSP through core funding and through buy-ins to various projects. Additional opportunities exist for supplemental funding, and contacts are being pursued by project leaders. This leveraging activity is to be commended. The strategy of the initial SM CRSP was to admit two projects as second-tier members. Initially, it was reasoned that inasmuch as only four projects could be fully funded, the remaining funds should be given to two highly ranked projects, as partial funding. This created a second class of citizenship in the SM CRSP that has led to some problems. The EEP has no recommendation for resolving the existing tensions that this approach has created, but it suggests that this practice not be used in any SM CRSP renewal. The *sin qua non* of future activities should be full membership for all participants, or no membership.

**Communications:** For the most part communication within the SM CRSP is

good. But as the SM CRSP prepares for the next 5-year cycle, communications should be enhanced. Problems exist with communicating budget decisions, especially to those PIs unfamiliar with US AID financial management procedures. There are also inter-CRSP (e.g., IPM, SANREM) communication opportunities that should be supported. The panel commends the component projects for developing World Wide Web home pages that enhanced communication, both within the CRSP and outside.

**Marketing:** In today's funding environment research projects need to be marketed to sponsors, stakeholders, and intended users if support is to be continued. Outcomes from research and impacts of implementation must be spelled out in easily understood communiques. The SM CRSP needs to address this need through some programmatic mechanism, with a commitment of resources to make it happen. Otherwise, the excellent discoveries and useful products coming from investments in this CRSP will be relatively unknown.

**Planning:** The ME 4as developed an excellent outline for annual work plans by the component projects. The use of a common format allows easy betweenproject comparisons. Helpful reviews by the Technical Committee contribute to keeping the CRSP on track. Planning for the Program's renewal is underway, and quite timely.

**Products:** Several products developed by this CRSP are in hand (see the individual project summaries above). Although some of these products are physical (see the NiffAL project), many will be processes for the synthesis of knowledge. Distribution paths, intellectual property issues and updating requirements will all need to be considered. In most cases this has not yet begun (some exceptions are noted).

**Training:** As a byproduct of the SM CRSP five dozen students have received formal degree training in the United States. In addition, many collaborators have participated in workshops and conferences directly related to the SM CRSP activities. This growing network of soil management scientists will be a lasting legacy of this program, and a valuable resource, should the program be renewed for a second term.

**Potential Impacts:** The panel believes that in most cases the original objectives of the collective projects will be met on time and within budget. The impacts that are likely to come from this CRSP should be substantial, and will be delivered as several product forms. Among these are products, processes and decision tools. But, the extent of that impact will depend on paths yet to be taken, such as the degree of international marketing. How these research outputs will be taken up by others needs to be strategically considered by the CRSP, and strategies carefully planned.

## OVERARCHING RECOMMENDATIONS

The panel offers the following overarching recommendations as a consensus of our best judgements for improving an otherwise excellent CRSP. We admit that our external views may not always be fully informed, and that in too many cases our time may have been so limited that our information base was insufficient. Given those conditions we affirm that the following recommendations are our best judgements for improving the SM CRSP.

### **We recommend:**

- More leadership be provided by the ME on programmatic direction, leading to more intra-CRSP collaboration;
- Greater focus be given to the integration of biophysical with socioeconomic approaches to soil management constraints, including more frequent face-to-face meetings, more discussion and dialogue among component projects, and more attempts at consensus building, perhaps encouraged by set-aside funding from the ME for travel;
- That each SM CRSP project should have a gender analysis component, in recognition of the fact that gender issues in soil management are non-trivial, and important to sponsors as well;
- More openness on SM CRSP budget matters and better communication with PIs on budgetary decisions should occur, preferably as written documents containing the rationale for the decisions, rather than as phone conversations or word-of-mouth;
- More consideration should be given to marketing the collective accomplishments of the SM CRSP to donors, clients, stakeholders and the private sector;
- Greater support should be given by the ME to the PIs for coping with the "pipeline" management process for reallocating funds within the CRSP, including more assistance from the PIs to the ME, such as timely vouchering, with an understanding of federal government fund-management practices;
- Planning begin immediately for the next generation of this CRSP, with consideration for:
  1. Moving to more integrated approaches to soil

management research activities within the CRSP;

2. More focus on specific soil management constraints;
  3. The use of the existing network of collaborators (as stakeholders) to help define the next set of constraints, and plan future collaborative research activities; and,
  4. Different perspectives on the organization of soil management constraints that go beyond the biophysical (e.g., nitrogen) to other dimensions (e.g., limits to adoption)<sup>5</sup>
- Development of an implementation plan for the recommendations provided as a result of this external evaluation, with a timetable for activities and a plan for reporting on progress.

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<sup>5</sup> The panel purposefully did not engage in any discussion of what a new set of constraints might entail. We did however note that the SM CRSP planners should give consideration to the "drivers" that will no doubt affect the ever-changing soil management research "landscape". Important "drivers" are likely to be the dynamics of global trade, the impacts of global climate change (and the attendant politics), urbanization, institutional restructuring (such as the now-initiated CGIAR/IARC process), and the ever-changing science and technology frontiers (including information technologies, social science theory). Special attention should no doubt be given to the driving changes that will be brought about by the advent of the World Wide Web.

## CONCLUSIONS

The SM CRSP is functioning well, and making good progress on its collective objectives. There is a strong consensus within the EEP that the SM CRSP will complete its activities, for the most part, on time and within budget. The resulting products and anticipated impacts will be significant and represent a worthwhile investment for US AID.

We have looked ahead in an attempt to project a next generation of soil management research activities and concluded that the present core of scientists deserves an opportunity to plan its own destiny, and that this be built on the best of past experiences, developed in an integrated approach. This will require of US AID a commitment to honor a proposal for program renewal, under a set of mutually agreed expectations. Among these expectations should be a firm commitment from US AID that a proposal from this coalition will be given direct consideration, in place of another round of competition. In turn, the present SM CRSP should agree to a planning process that will:

- Open the planning and decision making to experts beyond the present membership;
- Allow for appropriate program memberships and the project-appropriate allocation of any future funds; and,
- Permit new approaches to identifying a revised set of soil management constraints.

Finally, concerns have been expressed that more efficiency in the oversight of this CRSP (and others as well) is needed. It seems difficult to justify a management entity rate of 16 % on a \$2.5 million annual grant. The EEP proposes that US AID Washington give consideration to combining

functions across CRSPs, such as having one Board of Directors for all CRSPs, perhaps with one member supported by each active CRSPs. Other cost-saving might be realized through more use of electronic communications (e-mail, chat rooms, and video conferencing).

## **ACKNOWLEDGEMENTS**

The panel appreciates the warm hospitality and cooperation we received from all of the SM CRSP component project scientists and their many collaborators. We especially appreciate the able assistance of Gordon Tsuji in the organization, support, communications, and record-keeping of our many activities. We also appreciate the cooperation of Goro Uehara in the management aspects of this review. Special thanks are extended to Charles Sloger for his able assistance and dedication to this activity.

## Appendix 1

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## LIST OF ABBREVIATIONS

ADSS	Acidity Decision Support System
BNF	Biological Nitrogen Fixation
CID	Consortium for International Development
DSS	Decision Support System
EEP	External Evaluation Panel
FAO	Food and Agriculture Organization
FHH	Female Headed Household
GIS	Geographic Information Systems
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
IARC	International Agricultural Research Centers
IBSRAM	International Board for Soil Research and Management
IFDC	International Fertilizer Development Center
INTDSS	Integrated Nutrient Management Decision Support System
IPM	Integrated Pest Management
LDC	Less Developed Country
ME	Management Entity
MHH	Male Headed Household
NARS	National Agricultural Research Stations
NDSS	Nitrogen Decision Support System
NERA	Northeastern Regional Association of State Agricultural Experiment Station Directors
NGO	Non-Governmental Organization
NifTAL	Nitrogen Fixation by Tropical Agricultural Legumes
NVO	Non-Governmental Voluntary Organization
PDSS	Phosphorous Decision Support System
PI	Principal Investigator
PVO	Private Volunteer Organization
RUSLE/WEPP	Revised Universal Soil Loss Equation/Water Erosion Prediction Project
SANREM	Sustainable Agriculture and Natural Resource Management
SM CRSP	Soil Management Collaborative Research Support Program
USAID	United States Agency <i>for</i> International Development

## ME RESPONSE TO EEP OVERARCHING RECOMMENDATIONS

1. Recommendation: More leadership be provided by the ME on programmatic direction, leading to more intra-CRSP collaboration;

Response: Under normal circumstances, the ME and the agency jointly develop a CRSP program giving the ME an opportunity to develop a close working relationship with the Agency, the Principal Investigators and their host country collaborators. In this instance a new, an admittedly inexperienced ME, was elected by the PIs to lead this CRSP. The EEP's recommendation is well taken and the ME is learning to give the PIs and our collaborators the freedom and direction they need to perform at a high level.

2. Recommendation: Greater focus be given to the integration of biophysical with socioeconomic approaches to soil management constraints, including more frequent face-to-face meetings, more discussion and dialogue among component projects, and more attempts at consensus building, perhaps encouraged by setaside funding from the ME for travel;

Response: This phase of the Soil Management CRSP has allocated a higher fraction of its budget to socioeconomic objectives than in the past, but as the EEP correctly points out, the socioeconomic component resides in two projects and is not seamlessly integrated into all projects. It will not be easy to rectify a deficiency that should have been worked out in the proposal writing stage, but the situation can only improve. The two principal investigators who are responsible for the socioeconomic projects are newcomers to the CRSP and needed time to get to know the other PIs and their projects. They are now in a better position to influence the thinking of the entire CRSP. Integration cannot be forced on unwilling partners, but the opportunity now exists for the PIs to learn from each other as they have always done in the past.

3. Recommendation: That each SM CRSP project should have a gender analysis component, in recognition of the fact that gender issues in soil management are non-trivial, and important to sponsors as well;

Response: Having a project specifically designed to improve the status of women probably called attention to the apparent absence of this important issue in the remaining projects. Several of the projects, in particular the Montana State and North Carolina State University projects, although not claiming to have anything to do with gender, may in the end, do more to empower women than projects that explicitly claim to

do so. Unlike earlier soil management projects that concentrated on increasing crop yields, the new projects focus on enabling technologies that permit users to exercise choice in how one achieves user-specified objectives. While these "decision support tools" are gender neutral, they are effective equalizers that allow all users to find ways to attain personal objectives in their own way.

4. Recommendation: More openness on SM CRSP budget matters and better communication with PIs on budgetary decisions should occur, preferably as written documents containing the rationale for the decisions, rather than as phone conversations or word-of-mouth;

Response: There are two issues here. The first deals with allocation of the annual incremental award and the second is related to administrative costs charged for buy-ins. In both cases, the lack of specific internal management guidelines for this CRSP on budgetary matters not provided in the 1985 CRSP Guidelines resulted in what appeared to be unilateral decisions by the ME.

The SM CRSP received two buy-ins at the time of the EEP review. Based on communications with directors of the Bean-Cowpea and INTSORMIL CRSPs, the ME learned the administrative cost should not exceed 20%. A rate of 16% (similar to the ME's portion of the initial award) was applied to the University of Florida's buy-in of \$200,000 from the Office of Disaster Relief (ODR). For the second, the Board of Directors recommended the ME and Cornell reach a negotiable and mutually agreeable rate. A figure of 7% for the \$IM buy-in for Cornell from the Bangladesh mission was used.

The ME will prepare a handbook or guideline to improve the transparency of administrative actions and policies in concert with the principal investigators.

The second is related to annual allocations of incremental awards. In response to the EEP's recommendation, members of the TC now provide guidance on budget matters associated with annual workplans submitted by each PI. For example, to accommodate a reduced level of funding in PY4, the TC recommended an across the board reduction rather than selective reduction. The principal investigators were apprised of actions taken on budget related issues through the TC and the ME.

5. Recommendation: More consideration should be given to marketing the collective accomplishments of the SM CRSP to donors, clients, stakeholders and the private sector;

Response: Publicizing the accomplishments of the current CRSP will require a different approach from the one taken before. In the past project scientists used journal articles to inform peers of their work. In the current phase, the projects are more product and practice oriented. This allows the scientists not only to publish journal articles, but to distribute tangible products which customers can use. Examples of products and practices generated by this CRSP include: (1) a liquid inoculum containing Rhizobium, especially designed for tropical regions which lack the traditional Rhizobium organic carriers, (2) soil erosion control measures that withstood the damaging forces of Hurricane Mitch, (3) practices for overcoming micronutrient deficiencies and new pathogen in rice soils, (4) a decision support system for diagnosing and prescribing solutions to soil fertility problems and (5) a tradeoff model that helps policy makers choose better environmental and economic decisions. The CRSP now needs to develop a global network to test and promote its products and practices. We will explore developing partnerships with private firms to market our products.

6. Recommendation: Greater support should be given by the ME to the PIs for coping with the "pipeline" management process for reallocating funds within the CRSP, including more assistance from the PIs to the ME, such as timely vouchering, with an understanding of federal government fund-management practices;

Response: Coping with pipeline management is an issue principally resulting from the timeliness (or untimeliness) of the incremental awards from the Agency. Generally, for the Soil Management CRSP, incremental awards have been received 3 to 4 months late. These delays confounds planning of research agendas which result in increased pipeline funds. The principal investigators should be commended for their restraint in expending funds unnecessarily because of administrative delays. An accrual method, if institutionally acceptable to account for committed funds, will allow principal investigators to report correctly uncommitted funds.

7. Recommendation: Planning begin immediately for the next generation of this CRSP, with consideration for:
- Moving to more integrated approaches to soil management research activities within the CRSP;
  - More focus on specific soil management constraints;
  - The use of the existing network of collaborators (as stakeholders) to help define the next set of constraints, and plan future collaborative research activities; and,
  - Different perspectives on the organization of soil management constraints that go beyond the biophysical (e.g., nitrogen) to other dimensions (e.g., limits to adoption)

Response: The result of this effort will be tested when the CRSP makes its grant extension proposal to SPARE in 2001.

**REVIEW PANEL REPORT**  
**PHASE 2 - GRANT EXTENSION**

# PHASE-2 REVIEW PANEL REPORT FOR THE SOIL MANAGEMENT CRSP

E.B. (Ron) Knapp

## *Introduction:*

A review panel was convened by the management entity (ME)<sup>1</sup> of the USAID-supported Soil Management CRSP (SM-CRSP). The role of the Review Panel was to evaluate research proposals received by the ME. Selected proposals would form a portfolio of research which would be presented to the USAID with a request for funding for the period 2002 to 2007.

The Review Panel was established in consultation with current SM-CRSP principal investigators (PIs) and Technical Committee members<sup>2</sup> during a meeting in San Francisco February 25-28, 2000. Members included Gerrit Bartels, E.B. (Ron) Knapp, Tom Walker and Ray Weil. Two of the members of the Panel, Knapp and Walker, also serve as independent members (non-principal investigators) on the Technical Committee of the current phase of the SM-CRSP. Drs. Bartels and Weil had no previous or current formal relationship with the SM-CRSP.

In August 2000, the review Panel received a copy of the request for pre-proposals (RFP) and copies of fifteen pre-proposals for review (appendix 1). This was followed by a formal meeting held on September 8 and 9 in Tacoma, Washington.

Attending the Tacoma meeting were Dr. Charles Sloger, current USAID Program Officer to the SM-CRSP, Drs. Goro Uehera and Gordon Tsuji, Director and Deputy Director of the ME for the SM-CRSP respectively, and the four Phase-2 Review Panel members.

## *Methods and Results:*

The ME and Panel adhered to a number of recommendations made by the External Evaluation Panel (EEP) in their report of December 1999. Specifically, the ME used the existing network of PIs from institutions participating in the current phase of the SMCRSP to help define the next set of constraints and to plan future collaborative research activities. Secondly, the Review Panel emphasized integration among research activities within the CRSP as an important feature for the next five-year SM-CRSP renewal period. Thirdly, The EEP recommended that "the SM-CRSP planners should give consideration to the "drivers" that will no doubt affect the ever-changing soil management research 'landscape'. Important drivers are likely to be the dynamics of global trade, the impacts of global climate change (and the attendant politics), urbanization....."<sup>3</sup> This final point is reflected in the Panel's interest in seeing strong socio-economic support in the portfolio of research projects.

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<sup>1</sup> For the current 1997 -2001 phase, faculty members of the University of Hawaii serve as the Management Entity for the SM-CRSP.

<sup>2</sup> Drs. T. Jot Smyth, Chair (North Carolina State University), John Duxbury (Cornell University), Tom Walker, (CIP), E.B.(Ron) Knapp (CIAT-retired).

<sup>3</sup> External Evaluation Report, Soil Management Collaborative Research Support Program (CRSP), December 1999. Footnote 5, Pg 23.

The Panel evaluated each pre-proposal individually in terms of focus on constraints and opportunities listed in the request for pre-proposals (RFP) as well as congruence and synergism among the pre-proposals. The Panel also relied on the December 1999 external evaluation report of strengths, weaknesses and opportunities of current SM-CRSP projects as an indicator of what could be expected from a renewal phase.

The following research themes became apparent: extension/adoption of soil/commodity nutrient management recommendations based on a mix of proven field methods and unproven computer-based decision aids including GIS; quantitative diagnostic screening techniques for C-sequestration; and *ex-ante* analysis to guide agro-environmental policy.

The Panel decided to hold from consideration the constraint and concomitant opportunity focusing on detailed soil resource mapping using remote sensing. The Panel believes many technical and operational hurdles still must be overcome, and considering requirements placed on the CRSPs, the technology is best left for future considerations. With this one exception, the Panel was satisfied that the fifteen pre-proposals adequately covered the list of constraints and objectives.

The Panel assigned each pre-proposal to one of the dominant research themes described above. Each pre-proposal was then evaluated according to the four criteria listed in the RFP. Four unique, identifiable outputs emerged, all with high expectations for measurable results. They were i) the software applications referred to as "NuMaSS"; ii) the "Trade-offs Model"; iii) methods for screening agro-pastoral systems for C-sequestration; and iv) review and evaluation of adoption, diffusion and economic impact of productivity enhancing technologies in the rice-wheat agro-ecosystem. The Panel selected eight of the fifteen pre-proposals, from five participating institutions. The eight pre-proposals met the highest scientific and technical merit and potential for measurable impact and transferability.

The Panel has recommended the ME consider a lean portfolio of four projects addressing the four identifiable outputs listed above. To accomplish this, the Panel decided to strongly encourage PIs of selected pre-proposals, addressing the same theme, work as a team and prepare a single, collaborative project. For example, the Panel found significant strengths and congruence in three pre-proposals titled "*Assessing Trade-offs Among Soil Management Technologies*", "*Improved Nutrient Management for Food Security and Stability in Sub-saharan Africa*", and "*Development of Methodologies to Assess Carbon Sequestration in Soils*". The Panel agreed on a recommendation that the three proposals be merged into one collaborative proposal. This was also true for three proposals addressing nutrient management.

To simplify organization of the process, Ron Knapp accepted responsibility for summarizing the results and recommendations of the Tacoma meeting. Letters were drafted, for all PIs (responding to all pre-proposals) explaining the Panel's recommendations and calling for full proposals based on the eight selected by the Panel. Among recommendations made by the Panel were budget targets based on information supplied by the USAID Program Officer. Draft letters were circulated to all members of the Panel for review and comment. All panel members made recommendations and several edits were made. Final letters were sent on September 15, 2000 to all PIs, with copies to the ME, SM-CRSP Board Chairman, EEP Chairman, USAID Program Officer and Panel members (Appendix 2). The PIs were requested to submit their full proposals by January 31, 2001 so the Panel could review them and make final recommendations by February 2001.

Between October and February, a significant amount of email correspondence was shared among PIs preparing full proposals, the ME, the USAID Program Officer and Panel members asking for clarifications, interpretations, guidance and inspiration most notably on positions and mechanisms for collaboration.

Full proposals were received on time by the ME and reviewed by the Panel in preparation for a meeting held during February 16-17 in Hilo, Hawaii. The Panel received five full proposals addressing the four research themes due to the fact there were two proposals addressing the Nutrient Management Support System (NuMaSS) theme. Attending the Hilo meeting were ME directors Uehara and Tsuji, USAID Program Officer Sloger and Panel members Bartels, Knapp and Walker. Dr. Ray Weil could not attend but sent written comments on all proposals.

After lengthy discussion, the Panel arrived at a number of recommendations. These ranged from a recommendation for a refocusing of the NuMaSS proposal submitted by NCSU to improve congruence with the second NuMaSS proposal, to restatement of budget guidelines for proposals outside initially suggested targets. The Panel also called upon all PIs for help in articulating linkages *among* the portfolio of projects. This was based on information supplied by the ME and USAID Program Officer to the effect that, unlike in the past, MEs of the CRSPs would present their portfolio of projects for review by the Strategic Partnership for Agricultural Research and Education (SPARE), a subcommittee of BIF AD. One function a SPARE is to review proposals for renewal submitted by each of the nine CRSPs. In order to facilitate the review by SPARE, the Panel asked each of the principal investigators to review the other proposals in the Phase 2 SM-CRSP portfolio and to edit their respective proposals to highlight foreseen and potential across-project linkages, as well as other clarifications they chose to address. The proposals were made accessible on a secure internet site on February 28 (<http://agrss.sherman.hawaii.edu/sm-crsp/rp2545>). Drafting of letters to the PIs was initiated by Bartels, Knapp and Walker at the Hilo meeting. As before, Knapp emailed final drafts to Panel members. Comments were received from all Panel members, and letters were edited and sent on February 26 to PIs, with copies to the Chairmen of the SM-CRSP Board of Directors and EEP, Director of the ME, USAID Program Officer and Panel members.

By April 26, PIs resubmitted proposals with "final edits". These were immediately posted on the secure internet site by the ME with a request for assessments from the Review Panel.

**Appendix 1. PRE-PROPOSALS for Phase 2 of the SM CRSP**

Principal Investigator: Anthony S.R. Juo  
Institution: Texas A & M University  
Project Title: "Sustainable Soil Management for Densely Populated Tropical Steeplands"

Principal Investigator: T. Jot Smyth  
Institution: North Carolina State University  
Project Title: "Supporting Adoption of the Nutrient Management Support System (NuMaSS)"

Principal Investigator: T. Jot Smyth  
Institution: North Carolina State University  
Project Title: "Development of a Potassium Component for the Nutrient Support System Software"

Principal Investigator: Paul Singleton  
Institution: NifTAL Center  
Project Title: "Carbon Sequestration & Nutrient in W. Africa: Assessing Biophysical & Social-Economic Potentials"

Principal Investigator: Paul Singleton  
Institution: NifTAL Center  
Project Title: "Soil Management Information & Resource Center: *Information dissemination, training & technical assistance to facilitate adoption of soil management technology*"

Principal Investigator: Dr. Russell Yost  
Institution: University of Hawaii  
Project Title: "Managing Soil Nutrient Supply for Increased Food Security, Income, & Improved Environmental Quality in SE Asia"

Principal Investigator: Dr. Russell Yost  
Institution: University of Hawaii  
Project Title: "Improved Nutrient Management for Food Security & Stability in Sub-saharan Africa"

Principal Investigators: John M. Duxbury  
Institution: Cornell University  
Project Title: "Enhancing Technology Adoption for the Rice-Wheat Cropping System of the Indo-Gangetic Plants"

Principal Investigator: John M. Duxbury  
Institution: Cornell University  
Project Title: "Characterization & Mapping of Soils & Crop Conditions in South Asia by Remote Sensing"

Principal Investigator: John M. Duxbury  
Institution: Cornell University  
Project Title: "Development of Methodologies to Assess Carbon Sequestration in Soil"

Principal Investigator: P.K. Nair  
Institution: University of Florida  
Project Title: "Practical Methods of Measuring Soil Carbon in the Tropics: Can Farmers' Perception of Soil Quality be an Indicator of Measured Parameters"

Principal Investigator: Christina H. Gladwin  
Institution: University of Florida  
Project Title: "Impacts & Response to Soil Fertility Decline in Sum-Saharan Africa"

Principal Investigator: J.W. Jones  
Institution: University of Florida  
Project Title: "Assessing Tradeoffs Among Soil Management Technologies: Enhanced Systems for Use at Farm & Policy Levels"

Principal Investigator: John Antle  
Institution: Montana State University  
Project Title: "The Tradeoff Analysis Project Phase 2: Scaling Up & Technology Transfer to Address SM-CRSP Constraints & Objectives"

Principal Investigator: John Antle  
Institution: Montana State University  
Project Title: "Methods for Assessing & Scaling Up Participatory Research Experiences in Ecuador, Peru, & Bolivia"

## **Appendix 2.**

### ***Chair, Board of Directors***

Dr. Richard Guthrie  
Associate Dean  
College of Agriculture  
107 Comer Hall  
Auburn University  
Auburn, Alabama 36849-5401

### ***Chair, External Evaluation Panel***

Dr. David R. MacKenzie, Chair External Evaluation Panel, SM-CRSP NERA  
4321 Hartwick Rd, Suite 120 University of Maryland  
College Park, MD 20740-3210

### ***USAID Program Officer***

Charles Sloger  
SM CRSP Program Officer  
U.S. Agency for International Development G/EGAD/ AFS, RRB, Suite 2.11-094 Washington,  
DC 20523

### ***Director, Management Entity***

Dr. Goro Uehara  
Director, SM CRSPIME  
University of Hawaii at Manoa  
Dept. of Tropical Plant and Soil Sciences  
1955 East West Rd  
Honolulu, Hawaii 96822

<b>List of Pre-proposals received</b>				
<b>Principal Investigator</b>	<b>Title</b>	<b>Institution</b>	<b>Cumulative Budget (5yr)</b>	<b>Constraints/ Objectives</b>
John Duxbury and Julie Lauren	Development of Methodologies to Assess Carbon Sequestration in Soils	Cornell University	1,046,174	/7
Stephen De Gloria and John Duxbury	Characterization and Mapping of Soils and Crop Conditions in South Asia by Remote Sensing	Cornell University	1,049,000	/8
John Duxbury and Julie Lauren	Enhancing Technology Adoption for the Rice-Wheat Cropping System of the Indo-Gangetic Plains	Cornell University	2,011,500	/1,2,3,4,5,6
Christina Gladwin	Impacts and Response to Soil Fertility Decline in Sub-Saharan Africa	University of Florida	1,870,153	A,B,C,D,E,F
James W. Jones	Assessing Tradeoffs Among Soil Management Technologies: Enhanced Systems for Use at Farm and Policy Levels	University of Florida	1,493,050	E,F,G/4,5,6, 7
P. K. Nair	Practical Methods of Measuring Soil Carbon in the Tropics: Can Farmers' Perception of Soil Quality be an Indicator of Measured Parameters	University of Florida	1,566,282	G/7
John Antle	The Tradeoff Analysis Project Phase 2: Scaling Up and Technology Transfer to Address SM CRSP Constraints and Objectives	Montana State University	1,808,273	C,D,E,F /3,4,5,6

John Antle	Methods for Assessing and Scaling Up Participatory Research Experiences in Ecuador, Peru, and Bolivia	Montana State University	1,865,813	A,B,C,D,E,F,G
Paul Singleton	Soil Management Information and Resource Center: Information Dissemination, Training, and Technical Assistance to Facilitate Adoption of Soil Management Technology	NiTAL Center, University of Hawaii	1,947,539	E/5
Paul Singleton	Carbon Sequestration and Nutrient Management in W. Africa: Assessing Biophysical and Socio-Economic Potentials	NiTAL Center, University of Hawaii	774,580	D/4,6
T. Jot Smyth	Supporting Adoption of the Nutrient Management Support System (NuMaSS) Software	North Carolina State University	1,969,200	A,B,C,D,F
T. Jot Smyth	Development of a Potassium Component for the Nutrient Management Support System Software.	North Carolina State University	1,669,682	A,B,C,D,F
Anthony Juo	Sustainable Soil Management for Densely Populated Tropical Steeplands	Texas A&M University	1,997,770	
Russell Yost	Managing Soil Nutrient Supply for Increased Food Security, Income, and Improved Environmental Quality in SE Asia	University of Hawaii	2,000,000	A,B,C,E/2,3,4,5
Russell Yost	Improved Nutrient Management for Food Security and Stability in Sub-saharan Africa	University of Hawaii	2,000,000	A,B,C,E/2,3,4,5,7

**ANNEX**

**RFP FOR PRE-PROPOSALS**

**RFP FOR PROPOSALS**

## **REQUEST FOR PRE-PROPOSALS FOR THE SOIL MANAGEMENT COLLABORATIVE RESEARCH SUPPORT PROGRAM**

This request for pre-proposals provides the direction for the next phase of the Soil Management Collaborative Research Support Program (SM CRSP). The direction of the second phase will be characterized by emphasis on adoption of existing technologies by farm households and development of new tools for measuring carbon sequestration in soils and monitoring global soil resource inventories. This direction supports USAID's goal of "Encouraging broad-based economic growth and agricultural development" and the strategic objective (SO) of "Improved food availability, economic growth and conservation of natural resources through agricultural development" of the Center for Economic Growth and Agricultural Development, Bureau for Global Programs, Field Support and Research.

### **CONSTRAINTS:**

In order to support USAID's goal and objectives, the SM CRSP will focus its efforts on six constraints that block adoption of soil management practices and two additional opportunities which have emerged, respectively from the Kyoto Protocol on climate change and NASA's new initiative to measure and monitor soils from earth orbiting satellites. The constraints on adoption are considered critical because adoption is necessary to bring about needed change. The aim is to foster adoption that will enable customers to exercise choice in the changes that occur. In the area of new opportunities, climate change, carbon sequestration and carbon credit present new income generation opportunities for farmers, and earth orbiting satellites offer unprecedented speed and resolution for gathering geo-referenced soil information for real time decision making.

Proposals based on constraints alone can result in a Portfolio of disparate projects that in the end may not integrate into a coherent program. The External Evaluation Panel report recommended that proposals prepared independently on a competitive basis may have contributed to less than optimal integration in the first phase. To prevent a repetition of this problem, this request for proposals require all proposed projects to plan activities that produce outputs and results based on a common set of CRSP objectives. Each objective is linked to a specific constraint. A more complete description of the six constraints and two opportunities follows along with their corresponding research objectives.

a) Availability and accessibility of information to support household decision making and adoption of sustainable production practices.

Remedies to cure soil management problems abound but can be prescribed only after a proper diagnosis of a problem has been performed. A proper diagnosis requires information about the chemical, physical, and biological condition of the soil, its agro-climatic setting, its intended use, and the socioeconomic conditions under which the household and community operates. It is difficult enough to diagnose the problem, but to cure it; one must still match the biophysical requirements of the technology to the socioeconomic characteristics of the household. On the one hand, extension agents and households do not have access to knowledge and information soil scientists use to diagnose and prescribed remedies for soil management problems, and on the other, soil experts are not in a position to fully appreciate the socioeconomic constraints under which households operate. This situation has led to the development and application of participatory approaches to technology adoption in which members of households, extension agents and researchers work together to find household-acceptable solutions to soil management problems. The unanswered question for the participatory method is the issue of scaling up from the few households to the hundreds and thousands of households which will never have the opportunity to be involved in participatory soil management technology testing and adoption. The 8M CRSP is seeking pre-proposals that offer methodologies that enable lessons learned from successful cases of site and situation specific technology adoption to be used to identify other sites and situation where the same technology is likely to be adopted. By lessons learn, we mean biophysical and socioeconomic conditions that are necessary for adoption of a particular technology (e.g., new crop, product or practice) to occur.

b) Market constraints to farm profitability and to adoption of inputs and improved soil management practices.

For farmers to adopt new inputs and improved soil management practices, these inputs and practices must be profitable or otherwise enhance the farm household's living conditions. Farm households and agronomists often do not see eye to eye because agronomists focus on increasing yields, whereas, households operate to increase family income. Agronomists assume increased yields will lead to increased income but this focus on yields ignores the key economic factors that determine farm profitability and family income from farming, namely prices received for farm products and the cost of inputs that enhance productivity. To enhance the adoption of improved practices, researchers must identify key constraints to farm profitability. These constraints may involve lack of adequate infrastructure investments, institutional constraints on

marketing farm products, lack of competition in product and input markets, social factors limiting availability of farm inputs, etc.

c) Human and institutional factors that block technology adoption.

Most resource-poor farm households are risk averse but are compelled to gamble with nature. Each year, they prepare and seed their fields with the expectation that conditions will be right to produce an adequate harvest. Aversion to risk stems from the fact that conditions vary from year to year resulting in rich harvests in some years and meager ones in others. However, it is the meager years that drive households to design farming strategies. Households tend not to choose practices that promise high yields in the average year but select strategies that produce low but dependable yields in the worst years. Farmers in remote rural areas with limited markets for their products also often face a high degree of price risk, as market prices are affected dramatically by weather, pests, and other natural and human-induced market disruptions. Technology adoption will be accelerated if researchers can create products and practices that improve the farmer's ability to manage production and price risk.

Methodologies that can bring immediate relief to low income households cultivating marginal lands, and that can be adopted readily on a large scale are urgently needed.

d) Availability and accessibility of information to support public policies that encourage adoption of sustainable production practices

A great deal of experience has shown that farmers-particularly those in economically and environmentally marginal areas-rarely have adequate incentives to adopt management practices that lead to the long-term conservation of agricultural resources. Therefore, appropriate public policies are needed to encourage farmers to adopt and use sustainable practices. In some cases, win-win situations may exist in which practices that increase farm income are also good for the environment. In these situations, the principal constraint to adoption is lack of information (see constraint a). However, in most cases there are unavoidable tradeoffs between practices that increase farmers' incomes in the short-term and the impact of these practices on the long-term conservation of the agricultural resource base. To design policies that balance these competing short-term and long-term needs of farmers and the rural population, information about short-term versus long-term tradeoffs are needed by farmers, policy makers, and the general public. The SM CRSP is seeking methods that will provide this type of information in a form that farmers, policy makers, and the general public can use to design appropriate policies.

e) Ineffective transfer of soil management technologies from research centers to decision makers at the farm and policy levels

There are three ways to transfer soil management technologies. The first is by trial and error. This method is too slow, costly and unreliable. The second method is by analogy. This method is based on the assumption that technologies tend to succeed in locations where the biophysical and socioeconomic conditions are similar (analogous) to those where the technologies were found to be successful. The second method is superior to the first, but requires knowledge of the spatial distribution of biophysical and socioeconomic conditions where the technology is to be transferred. The third method, like the second, requires knowledge of the spatial distribution of bio-physical conditions but depends on computer simulation of technology performance at any location (not just analogous sites) and offers users technology options from which to choose. By enabling potential technology users to exercise choice, users are able to bring to bear all the constraints they face, their biases, preferences and idiosyncrasies into the decision making process. There is a need to extend the second and third transfer methods to soils management technology.

f) Reaching decision makers and integrating decision making at different levels in the agroecosystems hierarchy

Improvements in agro-systems performance require policy adjustments at the national level and adoption of new practices at the household level. Researchers who work on policy often use different terms and languages from those who specialize in agricultural practices causing both groups to talk past each other. In addition, information needed by policy makers to protect the natural resource base of a country may be different from the information required by household members to protect their farm from soil erosion. There is also a need to bridge the biophysical-socioeconomic divide that exists among researchers at all levels in the agroecosystem. Because of the interdependency of the components operating within the agroecosystem, an integrated, interdisciplinary, systems approach is necessary to ensure effective utilization of soil management knowledge.

g) Lack of standard procedures to measure gains and losses of carbon sequestered as soil organic matter.

Increasing soil organic matter can increase water-holding capacity, increase nitrogen reserves, increase nutrient retention capacity, detoxify aluminum in acid soils, and increase phosphorus and trace element availability. A well-fertilized and watered field can be intensively cultivated without loss of soil organic matter under no-till agriculture, and can even gain carbon if the soil organic matter content is low. How will credit for soil carbon sequestration affect soil management in the future? We need to develop reliable, quantitative methods to measure gains and losses of carbon in spatially variable fields so that when carbon credit becomes reality, an acceptable method for measuring changes in soil carbon will be available.

h) High cost of making soil surveys.

Soil scientists are trained to predict how a particular soil in a given area will behave and perform under different management scenarios. But they can do so only if there is a soil survey of the area in question. In many areas of the world, particularly in the developing countries, soil surveys are either non-existent or lack sufficient detail to be useful. Most countries lack the resources to produce soil surveys by traditional methods. In December of last year, the US and a number of collaborating countries launched the first of more than two dozen Earth Observing satellites that measure among other features, soil and vegetation while orbiting the earth 16 times a day. There is a need to learn to interpret and use satellite and other remotely sensed data to produce low-cost, high-resolution soil surveys for technology transfer and land-use planning.

**OBJECTIVES:**

Given the six constraints and two opportunities, objectives to accomplish tasks related to each follows:

1. Develop methodologies to scale up technology adoption from participatory scales to national and regional scales.
2. Develop methodologies that enhance adoption of improved soil management practices in the face of market constraints to farm profitability and affordability of farm inputs.

3. Develop methodologies that enable households and institutions to assess and anticipate consequences of technology adoption.
4. Develop methodologies that provide farmers, government agencies and the general public with information needed to design policies that encourage the adoption of production practices that are compatible with the long-term conservation of agricultural resources.
5. Accelerate technology transfer by applying existing methods to soil management products and practices.
6. Apply multidisciplinary methodology to facilitate decision making at different levels in the agroecosystem.
7. Develop practical methods to measure gains and losses of soil organic carbon over time in spatially variable soils.
8. Develop rapid, cost-effective methods to produce high resolution soil resource inventories from satellite and other remotely sensed data.

### **PROGRAM GOAL**

Although the constraints and objectives for the second phase are new, the SM CRSP's goal to "enable people to attain food security without compromising the sustainability of the agro-environment" remains unchanged.

### **PRE-PROPOSAL FORMAT:**

A pre-proposal may contain one or more objectives. A participating institution may submit up to 4 pre-proposals. Pre-proposals from the same institution should cover different objectives.

Pre-proposals submitted to the Management Entity of the Soil Management CRSP should be no more than 5 single-spaced pages (excluding institutional arrangements, literature citation, and budget) printed in 12-point type. It should contain the following information:

- Identification of constraint(s)/objective(s).
- Problem statement
- Project strategy and a generalized plan of work Product(s) to be delivered
- Anticipated result(s) and impact
- Line item budget of direct and indirect costs and cost-sharing (a minimum of 25%). The total budget of the pre-proposal should not exceed \$400,000 per year or \$2,000,000 for 5 years. A line item budget for each of the 5 years should list both direct and indirect costs. Cost-sharing is required at a minimum of 25% of the total budget less exemptions as indicated in the CRSP Guidelines (1975).

Pre-proposals must be postmarked by July 14, 2000. Send six hard-copies and a diskette using either WordPerfect 8 or MS-Word 97 for Windows to the following address:

Management Entity,  
 Soil Management CRSP  
 Department of Tropical Plant and Soil Sciences College of Tropical Agriculture and Human  
 Resources University of Hawaii at Manoa  
 1955 East West Road, Ag Sci 205  
 Honolulu, Hawaii 96822

### **EVALUATION CRITERIA**

Pre-proposals will be based on the following criteria:

- Scientific and technical merit (20%)
- Cost-effectiveness (20%)
- Transferability to other location (20%)
- Likelihood of producing significant and measurable impact (40%)

In the event the review panel finds submissions to fall short of covering the constraints and objectives outlined above, a second round of requests for pre-proposals will be solicited from all eligible institutions.

**SCHEDULE:**

In order to meet USAID's deadline for renewal, the following schedule of events will be followed:

<u>Events</u>	<u>Date</u>
Request for pre-proposals announced	May 2000
Pre-proposals received	July 2000
Call for external pre-proposals if constraints not fully covered by submissions from participating institutions	Aug 2000
External pre-proposals received	Oct 2000
Request for full proposals	Nov 2000
Full proposals received and rated	Feb 2000
Technical Committee assists ME to finalize renewal proposal to USAID	Apr 2001
Renewal proposal submitted to USAID	May 2001
Renewal proposal received by SPARE	Aug 2001
Phase II begins	Feb 2002

**REQUEST FOR PROPOSALS  
FOR THE  
SOIL MANAGEMENT COLLABORATIVE RESEARCH SUPPORT PROGRAM  
2002 to 2007**

**BACKGROUND**

The Management Entity received 15 pre-proposals in response to a request for preproposals from six U.S. universities participating in the current phase of the Soil Management CRSP. Of the 15, an external review panel recommended inviting eight to participate in preparing full proposals. The eight represented 5 institutions. The second phase of the SM CRSP will focus on six constraints that block adoption of soil management practices and one opportunity that emerged from the Kyoto Protocol on climate change.

**PROCESS AND ELIGIBILITY**

This request for proposals provides the direction for the next phase of the Soil Management Collaborative Research Support Program (SM CRSP). Proposals should be prepared for a five-year grant period beginning in early 2002 and must be received by January 31, 2001. Activities of the Soil Management CRSP will be funded by the U.S. Agency for International Development and the participating U.S. universities through cost-sharing.

**USAID GOAL AND STRATEGIC OBJECTIVE**

The first goal of USAID's seven goal areas is stated as "broad-based economic growth and agricultural development achieved". Experience has demonstrated that broad-based economic growth is required for poverty reduction. In the poorest countries, agricultural development is critical for initiating and sustaining broad-based economic growth. Success in reducing global poverty, therefore, depends on economic growth and agricultural development.

The direction of the second phase will be characterized by emphasis on adoption of existing technologies by farm households and development of new tools for measuring carbon sequestration in soils.

This direction supports USAID's goal of encouraging broad-based economic growth and agricultural development and the strategic objective (SO) of "Improved food availability, economic growth and conservation of natural resources through agricultural development" of the Center for Economic Growth and Agricultural Development, Bureau for Global Programs, Field Support and Research.

## CONSTRAINTS AND OPPORTUNITY:

In order to support USAID's goal and objectives, the SM CRSP will focus its efforts on six constraints that block adoption of soil management practices and a new opportunity on carbon sequestration which has emerged from the Kyoto Protocol and United Nations Convention on Climate Change. The constraints on adoption are considered critical because adoption is necessary to bring about needed change. The aim is to foster adoption that will enable customers to exercise choice in the changes they wish to bring about.

The new initiative on carbon anticipates the opportunity of farm households to receive payment from greenhouse gas emitting industries to sequester carbon as soil organic matter. If payment for increasing soil organic matter becomes reality, the benefits to farm households from improved land quality and increased farm productivity will far outweigh the public good derived from removing CO<sub>2</sub> from the atmosphere.

The External Evaluation Panel noted that proposals prepared independently on a competitive basis may have contributed to less than optimal integration in the first phase. To prevent a repetition of this problem, this request for proposals require all proposed projects to plan activities that produce outputs and results based on a common set of CRSP objectives. Each objective is linked to a specific constraint. Descriptions of the six constraints and one opportunity along with their corresponding research objectives are given below.

### a) Availability and accessibility of information to support household decision making and adoption of sustainable production practices.

Remedies to cure soil management problems abound but can be prescribed only after a proper diagnosis of a problem has been performed. A proper diagnosis requires information about the chemical, physical, and biological condition of the soil, its agroclimatic setting, its intended use, and the socioeconomic conditions under which the household and community operates. It is difficult enough to diagnose the problem, but to cure it; one must still match the biophysical requirements of the technology to the socioeconomic characteristics of the household. On the one hand, extension agents and households do not have access to knowledge and information soil scientists use to diagnose and prescribed remedies for soil management problems, and on the other, soil experts are not in a position to fully appreciate the socioeconomic constraints under which households operate. This situation has led to the development and application of participatory approaches to technology adoption in which members of households, extension agents and researchers work together to find household-acceptable solutions to soil

management problems. The unanswered question for the participatory method is the issue of scaling up from the few households to the hundreds and thousands of households which will never have the opportunity to be involved in participatory soil management technology testing and adoption. The SM CRSP is seeking pre-proposals that offer methodologies that enable lessons learned from successful cases of site and situation specific technology adoption to be used to identify other sites and situation where the same technology is likely to be adopted. By lessons learn, we mean biophysical and socioeconomic conditions that are necessary for adoption of a particular technology (e.g., new crop, product or practice) to occur.

b) Market constraints to farm profitability and to adoption of inputs and improved soil management practices.

For farmers to adopt new inputs and improved soil management practices, these inputs and practices must be profitable or otherwise enhance the farm household's living conditions. Farm households and agronomists often do not see eye to eye because agronomists focus on increasing yields, whereas, households operate to increase family income. Agronomists assume increased yields will lead to increased income but this focus on yields ignores the key economic factors that determine farm profitability and family income from farming, namely prices received for farm products and the cost of inputs that enhance productivity. To enhance the adoption of improved practices, researchers must identify key constraints to farm profitability. These constraints may involve lack of adequate infrastructure investments, institutional constraints on marketing farm products, lack of competition in product and input markets, social factors limiting availability of farm inputs, etc.

c) Human and institutional factors that block technology adoption.

Most resource-poor farm households are risk averse but are compelled to gamble with nature. Each year, they prepare and seed their fields with the expectation that conditions will be right to produce an adequate harvest. Aversion to risk stems from the fact that conditions vary from year to year resulting in rich harvests in some years and meager ones in others. However, it is the meager years that drive households to design farming strategies. Households tend not to choose practices that promise high yields in the average year but select strategies that produce low but dependable yields in the worst years. Farmers in remote rural areas with limited markets for their products also often face a high degree of price risk, as market prices are affected

dramatically by weather, pests, and other natural and human-induced market disruptions. Technology adoption will be accelerated if researchers can create products and practices that improve the farmer's ability to manage production and price risk.

Methodologies that can bring immediate relief to low income households cultivating marginal lands, and that can be adopted readily on a large scale are urgently needed.

d) Availability and accessibility of information to support public policies that encourage adoption of sustainable production practices

A great deal of experience has shown that farmers particularly those in economically and environmentally marginal areas rarely have adequate incentives to adopt management practices that lead to the long-term conservation of agricultural resources.

Therefore, appropriate public policies are needed to encourage farmers to adopt and use sustainable practices. In some cases, win-win situations may exist in which practices that increase farm income are also good for the environment. In these situations, the principal constraint to adoption is lack of information (see constraint a). However, in most cases there are unavoidable tradeoffs between practices that increase farmers' incomes in the short-term and the impact of these practices on the long-term conservation of the agricultural resource base. To design policies that balance these competing short-term and long-term needs of farmers and the rural population, information about short-term versus long-term tradeoffs are needed by farmers, policy makers, and the general public. The SM CRSP is seeking methods that will provide this type of information in a form that farmers, policy makers, and the general public can use to design appropriate policies.

e) Ineffective transfer of soil management technologies from research centers to decision makers at the farm and policy levels

There are three ways to transfer soil management technologies. The first is by trial and error. This method is too slow, costly and unreliable. The second method is by analogy. This method is based on the assumption that technologies tend to succeed in locations where the biophysical and socioeconomic conditions are similar (analogous) to those where the technologies were found to be successful. The second method is superior to the first, but requires knowledge of the spatial distribution of biophysical and socioeconomic conditions where the technology is to be

transferred. The third method, like the second, requires knowledge of the spatial distribution of bio-physical conditions but depends on computer simulation of technology performance at any location (not just analogous sites) and offers users technology options from which to choose. By enabling potential technology users to exercise choice, users are able to bring to bear all the constraints they face, their biases, preferences and idiosyncrasies into the decision making process. There is a need to extend the second and third transfer methods to soils management technology.

f) Reaching decision makers and integrating decision making at different levels in the agroecosystems hierarchy

Improvements in agro-systems performance require policy adjustments at the national level and adoption of new practices at the household level. Researchers who work on policy often use different terms and languages from those who specialize in agricultural practices causing both groups to talk past each other. In addition, information needed by policy makers to protect the natural resource base of a country may be different from the information required by household members to protect their farm from soil erosion. There is also a need to bridge the biophysical-socioeconomic divide that exists among researchers at all levels in the agroecosystem. Because of the interdependency of the components operating within the agroecosystem, an integrated, interdisciplinary, systems approach is necessary to ensure effective utilization of soil management knowledge.

g) Lack of standard procedures to measure gains and losses of carbon sequestered as soil organic matter.

Increasing soil organic matter can increase water-holding capacity, increase nitrogen reserves, increase nutrient retention capacity, detoxify aluminum in acid soils, and increase phosphorus and trace element availability. A well- fertilized and watered field can be intensively cultivated without loss of soil organic matter under no-till agriculture, and can even gain carbon if the soil organic matter content is low. How will credit for soil carbon sequestration affect soil management in the future? We need to develop reliable, quantitative methods to measure gains and losses of carbon in spatially variable fields so that when carbon credit becomes reality, an acceptable method for measuring changes in soil carbon will be available.

## PROGRAM OBJECTIVES:

Given the six constraints and one opportunity, objectives to accomplish tasks related to each follows:

1. Develop methodologies to scale up technology adoption from participatory scales to national and regional scales.
2. Develop methodologies that enhance adoption of improved soil management practices in the face of market constraints to farm profitability and afford ability of farm inputs.
3. Develop methodologies that enable households and institutions to assess and anticipate consequences of technology adoption.
4. Develop methodologies that provide farmers, government agencies and the general public with information needed to design policies that encourage the adoption of production practices that are compatible with the long-term conservation of agricultural resources.
5. Accelerate technology transfer by applying existing methods to soil management products and practices.
6. Apply multidisciplinary methodology to facilitate decision making at different levels in the agroecosystem.
7. Develop practical methods to measure gains and losses of soil organic carbon over time in spatially variable soils.

## PROGRAM GOAL

Although the constraints and objectives for the second phase are new, the SM CRSP's goal to "enable people to attain food security without compromising the sustainability of the agro-environment" remains unchanged.

## PROPOSAL GUIDELINES

Project proposals should reflect a multidisciplinary, systems approach that comprehensively addresses one or more constraints. The Review Panel determined that projects involving multi-institutional partners jointly develop a single proposal in which contributions from each partner are defined in the project work plans. Proposals must describe products and outputs of existing technologies or previously developed technologies by current investigators in the first phase for adoption by an identified target or user group.

## PROPOSAL FORMAT:

Proposals submitted to the Management Entity of the Soil Management CRSP should be no more than 20 single-spaced pages (excluding institutional arrangements, literature citation, and budget) printed in 12-point type. It should contain the following information:

- Transmittal Letter
  - The following information must be included
    - Legal name and address of the institution and specific division or campus identification;
    - Signature of an authorized institutional representative.
  
- Title Page
  - Project title
  - Principal Investigator(s) and institutional affiliation
  - List mailing address, street address for courier delivery, email address, telephone and fax numbers for each investigator.
  - Dollar amount requested.
  
- Problem Statement
  - Identification of constraint(s) to be addressed;
  - Identification of existing or previously developed technologies;
  - Justification in terms of the goal and the strategic objective of USAID and AFS;
  - Other information applicant deems relevant

- Project Objectives
  - State specific objectives and constraints to be addressed .Identify outputs and/or products for technology adoption
  - Project Strategy and Approach (overall scope of work for the grant period)
  - Target Groups (end users)
  - Target geographic location(s)
  - Collaborative Relationships
    - U.S. universities;
    - National Agricultural Research Systems (NARS);
    - International Agricultural Research Centers (IARC), including CGIAR ;
    - Private voluntary organizations (PVO);
    - Non-government organization (NGO);
    - Private organization or enterprises
    - Other CRSP and InterCRSP projects;
    - Others

- Annual Work Plans

A work plan of activities and tasks must be prepared for each objective/constraint. A work plan is a chronological and sequential list of statements identifying activities and/or tasks to be carried out to achieve a stated objective. These statements can be "bullet statements" and must include a description of the activity with an estimate of the start and completion dates and must identify the responsible investigator. These statements should be listed in the sequence in which activities will be conducted by project years over the life of the grant.

Activities and/or tasks are the essential steps that lead to achievement of a milestone event, product or output under each objective/constraint. A chronological listing of descriptive narrative statements of major activities to be undertaken for each objective will comprise the annual work plan for each objective/constraint.

Work plans must list specific tasks/activities to be carried out, when they will be carried out, who's responsible to oversee the conduct and completion of these tasks, and what will it cost to achieve stated objectives, or

- what key activities are to be carried out;
- when will key activities be carried out;
- who is the responsible investigator to implement activities;

- what is the cost? (determine your major costs, i.e. travel, equipment, etc. Overlapping costs, if any, should be equitably distributed among other activities. Cumulative costs should then be reported in a summarize line item format. See the budget annex for more information.)
  
- Schedule  
Develop a timeline of program activities/events with milestones (key or important events for each objective/constraint. Indicate the start and completion dates for activities and a projected date to achieve a milestone event. Milestone events are defined as key events or steps that must be completed in order to achieve your objectives. There may one or more milestone events for each constraint/objective. In USAID terminology, these events can be considered as "measurable indicators of progress".
  
- Impact Assessment/Verifiable Indicators of Success  
Use the logical framework structure as described in attachment A.

## EVALUATION CRITERIA

Proposals will be based on the following criteria:

- Scientific and technical merit (20%)
- Cost-effectiveness (20%)
- Transferability to other location (20%)
- Likelihood of producing significant and measurable impact (40%)

## ANNEX

### Institutional information

- Name and telephone, fax, and email address of a business personnel who may be contacted during grant negotiations;
- Federal tax identification number

## Budget

Estimated summary budget per year should be related to costs associated with activities, outputs, and products. A line item budget format is shown in Attachment B.

- Cost sharing. Each participating institution is required to cost share a minimum of 25% of the estimated budget. Funds allocated to subagreements with host country collaborators and costs associated with stipends to graduate students from host countries are exempt. (See page 33, CRSP Guidelines, 1975)
- Indirect costs. List negotiated rates for on-campus, off-campus research, training etc.
- Fringe benefits. Indicate percentage of salary or rate used for regular employees, graduate students, undergraduate students.
- Travel. (a) International travel: indicate projected destinations and number of days on TDY with estimated airfares. (b) Domestic travel: indicate projected destinations and number of days with estimated airfare.
- Equipment. List equipment items with projected cost exceeding \$5000. Identify equipment item and country of origin.
- If you use "other", identify with examples with costs.

## Bio-data

- name and title
- institutional affiliation
- time commitment (FTE)
- relevant training/experience related to proposed project
- titles of 5 relevant publications or other documents.

Institutional Commitment from Collaborators

- documentation (letter by fax or email)

Literature cited

DEADLINE

Proposals must be received by January 31, 2001. Send six hard-copies and a diskette using either WordPerfect 8 or MS-Word 97 for Windows to the following address:

Management Entity,

Soil Management CRSP

Department of Tropical Plant and Soil Sciences College of Tropical Agriculture and Human Resources University of Hawaii at Manoa

1955 East West Road, Ag Sci 205

Honolulu, Hawaii 968

**Administrative and Management Review**  
**Soil Management Collaborative Research Support Program (CRSP)**

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Grant No. LAG-G-00-97-00002-00

Final Report  
June 15,2001

## **Acknowledgements**

A large group of people contributed to the successful completion of the Administrative Management Review of the Soil Management Collaborative Research Support Program (SM CRSP). The team would like to thank the University of Hawaii community for providing background information and organizational support. In particular, the team thanks Dr. Goro Uehara, CRSP Director, and Dr. Gordon Tsuji, Deputy Director, for agreeing to accommodate the team on short notice in spite of their own heavy travel schedules and their gracious reception of the team in Hawaii. We also appreciated the assistance and enthusiasm of the staff of the CRSP's Management Office in Honolulu.

The team also recognizes with gratitude the Soil Management CRSP Principal Investigators, and university administrators at the University of Hawaii, University of Florida, North Carolina State University and Montana State University who generously shared their time with the team, and provided assistance in arranging transportation, meals, and accommodations. In addition to the on-site visits, team members spoke with some members of the External Evaluation Panel, Board of Directors, and Phase II proposal review team.

The team thanks the staff at USAID/G/EGAD, including Felipe Manteiga, Director of the Office of Agriculture and Food Security, John Swanson, Division Chief, and other CRSP project officers for their support, advice, and insights on the CRSP program. Special recognition is due to Charles Sloger, Cognizant Technical Officer (CTO) of the Soil Management CRSP for planning the trip, overseeing the group's schedules, and providing important background and insights on the project.

The team also expresses its appreciation to the staff of the U.S. Department of Agriculture, particularly Robin Comfort, for arranging the services of the team specialists and for providing logistical support, and to Margaret Blackwell, Assistant Director of the International Programs Office of Louisiana State University's Agricultural and Mechanical College for arranging the contracting for the team members.



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## **Executive Summary for the Soil Management CRSP Review**

This report presents the findings of the Administrative Management Review of the Soil Management Collaborative Research Support Program (CRSP). It is clear that the Soil Management CRSP, during the current phase (from 1997 to 2002), has been building a strong program under the leadership of the Management Entity (ME) at the University of Hawaii, Manoa. It meets the expectations of the United States Agency for International Development (USAID) for management of a CRSP.

The SM CRSP, over the past five years, has identified an important set of constraints affecting the productivity of soils around the world. It has nurtured a group of activities to address those constraints, some of which are demonstrating the potential for real impact over the next few years. With continued generous support of the University of Hawaii for the CRSP and its Management Entity and improved methods of communication among PIs and CRSP partner institutions at home and abroad, the CRSP is in an excellent position to move forward.

Since the SM CRSP is currently immersed in the planning of its five-year extension, the team hopes that the suggestions of the AMR regarding the CRSP management and structure can be incorporated into the full proposal to be submitted to the Strategic Partnership for Agriculture Research and Education committee in the fall of 2001. Program management and researchers should realize that some of the comments, contained in this report are a reflection of difficulties with the CRSP system and not simply of the functioning of a particular program.

The recommendations of the team include suggestions to improve the functioning of USAID offices with the CRSP as well as to streamline the processes used by the ME in its relationships with its PI and the subcontracted organizations with which it works in the US and in host countries (HC). The list of recommendations in this Executive Summary are organized according to the unit that is expected to take action to implement changes. In the full text, recommendations follow the topic to which they pertain. Since the two lists are not in identical order, the recommendations below note the section in which they may be found in the main text.

### **Recommendations:**

#### **USAID**

1. That USAID should provide a one-time additional amount to fund the CRSP through the end of the fiscal year (September 30) rather than from April to April. (Section V, page 15)
2. That USAID allocate funds in a more timely manner and that this include a letter of commitment to the ME as soon as possible so that the institutions that are able to can advance funds to maintain operations. (Section V, page 15)
3. That USAID provide clarification as to the current financial reporting requirements. Changes in these requirements need to be clearly communicated to all involved parties, including the ME, the CTO, the Program Analysts in USAID/G/EGAD/ AFS, and USAID Procurement Office. (Section V, page 15)
4. That USAID correct the deficiencies in its record systems so that accurate information is provided on fund commitments and expenditures. (Section V, page 15)

5. That each contract modification should include identification of the appropriate performance period to which it pertains. (Section V, page 15)

**The Management Entity at the University of Hawaii, Manoa:**

6. That the ME provide stronger leadership in the development of a more integrated program by developing a system for sharing information about CRSP activities and objectives, including the vision of the Program Director, and by encouraging greater interaction among PIs on CRSP issues. (Section III, page 5)
7. That the ME develop, in a participatory mode, an Operations and Policy Manual for the SM CRSP, including at a minimum the following:
  - A common format for work plans, annual reports, and budgets that will allow the ME and the TC to identify progress against indicators, host country and U.S. expenditures and cost sharing levels.
  - The process for selecting and rules for retention of members of the TC, EEP, and BOD, including a statement of their responsibilities.
  - A definition of leveraged funds and format for reporting them.
  - The CRSP policies for treatment of buy-ins from USAID missions, regional bureaus and/or global centers or other institutions. The CRSP policies on late documentation or other reporting or planning problems (e.g. a penalty of x % of the next years budget)
  - The procedures for removing a project and or institution from the CRSP and how a project is handled if a PI moves to another institution. (Section IV, page 9)
8. That the Operations and Policy Manual be posted on the SM CRSP website under its own heading. (Section IV, page 10)
9. That all ME and TC decisions be explained and those explanations be disseminated to all PIs. (Section IV, page 10)
10. That the ME continue its development of the SM CRSP website with the goal of using it as the primary vehicle for CRSP communications and annual reporting. (Section VI, page 17)
11. That the SM CRSP plan and conduct a yearly meeting or meetings devoted to CRSP issues. These might include a BOD meeting, meetings of PIs, and the annual meeting of the TC. (Section IV, page 10)
12. That the ME work with the UH Office of Research Services and the contracts office of the various universities to develop an accrual reporting system. (Section V, page 15)
13. That the ME ensure that all subcontracts include a full explanation of the cost-share requirements. (Section V, page 15)

14. That the ME clarify its definition of the cost categories: "U.S.," "Host Country," and "In U.S. on behalf of the Host Country" and develop a method for tracking them. (Section V, page 15)
15. That the ME investigate other options for subcontracting to see if there are viable options for improving the current system, and take appropriate action. (Section V, page 15)
16. That the size of the ME budget be increased to provide for funds for PI meetings to increase program integration and cooperation and collaboration among the projects as well as for capacity building within host countries and additional student training. (Section V, page 15)
17. That the ME carry out or arrange to have carried out an analysis to determine where and if gender-sensitive approaches are relevant to the work planned for Phase II. (Section VII, page 18)
18. That the CRSP develop a training plan identifying their expectations for training in each activity and for monitoring whether its goals are being achieved. (Section VIII, page 20)



## **I. INTRODUCTION**

This report presents the findings of the Administrative Management Review of the Soil Management Collaborative Research Support Program (CRSP) carried out from May 13 to May 23, 2001 and as specified in the revised Scope of Work (Appendix 1). It is clear that the Soil Management CRSP, during the current phase (from 1997 to 2002), has been building a strong program under the lead of the Management Entity (ME) at the University of Hawaii, Manoa. It meets the expectations of the United States Agency for International Development (USAID) for management of a CRSP.

Team members (Appendix 2) met with the USAID Cognizant Technical Officer (CTO) before the trip to clarify the goals and receive background information on the CRSP. During the review, the team visited four of the six participating U.S. institutions (University of Florida in Gainesville; North Carolina State University in Raleigh; Montana State University in Bozeman; and University of Hawaii, Manoa in Honolulu) and met with administrators, researchers, staff, and students (Appendix 3). The team did not visit either Cornell University or Texas A & M University, institutions that are also part of this phase of the program. The team did not meet with new members of the research teams planned for Phase II. In addition, the team reviewed numerous internal and published documents to obtain information regarding the CRSP's management, policies, and operating procedures (Appendix 4). The team did not visit any overseas sites, but consulted EEP reports and other project documents and web sites on those activities. The team also visited or spoke with some members of the Technical Committee (TC), Board of Director (BOD), and External Evaluation Panel (EEP) members.

Readers of this report should understand that the Administrative Management Review is conducted for the benefit of US AID as part of the Triennial Review Process of each CRSP that determines whether extension of a CRSP will occur and at what level of funding. According to the CRSP guidelines (1985: 39), "AID's report on its administrative management review will be submitted to the ME which will use the recommendations to adjust the program and the CRSP proposal to be submitted to AID for the three (sic) year extension of the grant."<sup>1</sup> Program management and researchers should therefore realize that some of the comments are a reflection of difficulties with the CRSP system and not simply of the functioning of a particular program.

## **II. PROJECT BACKGROUND**

Initially authorized under Title XII of the 1975 Foreign Assistance Act, and amended and reauthorized in 2000, the CRSPs are long-term programs to harness the expertise of U.S. universities to fight hunger and poverty through international food and agricultural research, both in the U.S. and in developing countries. The CRSPs facilitate cooperation and collaboration among participating U.S. and host country institutions, federal and state agencies, international agricultural research centers, non-governmental agencies, private industry and other groups.

Formed in 1981, the Soil Management CRSP is now completing its twentieth year and is in the process of finalizing its proposals for renewal under the program's ten-year authorization. This program was originally known as TropSoils and involved four U.S. universities: Cornell University, the University of Hawaii, North Carolina State University, and Texas A & M University. It focused on the study of three agro-eco zones: "the humid tropics of Peru and

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<sup>1</sup> The time period for the extension is now usually five years.

Indonesia, the semi-arid tropics of Niger and Mali, and the acid savannas of Brazil. In the 1990-1991 fiscal year (FY), two separately administered USAID funded projects were administratively incorporated into this CRSP: the Soil Management Support Services (SMSS) project and the Technology of Soil Moisture Management (TSMM) project. The following fiscal year, a third project was added--the Nitrogen Fixation for Tropical Agricultural Legumes (NifTAL) program. The first two of these three projects were led by USDA; the third by the University of Hawaii. The operating philosophies of these three entities and the CRSP were very different. A CRSP is structured to operate as a collaborative effort among U.S. and host country universities, with jointly planned and implemented activities. Graduate student training has also been a particularly important component. In contrast, the three incorporated projects were more directly focused on achieving specific research goals under independent research programs. To facilitate the merger of these different efforts, the CRSP grant was amended for the 1991-1994 period. There was no plan at the time of merger to develop a more collaborative program, but it was expected to emerge during the 1991-1994 time period. It would have been a significant undertaking even if the original program budgets had been maintained. But budgets were sharply reduced and the CRSP management" entity had serious problems maintaining its activities. There were additional problems as indications emerged that USAID was considering terminating the Soil Management CRSP.

In 1995, USAID requested that the ME (at that time based at North Carolina State University) initiate a process to revitalize and restructure the Soil Management CRSP. There was to be a new focus on Integrated Nutrient Management and a competitive process to "select the participating universities. The ME assembled an advisory panel to identify and prioritize the major constraints to integrated nutrient and soil management in the tropics. " They identified five areas of soil management that constrained agricultural productivity, including the management of nitrogen, phosphorus, water use, and soil acidity as well as erosion and land degradation. A request for pre-proposals for research on these areas was sent to the U.S. agricultural research community. Fifty-four submissions were received. An independent review panel chose nineteen from that group to submit fully developed proposals. In the last stage of the review, seven of the nineteen were selected for possible funding by the CRSP, the final number to be dependent on the total pool of funds allocated by USAID. After allocations were completed, six of the seven projects were funded: four fully and two partially. In conjunction with the selection of the new research projects, the ME at North Carolina State circulated an announcement requesting that other institutions take on the position of the Management Entity for the CRSP. At a meeting in Raleigh, North Carolina in March 1996, after presentations by each interested institution, the PIs of the new CRSP elected the University of Hawaii as the new ME. Dr. Goro Uehara, a soil chemist, has been the program director since the restructured Soil Management CRSP began in February 1997. The six participating institutions in the current phase of the Soil Management CRSP are Cornell University, the University of Florida, the University of Hawaii, Montana State University, North Carolina State University, and Texas A & M University.

The open competition for new proposals resulted in two new universities joining the CRSP. The selected research projects, however, had been developed in isolation from each other, sharing only a focus on one or more of the identified constraints. Since 1997, the projects have developed independently with a low degree of interaction or cooperation. This point will be discussed in detail in later sections of the report.

The broad goal of the Soil Management CRSP is to attain food security without compromising the sustainability of the natural resource base. This contributes to the Strategic Objective 2 of the Office of Agriculture and Food Security, "Improved Food Availability, Economic Growth, and Conservation of Natural Resources through Agricultural Development." The more focused objectives of the SM CRSP include increasing the productivity, stability, and resiliency of agro-ecosystems, as well as increasing gender and intergenerational equity in farming communities by enabling men and women to share in benefits derived from and decision-making about efficient management of agro-systems.<sup>2</sup> The CRSP's research activities build upon the assumption that existing knowledge about soil management is extensive if not exhaustive, but not yet available or organized for easy adoption by farmers, extension workers, policy makers, or agribusinesses. By developing a range of products to accurately organize databases on nutrient management and alternatives among production choices, the CRSP will provide tools appropriate for environmentally sound and agriculturally productive management of farms, watersheds, and regions. Examples include the decision support systems of Nutrient Management Decision Support System (NuMass) and the Trade-Off Analysis Models and the improved inoculants of the NifTAL project, as well as less quantified recommendations of the farm-oriented programs investigating the rice-wheat cropping systems, the adoption of fertilizer, and the management of erosion on steepplands.

In late 1999, the External Evaluation Panel (EEP) conducted an in-depth review of the CRSP. Some of its recommendations have shaped the selection of projects for the proposals now being prepared for the five-year extension. . The new five-year program description will be presented to the Strategic Partnership for Agricultural Research and Education (SPARE) committee of the Board of International Food and Agricultural Development (BIF AD) later this year. Based on their review, SPARE will make recommendations to USAID on the renewal of the program for another five years.

### **III. THE MANAGEMENT ENTITY**

The process described above to establish this phase of the Soil Management CRSP resulted in some unusual characteristics in the completion of its proposal and its consequent organization. It is important to appreciate for example, that the research projects and the PIs were chosen under the guidance of the former ME, North Carolina State University. It was only after the participating projects were selected that the current ME, the University of Hawaii, was chosen by the CRSP PIs. As a result, the ME took over a CRSP with a pre-existing philosophy emphasizing the independence of each research activity. The ME had to develop the global plan within an environment that saw the projects of Phase I as distinct activities whose PIs were not informed about each others efforts. They did not envision their programs as part of a more integrated program. Developing a global plan to link these independent efforts was not easy. Although the lack of program integration was later recognized as a shortcoming of the current phase by the External Evaluation Panel (EEP), it was not initially seen as a goal of the new ME. Cross-program synergies are now planned to be more seriously sought in the development of Phase II.

The Management Entity (ME) is the legal contractor for this grant and is responsible for administering the grant. The University of Hawaii at Manoa is the Management Entity. The team met with officials from the various operational levels at all of the universities visited and found

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<sup>2</sup> Soil Management CRSP Grant Document, Project Number 931-1311 (February 11, 1997), pages 25-26; 30,32.

strong support for the CRSP throughout the system. These included the involved departments, colleges, fiscal offices, and university administrators. The respondents were in all cases quite knowledgeable about the CRSP and its goals and operations and strongly supported the role and involvement of their universities in CRSP activities. Several administrators spoke to the importance of the CRSP in providing a model for international cooperation on their campuses; others praised the CRSP for modeling high quality scientific research.

This is one of the few CRSPs, if not the only one, in which the salary and benefits of the Program Director (PD) is totally supported by his university, specifically, the University of Hawaii (UH). The PD is a senior tenured faculty member in the Department of Tropical Plant and Soil Sciences, College of Tropical Agriculture and Human Resources. Current occupants of the College administrative staff are relatively new in their positions and are very supportive of the CRSP. The university's financial offices responsible for the fiscal operations of the CRSP at the University of Hawaii are also knowledgeable, well informed, and supportive of the program.

The PD is responsible for the overall functioning of the CRSP and the Deputy Director is responsible for the day-to-day operations. This division of responsibility is understood by all of the participants and appears to be functioning well. The overall management style appeared to be very collegial. The PD does not provide a great deal of direct program leadership but is in close contact with the PIs and appeared to be well informed as to the status of each project, its direction, and its accomplishments. The PD has been involved in the various aspects of the development of Phase II and is aware of the need for more integration between projects. The PD has a clear and stimulating vision of the intellectual and substantive goals of the CRSP. To achieve this vision, he will need to direct the CRSP's management processes more closely, and to make sure that the final version of the Phase II planning documents reflect his view.

Some of the current PIs expressed the option that Phase I might have benefited from more frequent meetings of all the PIs or greater encouragement of cross-project coordination. Certainly more efforts at communicating with the group will help to convey the PD's goals for the CRSP and his understanding of how each activity can contribute to the whole program. Overall, the ME appears to be functioning well with a competent and dedicated staff. The ME budget is appropriate for its activities. If it had to include the PD's salary, now funded by the university, the ME budget would likely exceed the twenty percent amount established as a guiding figure for CRSPs. Currently the percentage of the CRSP budget spent on the ME operations is approximately sixteen percent.

The CRSP's Deputy Director is actively involved in the day-to-day management of the CRSP. His responsibilities cover the practical administration of project funds and activities. He interacts directly with the PIs and the UH administrative and financial systems. The CRSP PIs spoke favorably of his timeliness and knowledge in responding to their queries and various requests.

It should be noted that the PD stated during the review that this was the first review either he or the Deputy Director had experienced and as such were learning a great deal about how a CRSP functions and about CRSP operations. This suggests that neither the CRSP council nor the Board of Directors has been an adequate source of information about how CRSPs operate. In fairness to those groups, however, it was not clear that either one had been asked to provide such information. Although the guidelines recommend that the Board of Directors be "selected by their participating institutions on the basis of their administrative responsibilities and relevant expertise," it is not obvious that, in this case, more than one member of the BOD has had previous experience with CRSPs or with AID.

In summary, the CRSP guidelines identify a number of the responsibilities of the Management Entity (ME) (pages 10 and 23-25 in the 1985 version; pages 8-9 and 19-21 in the 2000 draft). These are listed and explained in the section below. They provide a basis for assessing the organization and operation of the ME of the Soil Management CRSP.

The responsibilities include:

1. Receiving and administering the USAID grant funds.
2. Entering into sub-grant agreements with United States (U.S.) and Host Country (HC) institutions.
3. Being accountable to USAID for all expenditures (including equipment), ensuring promptness and ease in fiscal transactions from the ME, and meeting the contractual requirements for cost sharing and balancing of HC/U.S. expenditures.
4. Implementing the program, including the coordination and development of annual budgets, work plans and annual reports, the collection and dissemination of other information as needed by USAID, the development and carrying out of a communications plan, the oversight of program quality, and the facilitation of the research efforts as needed.
5. Establishing a system to facilitate and manage travel.
6. Representing the CRSP in dealings with USAID, Washington, missions, and bureaus.
7. Working with the CRSP management and overview structure that includes the Board of Directors (BOD), the Technical Committee (TC), and the External Evaluation Panel (EEP)
8. Designing and completing a global plan with regional strategies.
9. Making available base line data through socioeconomic studies or other assessments or by updating existing studies and assessments for measuring future progress.

In the sections that follow, the above responsibilities are discussed. This CRSP has strong and capable investigators leading the projects as planned and selected at the beginning of this phase of the CRSP. Good progress is being made towards the goals of the CRSP. This CRSP has slight weaknesses, in most of the above eight areas, that are easily correctable. Many of these deficiencies are the result of the inexperience of the ME. The review team offers these observations and recommendations in the hope that they will provide insight and suggestions helpful to further strengthening this CRSP.

#### **Recommended:**

1. That the ME provide stronger leadership in the development of a more integrated program by developing a system for sharing information about CRSP activities and objectives, including the vision of the Program Director, and by encouraging greater interaction among PIs on CRSP issues.

## **IV. PROGRAM STRUCTURE AND GOVERNANCE**

The SM CRSP has the typical CRSP governance structure consisting of a Board of Directors (BOD), a Technical Committee (TC), and an External Evaluation Panel (EEP). Each of these bodies is a suggested component of CRSP governance in the CRSP Administrative Guidelines.

### **A. The Board of Directors (BOD)**

The BOD is currently composed of six members. Five of the six represent institutions participating in the five fully-funded projects and the sixth is from one of the International Research Centers, International Livestock Research Institute (ILRI). Neither the University of Florida nor the University of Hawaii, both of which have partially funded activities under the CRSP have representatives on the BOD. According to the CRSP guidelines, the PD is supposed to serve as an ex-officio member of the Board, and he does. In addition, the guidelines state that the ME's institution, in this case the University of Hawaii, is supposed to have a permanent member on the Board. To fill the current vacancy, the University of Hawaii will need to appoint a new institutional representative.

Although the CRSP has not developed a set of specific guidelines for the SM CRSP, the guidance on Board membership is found not only in the CRSP guidelines, but has also been reprinted in the SM CRSP's first, second, and third annual reports. These reports also contain the general overview of the BOD's responsibilities.

Discussion with both board members and PIs about the BOD and its function revealed the sentiment that the BOD has been ineffective. It has been uninvolved in establishing policy or guidance on CRSP issues and its usefulness to the CRSP was questioned. At least one PI felt that the BOD members looked after the interests of their institutions first before those of the CRSP. BOD members, in turn, felt that they had not been asked to assist in policy development and, although reported to, were asked to approve the plans presented to them rather than initiate action or to participate in a constructive dialogue leading to participatory decision making. Some members felt that they did not receive adequate information about the CRSP before their meetings.

The team believes that these divergent views could be mitigated by agreement on a set of guidelines and procedures outlining the expectations of membership, responsibilities, officer selection, and tenure of the Board. Based on that agreement, the BOD would have been able to resolve questions of their role in this CRSP.

### **B. The Technical Committee (TC)**

The TC is composed of four people. Two are from CRSP institutions and two are from non-U.S. cooperating institutions. Most of the PIs described the TC as hardworking, fair, and serious about its responsibilities. Except for excerpts from the general CRSP guidelines republished in the annual reports, the SM CRSP has not developed its own guidance on membership, member selection, and length of service or responsibilities. As a result, there was confusion as to the specific role of the TC in the SM CRSP. The chair of the TC reported a number of TC functions as decided by the TC. They included: helping the ME prepare the annual reports, making technical suggestions to the projects, making recommendations to the

ME to report to the BOD. There were also areas they did not get involved in: making policy, ranking the projects, or relating research accomplishments to funding levels. In contrast, the discussion of the role of the TC with the ME revealed a different role that included evaluation and policy. Again, discussions among the PIs and TC on the appropriate role in the CRSP and codifying that agreement into guidelines could eliminate this confusion.

From the perspective of the PIs, the TC was doing a good job, given the narrow range of its responsibilities. Most of the PIs contacted were positive about the technical feedback they received from the TC on their annual work plans and reports. After these reports are submitted before the annual TC meeting in February, the TC issues letters with its comments usually in March.

Since the PIs do not meet with the TC or among themselves on a regular basis, there is no clear process by which the PIs who are not themselves members of the TC can reply or appeal to the TC. There is no mechanism providing PIs with a collective voice through the TC to the ME; rather, PIs address the ME directly with individual concerns. This structure adds to the autonomous character of the projects and works against promoting a collective identity for the CRSP.

### **C. Principal Investigators (PIs)**

The team met with four PIs, a large number of U.S. collaborating scientists, a few host country scientists based in the U.S., and a few graduate students (see Appendix 3). All were supportive of the CRSP and felt that the ME was supportive and responsive to requests and inquiries. There was however a great deal of concern and frustration over the problem of irregular and delayed funding from USAID. This will be discussed in more detail in the financial section. In almost all cases there was a lack of awareness of CRSP policies and procedures and PIs did not know where to access the needed information other than by contacting the ME.

In most cases, the PIs are providing good leadership for their projects. A few cases revealed some lack of focus and the pursuit of more activities than funds could support. In general the PIs are providing the required material at the designated times. In the case of non-compliance, however, the ME or TC has no real leverage on the PIs since there is no repercussion on the activity's funding levels, recently this possibility has been raised by the TC. There should be a direct relationship between accomplishments, quality of the research, and funding. PIs agreed with the value of establishing that relationship and yet it seemed that the funding level set at the beginning of the program was maintained regardless of success in meeting goals or the quality of work produced. .

Several of the PIs repeated the background on how the current phase of the SM CRSP came about, emphasizing that each was an individual project and they operated independently. Most of them also stated a desire for more integration and interaction and expressed the view that the leadership had to come from the ME for that to be . accomplished. Most of the PIs also were unaware of the process for making decisions about CRSP activities and felt there needed to be better sharing of information.

#### **D. The External Evaluation Panel (EEP)**

The EEP consists of five members, none of whom is from any of the SM CRSP institutions. With one exception, the members had little CRSP experience. They conducted their evaluation of the CRSP activities in 1999. Most of the Host Country sites of the fully funded projects were visited by at least one EEP member. In addition, the entire team met with all of the PIs as a group and the ME, at a meeting in December 1999 in Denver, Colorado. Most of the PIs felt that the EEP had conducted a good evaluation. The ME also stated it was satisfied with the EEP's work. The report has apparently played a major role in helping identify the issues and format for soliciting proposals for Phase II.

Although the majority interviewed made initially favorable comments about the EEP, there were a few expressions of concern as to the approach of some of the EEP members and their involvement in SM CRSP issues other than evaluation. This review team has two serious concerns about the EEP report and its involvement with the CRSP. First, the EEP's reporting on some projects seemed to be based mainly on the annual reports of the projects themselves and did not appear to contain significant evaluative input from the EEP itself. This raises questions about the usefulness of visiting all of the overseas sites given the expense of such work. The second concern is the involvement of the EEP in a management issue regarding the funding levels and participation of one of the projects. The EEP is intended to provide independent and objective evaluation of ongoing work. The responsibility of the EEP, as stated in the third annual report is to provide oversight, evaluation of programs toward stated objectives, and assessment of probability of success in achieving their objectives. The ME is then supposed to make appropriate management decisions based on its own conclusions from the EEP's recommendation. In this particular case, however, the EEP was itself engaged in trying to resolve a thorny management issue. The AMR team, without taking a position on the appropriateness of the solution, believes that CRSP management issues are the responsibility of the ME and BOD and not the EEP. A rather lengthy discussion about the role of the EEP now also appears on the SM CRSP website. It states, "it would be expected that the EEP would find solutions to problems through changes in projects and components of projects." While entirely appropriate to consult with the EEP for advice, the ME should ultimately take responsibility for making a decision and taking the final action. It appears that the EEP functioned with little or no ME guidance on either its function or quality.

#### **E. Transparency and Integration**

Many of the PIs were unclear as to how decisions about a number of management issues had been made in the CRSP. As noted above, the TC and the ME work on a bilateral model, communicating individually with each project as necessary, rather than on a collective basis. This has at times resulted in confusion and some resentment as PIs feel they are not granted access to the whole picture. The logic behind ME and TC decisions needs to be explained and communicated to all of the CRSP PIs. The processes for governing the SM CRSP need to be made more transparent. Although a number of relevant instructions for submitting work plans and formatting of the annual reports are available on the CRSP website, they are found within the TC minutes rather than in a separate section on policies and procedures. Curiously, none of the PIs or ME staff pointed us to the website for this information. It seems that archiving the materials in the TC minutes is not an obvious retrieval point for CRSP participants, perhaps because the TC is not seen as representative of the PIs. In some CRSPs the TC has included a greater number of PIs or regional representatives and has served, in the course of more technical discussions, to clarify a number of management issues

regarding work plans, annual reports, training, and budgeting. These discussions have then been codified into an operations manual specific to the CRSP, permitting all CRSP participants equal knowledge about operations and policies. Other CRSPs provide examples of operations and policy manuals, some of which are now easily available on their web sites. It is important to emphasize that while the production of an operations manual is useful on its own, the larger goal is to make the process a participatory and collaborative one so that it achieves the purpose of both engaging and informing all the PIs in the process of determining how their CRSP will work to achieve their objectives.

During Phase I of the SM CRSP, each research project has been led by a PI without much interest in or connection to other research projects. There appears to be some misinformation about the goals and objectives of one project by another. From a broader perspective, the projects do not yet add up to a whole greater than the parts. This is unfortunate as there are some very good projects in the CRSP. There has been no plan for integration and there have not been provisions made for PI meetings permitting or encouraging substantive discussions of each project and how the projects might work together. The ME has not yet been a strong advocate of greater integration, nor has yet provided funding, except for some recent limited travel support, to bring the PIs together. National agronomy and soil science meetings were mentioned as occasions when the PIs and BOD met with each other. This does not appear to be a satisfactory solution since not all of the PIs or BOD members attend these meetings. In addition, because researchers come to these meetings with a wide range of objectives there are too many distractions to make them an effective venue for CRSP meetings without greater organizational input from the ME or TC. A well-structured and well-run SM CRSP meeting of all the principal CRSP participants could become an effective way of dealing with many of the management issues discussed in the sections above.

Another issue hampering integration has been the parallel existence of the "first tier" and "second tier" projects within the CRSP. As noted above, during the first phase overall funding limitations of the CRSP was used to justify funding four projects fully at their requested levels while providing only partial funding to two other projects. This has led to a perception of "second class" status within the CRSP for the partially funded activities. Their institutions do not have representation on the BOD. Since several of the projects also receive supplementary funding from other sources, it is curious that the issue of the funding levels transformed into an expression of less than full membership in other spheres as well. The bilateral functioning of the TC and the ME exacerbates this division between the two categories of activities.

The AMR team does not believe that the two tiered system was beneficial to the CRSP and would suggest that Phase II establish a process of determining funding allocations that can be adjusted more easily over the course of the grant and that more closely links those adjustments to achieving a project's stated objectives.

### **Recommended:**

2. That the ME develop, in a participatory mode with all of the CRSP PIs, an Operations and Policy Manual for the SM CRSP, including at a minimum the following:

- A common format for work plans, annual reports, and budgets that will allow the ME and the TC to identify progress against indicators, host country and U.S. expenditures and cost sharing levels.

- A process for selecting and rules for retention of members of the TC, EEP, and BOD, including a statement of their responsibilities.
- A definition of leveraged funds and format for reporting them.
- A summary of the CRSP policies for treatment of supplementary funds from USAID missions, regional bureaus and/or global centers or other institutions.
- A statement of the CRSP policies on late documentation or other reporting or planning problems (e.g. a penalty of some amount or percentage of the next years budget).
- The procedures for removing a project and or institution from the CRSP and how a project is handled if a PI moves to another institution.

3. That the Operations and Policy Manual be posted on the SM CRSP website under its own heading.

4. That all ME and TC decisions be explained and those explanations be disseminated to all PIs.

5. That the SM CRSP plan and conduct regular meetings on a clearly stated schedule devoted to CRSP issues. These might include meetings of PIs, the annual meeting of the TC and the BOD.

## **F. Phase II Planning**

It is not possible to provide a complete evaluation of the process that has taken place in the planning of Phase II of the SM-CRSP for several reasons. Although the AMR team received a selection of the documents prepared for the Phase II planning process, it has not received all of them. The entire package would have included the RFP for the pre-proposals and full proposals, sample copies of the submissions, a description of the selection of the review panel and its responsibilities, the decisions of the panel and their correspondence, examples of the final proposals, and a list of the final projects to be included in Phase II. The team asked for some of this material as it became aware of the process and of the issues involved. Although it was included in the scope of work for the team, the material was not provided by the either CTO or the ME. It has also been difficult to get a clear picture from the various participants as to how priorities for the planning process were set and by whom. The documentation alone does not tell the complete story.

The planning for Phase II appears to have been based partly on the EEP recommendations, including the suggestion that institutions currently involved in the CRSP should be given the opportunity to submit renewal proposals. It was also decided by the ME to try to increase the involvement of the institutions beyond the current projects so that each institution was allowed to submit up to four pre-proposals. The competition was not opened up to institutions outside of the current participants. Some of these procedures were discussed at a meeting of all of the PIs with the TC and ME in San Francisco in (February 2000). An RFP was developed and distributed which included an identification of the areas to be emphasized. A four-person panel composed of two TC members and two non- TC members reviewed the pre-

proposals. From the fifteen pre-proposals submitted, nine were selected for full proposals. Instructions from the review committee were sent to the selected nine and full proposals were submitted and evaluated by the committee. From the nine, five proposals were recommended for inclusion and funding.

When discussing the Phase II process with the various PIs and the ME a number of issues emerged. These include:

- Lack of explanation as to why some proposals and pre-proposals were not selected.
- An apparent disjuncture between the criteria stated in the RFP and the criteria used to select proposals.
- Lack of transparency regarding the selection of review team members.
- Lack of appreciation and understanding of the philosophy of the CRSPs in the proposal selection process.

Since the team was not able to review all of the material from the process, it is not possible to draw clear conclusions about what actually happened. What is clear and rather troubling, however, is the observations that the PIs did not find the process to have been a clear and transparent one. No document provides an overview of the selection process. Comparison of the selected proposals and the stated goals of the RFP reveals some gaps, particularly on the issues of project integration and outreach, and none of the provided materials explains how changes in emphasis might have come about. From the documentation that the team saw, the review panel gave only cursory reasons for their rejection of certain proposals even though they may have fit the criteria in the RFP. From discussions with the PIs, it seems they remain uncertain as to how final determinations were made or on what basis. No summary has been prepared to explain how the selected proposals will contribute to the overall objectives and goals outlined in the RFP for the next phase of this CRSP.

Discussion with the ME revealed that the PD has a clear and very stimulating vision for this CRSP and how it is to be achieved. It is not clear, however, whether not the constellation of proposals selected by the review panel is linked to the achievement of that vision. Furthermore, it is not clear that the CRSP PIs either understand or share this vision. For the next phase to be successful there needs to be a common vision and goals.

## **V. FINANCIAL ISSUES**

### **A. USAID funding**

The lateness of USAID funding and its consequences on the research was the most discussed issue at all sites visited. The uncertainty of funding levels and schedule of disbursements delayed research and caused personal hardship such that in some cases people had to borrow money to continue their participation in CRSP activities. Host countries have been unable to carry out activities due to lack of funds, leading to the breakdown of goodwill between institutions.

Of continual concern and disruption is the lateness of yearly funding. The yearly amendments can be received any time from the end of May until September. This is very disruptive to the research and to people's lives, and is very expensive for the universities. Most people understand the complexity of the legislative and appropriation process that starts in Congress, but the problem here is exacerbated by serious delays within USAID. Some problems would be alleviated if USAID were to issue a yearly commitment letter to the ME. Such a letter could be used by institutions to advance funding to continue the projects until the amendments were received. Review of letters issued in the past reveals that they are not issued in a timely manner.

Other errors originating in USAID also complicate efficient function of the CRSP's financial systems. Although this project contract was issued on February 11 1997 with a funding period specified from May 1 to April 30 of each year, the contract ends on September 30, 2001. The five-year contract does not even end on the correct date, i.e., it specifies a period of less than five years. USAID has stated that the ending date will be changed, but it has not yet corrected the paperwork, causing a great deal of concern.

## **B. Pipeline**

At the start of this review, the information provided to the team showed that USAID records indicated that this CRSP had a large pipeline, or unexpended balance of funds. A printout dated May 8, 2001 from the USAID financial system indicated that the SM CRSP had only vouchered approximately one-half of the amount funded for the program. At the time of the review, the CRSP had been allocated a USAID budget of \$12,809,000 but the USAID material indicated that only \$6,716,926 had been expended. However, the ME had vouchered for and had received \$10,435,047. The difference between the two records meant a difference of \$3,718,121 between what USAID and the ME showed had been vouchered and paid.

In the course of long and detailed discussions, it became apparent that the USAID system did not contain accurate information. This may have been caused at least in part by a change in the federal system. Such inaccuracies are not acceptable. Furthermore, USAID should not always assume, as it did in this case, that the problem is the fault of the grantee.

The pipeline problem is further aggravated by not including encumbrances. The way universities handle encumbrances varies a great deal. If the ME were to develop a system requiring each subcontractor to report accruals when submitting vouchers, a much more accurate accounting of fund availability would be possible.

## **C. Subcontracts**

The ME subcontracts with the universities responsible for each project. Some of these universities then subcontract with additional universities or institutions in the U.S. and/or HC to conduct the research. The team reviewed examples of each type of contract. The contracts did appear to be adequate in all but one aspect. There was confusion at all institutions visited as to the cost sharing requirements. This occurred even though some of the subcontracts contained a clause stating the requirements. It is suggested that the ME ensure that all subcontracts include a full explanation of the cost-share requirements. This is a very important issue as in some cases universities believed they needed to report larger amounts than required which in turn limits their ability to seek additional funds requiring cost sharing.

The other major concern among the subcontractors was the problem of how long it took to receive funding. Not only is this a problem because of US AID's delay, but also a consequence of the time it takes each institution to issue contracts and amendments. The ME should investigate and determine if other options are available to speed the process. This should include determining how other CRSPs and other agencies handle this process. If other viable options are found, then their feasibility and cost for the SM CRSP should be determined. The ME and BOD should determine if the system should be changed as a result.

#### **D. Financial reporting**

No problems were identified in any of the reporting systems of either the ME or subcontracts, including cost sharing. The only exception was that copies of material were not going to all of the people identified in the contract. There was considerable confusion as to what was required of the ME as far as some reporting was required. For example, the ME received by electronic mail a notice from an USAID official that some reports were no longer needed. In response to that notice, the ME stopped submitting the identified report. . But the notice was not copied to the Program Analyst in the EGAD Center at USAID who is responsible for tracking the CRSP funding. The USAID official on the team was unaware of the change in requirements or familiar with that official. USAID needs to be consistent in what its reporting requirements are and when changes are made, all relevant parties need to be informed. With the exception of this confusion, all USAID reporting requirements are being met.

#### **E. Size and cost of the ME**

Currently the cost of the ME is well within the 20 percent identified for all CRSPs. This is a result of the generous support of the UH in providing the PD salary. The UH is commended for this very supportive action. If the PD salary were paid from the ME budget, its percentage share of the CRSP budget would likely exceed the 20 percent limit.

If the budget structure remains stable, consideration should be given to increasing the ME budget to provide funding for increased PI meetings and increased integration among the projects.

#### **F. Mission and Bureau Buy-ins**

The SM CRSP has had significant buy-ins from missions and a bureau. The Office of Disaster Relief provided \$200,000 (or the University of Florida project, the USAID mission in Bangladesh provided \$1,000,000 for the Cornell project, and the USAID mission in Addis Ababa provided \$200,000 for an inter CRSP activity led by the SM CRSP. Buy-ins provide some advantages to the missions and bureaus by offering a relatively simple procurement mechanism to channel funds for specific activities. The buy-ins, however, have not been without problems for the CRSP.

Three problems were identified. First, the CRSP lacks a consistent policy for what level of indirect costs the ME should charge for handling the buy-ins. Both PIs and missions or bureaus need to understand that there are administrative costs to the ME for handling these funds. The ME does not have the funding to pay for such costs from its own budget. The ME

needs a stated policy that is not only fair but also is applied uniformly. The team suggests that not only should the costs be fully covered, but also that there should be some return for the services the ME provides over and above the direct costs. The second issue concerns the costs of providing mission support for activities such as the inter CRSP activity in Ethiopia. When the CRSP provides a service to a mission, bureau, or other institutions it should be fully reimbursed and the CRSP or ME should not have to subsidize such activities. Third, the ME, the PI, and the donor of funds for specific project must clearly articulate the purpose of the buy-in in writing to avoid future misunderstanding about the activities to be completed for the amount of funds received. Such an agreement would include activities to be provided, the costs, the terms and period of payment. These three issues should be discussed collectively and the resulting agreement codified in the CRSP's operations and policy manual.

## **G. Cost-Sharing, Matching, and Host Country Expenditures**

As discussed above there was confusion, at all sites visited, as to the cost sharing requirements. Nevertheless, all indications were that the cost sharing requirements for the program were met. To avoid difficulties in the future, the team recommends that all subcontracts should include a full explanation of the cost-share requirements consistent with the original grant proposal and the CRSP guidelines.<sup>3</sup> The CRSP Guidelines (1985: 34-35) state:

...each CRSP is required to match with non-federal resources (in cash or in kind as valued) 25 percent of the federal funds provided by AID, except for those costs paid by federal funds that have been determined to be exempt from these requirements, as defined herein or as exempted in the following paragraphs.

The following costs in a CRSP effort are excluded from the matching requirement:

- Costs to operate the ME.
- Funds committed under the terms of a formal CRSP host country subagreement...
- Costs for training of participants as defined in AID Handbook...

PIs and their respective contracts' offices were similarly confused about the definitions of each of the following cost categories: in the U.S., in Host Countries, and in the U.S. on behalf of Host Countries. The ME should issue clarifications on these categories as well as guidelines for tracking the expenditures in each category.

## **H. Travel**

The ME is responsible for developing a system to facilitate and manage travel for the CRSP program. No problems were reported with the internal travel arrangements or reporting. The only difficulty raised concerning travel is a consequence of the larger problem of delays in the CRSP program funds. When funds were not provided in a timely manner, travel could not be undertaken to meet the timelines of the program.

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<sup>3</sup> The wording in the USAID contract with Hawaii takes precedence over the CRSP guidelines if different.

## **Summary of Recommendations on Financial Issues:**

### **USAID**

6. That USAID should provide a one-time additional amount to fund the CR8P through the end of the fiscal year (September 30) rather than from April to April.
7. That USAID allocate funds in a more timely manner and that this include a letter of commitment to the ME as soon as possible so that the institutions that are able to can advance funds to maintain operations.
8. That USAID provide clarification as to the current financial reporting requirements. Changes in these requirements need to be need to be clearly communicated to all involved parties, including the ME, the CTO, the Program Analysts in U8AID/G/EGAD/ AF8, and USAID Procurement Office.
9. That USAID correct the deficiencies in its record system so that accurate information is provided on fund commitments and expenditures.
10. That each contract modification should include identification of the appropriate performance period to which it pertains.

### **The Management Entity**

11. That the ME work with the UH Office of Scientific Research and the contracts office of the various universities to develop an accrual reporting system.
12. That the ME ensure all subcontracts include a full explanation of the cost-share requirements.
13. That the ME clarify its definition of the cost categories: "U.S.," "Host Country," and "In U.S. on behalf of the Host Country" and develop a method for tracking them.
14. That the ME investigate other options for subcontracting to see if there are viable options for improving the current system and take appropriate action.
15. That the size of the ME budget be increased to provide for funds for PI meetings to increase program integration and cooperation and collaboration among the projects as well as for capacity-building within host countries and additional student training.

## **VI. INFORMATION DISSEMINATION, USAGE, AND IMPACT**

The SM CRSP communicates its research results through a variety of methods. As is common in the scientific community, the publication of research results in refereed journal articles, edited book collections, and reports produced by the 8M CRSP are central pathways. Lists of such publications are provided in each year's annual report for the CRSP. In addition, the SM CRSP maintains its own comprehensive web site with ready access to a wide range of information about the CRSP. It discusses its structure, its participants, and provides copies of many of the CRSP's annual reports and newsletters, notice of technical bulletins, as well as

minutes of the meetings of several of its governing bodies, such as the Technical Committee and the Board of Directors. The SM CRSP web site also contains electronic links to the home pages of each individual project that, as described below, provide extensive detail about the research programs. The SM CRSP homepage descriptions of individual projects are not as detailed nor as up to date as are the homepages kept by each project.

In addition to these written and electronic forms of information dissemination, an important feature of several of the projects' programs has included workshops with host country participants. Held over the past two years in the Philippines and in Peru, these workshops have not only helped to test and further develop the Decision Support Systems of NuMass and the Trade-Off Analysis they have also served to publicize the work to a wide community. The meeting in the Philippines in September 1999 included forty-three participants from eighteen countries outside of the U.S., including seven African nations, six Asian nations, and five Latin American nations. The Peru meetings for the Tradeoff Analysis involved a series of sessions beginning with a week-long meeting in November 2000 with participants from a range of government ministries and other offices of Peru's national soil and water conservation program, PRONAMACHCS, to identify key sustainability indicators and continuing with additional staff training and analysis of the models in early 2001.

From the perspective of the AMR, these efforts at outreach to the external community are not matched by equal attention to outreach within the CRSP. PIs do not have a great deal of interaction, and some seem to lack accurate information or understanding about the projects of their colleagues. Although the annual reports and web sites are obviously available to all, it does not appear that the PIs routinely make the effort to keep up with the work of their colleagues. Furthermore, there have been few opportunities for PIs to meet together for discussing their work. The few meetings that have occurred have had other objectives.

Both summary and full-length reports are issued for use in host countries. In hard copy, a number of reports have been published in both English and Spanish and distributed among CRSP overseas partners and collaborators (see list in Appendix 4). In addition, PIs have developed project websites (see list in Appendix 6), which provides comprehensive coverage of project activities, including trip reports, research reports, work plans and training information. In addition, several projects maintain a virtual network to communicate research data, results of field trials, as well as information about the activities of collaborating institutions.

Synthesis of project results across activities has not, thus far, been a central focus of the SM CRSP. In Phase I, as described earlier, the research activities have been managed as discrete entities. In addition, the production of the various tools has been in their early stages, and there has not been a large amount of material to synthesize. It should be the responsibility of the ME to develop a program to provide such synthesis. This should begin during the final year of Phase I and into Phase II of the program, as the various pieces of work come to fruition, and the computer assisted decision support systems and other tools are finalized.

During Phase II, it is intended that each of the decision support system tools will be tested in regions other than the ones in which they are currently working. In addition, results from collaborating institutions are using the system and providing feedback from each location. Although the review panel has apparently selected the main research activities for Phase II, it would seem to the AMR team that there remains the opportunity to propose a structured synthesis effort. A program to synthesize the accomplishments of the SM CRSP and to communicate them to the wider research and development community could either be coordinated through the ME or another activity.

Even though the SM CRSP is still in the early stages of developing the tools that will have an impact on soil management practices and knowledge, it is already having a significant impact in at least four ways. The NIFTAL project at the University of Hawaii has provided the capabilities and knowledge to provide a high quality liquid microbial inoculum for legumes to farmers in the developing world. A new method is being field-tested substituting the liquid inoculum for the more expensive carrier materials such as peat. A second area of impact is with the NuMASS nutrient management system. Soil infertility problems in the Philippines have been correctly analyzed and solutions are now possible. The advance of the NuMASS system will be its ability to provide appropriate nutrient recommendations for a wide range of soil types that is calibrated according to the farmers' use of inputs and yield predictions. As a result of the SM CRSP programs in Honduras it is now understood what types of terraces can be constructed to control erosion even under extremely heavy rainfall situations. Finally, the Cornell project has begun to show how proper soil/plant nutrition can prevent some human health problems.

#### **Recommended:**

**16.** That the ME continue its development of the SM CRSP website with the goal of using it as the primary vehicle for CRSP communications and annual reporting.

## **VII. GENDER ISSUES**

There have been two main ways to address the question of women in development programs. The oldest and most common approach is to look at women as a distinct population with special needs that had to be distinctly targeted - an "add women and stir" approach. This sometimes includes counting the number of women participating in specific activities, including training. More recent efforts in this field have turned away from targeting towards "gender mainstreaming." Mainstreaming is an effort to integrate gender analysis into project design and implementation throughout the project cycle. It looks not only at women as a special group with potentially special needs, but looks at the relationships between men and women and their level of access to different institutional frameworks. In economic growth, this may involve identifying and resolving gender-based constraints to poverty reduction. This approach looks at the institutional environment of activities engaged in by agriculturalists or other project participants to identify where gender inequalities inhibit full participation by both men and women.

In the SM CRSP, one of its stated goals has been increasing gender and intergenerational equity in farming communities by enabling men and women to share in benefits derived from and decision-making about efficient management of agro-systems. While an overall goal of the CRSP, only one project has taken gender as a central theme in investigating possibilities for improving agricultural productivity in Africa. It is also one of the few activities working at a farmer level. It is consequently difficult to assess how well the CRSP as a whole takes gender issues into account, and it may well be that in some projects attention to gender might be irrelevant at this time. That conclusion, however, should be the result of careful consideration of the issue, rather than assumed beforehand. There is some concern by the team that, with the inclusion of the University of Florida project, other researchers may perceive that gender issues for the rest of the CRSP are resolved. The Trade-Off Analysis model, according to its PI, could be programmed to include sex-disaggregated data if they showed measurable differences in productivity. The project team has not yet collected such data, created the necessary data set, nor run a sex-linked variable. Although the PI would be

agreeable to running a sex-disaggregated variable, there are no plans, nor encouragement to include the work needed to make this happen in Phase II.

The ME response to progress on gender issues noted the inclusion of women in SM CRSP activities at both research and training levels. While any expansion of the number of women moving into science fields is commendable, gender issues involve more than an arithmetic calculation of people trained or employed. Including women in the work of the CRSP is not sufficient to ensure that gender analysis will be performed or that gender issues will be adequately addressed in the research activities. An EEP recommendation to include gender analysis in each activity was not elaborated upon in its report - nonetheless, the decision not to follow the EEP recommendation, as evidenced by the character of the proposals selected for Phase II, was made without reference to the EEP statement and without explanation of the decision to exclude it.

Interviews with the PIs revealed that most believe that addressing gender issues involves targeting women as a "special needs" population, whether in training, in the field, or as consumers. While it may on occasion to be appropriate to look at the needs of women as target populations, an approach which would fit more neatly into the Soil Management CRSP research constraint paradigm would identify gender-based constraints to Soil Management research, production, marketing, processing, and consumption. Such an approach looks at the institutional environment of the activities just described to identify where gender inequalities inhibit full participation by both men and women.

Recent changes in USAID's procedures for negotiating new grants and cooperative agreements have changed the language related to gender issues. The new rules (ADS 303.5.5b) should be considered to determine if they might apply to the CRSPs extension proposals (see Appendix 8). The regulations require that gender analysis be considered unless a waiver is obtained that explains the reasons why such an analysis is inappropriate or unnecessary.

**Recommended:**

**17.** That the ME carry out or arrange to have carried out an analysis to determine where and if gender-sensitive approaches are relevant to the work planned for Phase II.

**VII. SUSTAINABILITY, TRAINING, AND INSTITUTIONAL DEVELOPMENT**

**A. Sustain ability**

This first phase of the Soil Management CRSP has not been a sufficiently long period to achieve full sustainability of each activity. Adequate progress has been made and greater efforts to achieve sustainability are expected during Phase II. Some activities have been more successful than others in raising additional funds, both from other USAID sources as well as from international centers and foundations. In Phase II, the ME could provide support for opportunities for supplementary funding to achieve greater sustainability of the activities.

This section will raise a few concerns that bear consideration as plans for greater sustainability of the CRSP activities are developed:

1. **Emphasize Degree Training:** To maintain and to further research on the soil management constraints, it will be necessary to call upon a global network of trained personnel. Such a network depends upon reinvigorating the training programs that bring host country students to the US for formal degree programs, as well as innovative approaches providing web-based training and long distance education in host countries.
2. **Promote Institutional Capacity Building:** To ensure that returning experts function effectively in host countries, it will also be crucial to provide assistance in building the capacity of host country institutions to design and implement their own research programs; The second phase of the SM CRSP should consider ways to guide host country institutions in improving their financial and administrative abilities and to transfer additional responsibilities for the implementation of research activities to host countries. In some cases, it may be appropriate to establish formal subcontracts with host country institutions; in other cases, other means may be needed.
3. **Develop a Market for CRSP knowledge products:** It will be important to develop a demand for CRSP products if the activities will be sustainable. In Phase II, it will be necessary to reach the correct audiences with information about the SM CRSP activities. This will require careful thought about how to convey the substance and method of the CRSPs new models, products, and research results not only to expert technical audiences but also to policy makers and lower level government officials, such as extension agents.
4. **Developing Indicators to Assess Sustainability:** It would also be appropriate to build into the Phase II planning process a set of indicators to measure progress towards sustainability in each activity.

## **B. Training and institutional development**

In the early phases from 1981 to 1996, the SM CRSP provided advance degree training to 115 people. The CRSP envisioned that "These graduates will play a key role in the future work of this CRSP" (p.7 1st Annual Report). During the course of the review, the AMR team met with a number of people who had received training from the TropSoils CRSP and who were now involved in the SM CRSP. But training has not been a central focus of Phase I of the SM CRSP. Some projects have funded, from CRSP resources, U.S. and/or host country graduate students, but the number appears to be relatively few compared to some earlier iterations of the CRSP. A recent listing of students trained is found in the CRSP's third annual report. In addition, individual project websites do list many of the students training under those activities.

There appear to be both funding and philosophical positions leading to the decision to de-emphasize formal degree training under this phase of the CRSP. Decreased levels and the uncertainty of acquiring a stable flow of funding led to a concentration on research activities, since irregularities in funding levels and flow has led to hardships for some students and for the institutions in which they are studying.

The CRSP PIs also include under training activities such activities as short-term workshops held on specific topics for employed professionals. Some examples include the workshops in Peru and the Philippines mentioned earlier.

#### **Recommended:**

**18.** That the CRSP develop a training plan identifying their expectations for training in each activity and for monitoring whether or not its goals are being achieved.

#### **C. Benefits to U.S. agriculture**

Both the Tradeoff Analysis model and the NuMASS models have great potential for use in the U.S. and by U.S. agriculture. Similarly, there is nothing to prevent the NifTAL developed liquid inoculum to be made available to U.S. farmers. At this time, application of these models and products to U.S. circumstances is not the first priority of the SM CRSP researchers, since there is much work remaining to complete the research and refine the products. It might be possible to include a more targeted effort to develop US benefits during Phase II.

#### **D. Collaboration with Host Country Researchers and Institutions**

The relationship between the research programs and host country collaborators in the SM CRSP is complex. For several reasons, some financial and some administrative, there are few formal subcontracts with host country institutions to carry out CRSP research (see Appendix 5). Instead, several activities have informal relationships with individual researchers in host countries who perform research activities, and, in many cases, are funded on a cost-reimbursable basis. In two cases, the team heard that providing funding through a formal sub agreement involved too great a risk of those funds not reaching the researchers for whom they were intended. The fear was that funds would be leaked to non-participants along the way. Other difficulties about transferring funds to overseas institutions are discussed in the section on financial management (see Section V).

The degree and character of host country institutional and research involvement is difficult to determine from the formal materials provided about the CRSPs activities. There are no host country representatives, for example, on the Technical Committee or the Board of Directors. While there is obviously a wide and active network across the globe involved in SM CRSP research activities and product development, there is the appearance of activities being planned or developed in the U.S. and only tested in host countries, rather than a more collaborative methodology. In some cases, U.S. university students traveled to various host countries to carry out their degree-related research programs, but no host country researchers were involved in the selection of topics or design of their studies. It is only when the team challenged PIs on this point, and began to hear more detail about the process of how work plans are developed that a greater degree of host country collaboration emerged.

Several projects have on-going research relationships with IARCs, NGOs, and other organizations. For example, the Trade-Off Analysis project at Montana State is working closely with the International Potato Center (CIP); the NuMass project based at North Carolina State University is working with the Philippine Rice Research Institute (PhilRice) in the Philippines and the Institut Economique Rurale (IER) in Mali, among other groups. Some of the University of

Florida researchers have tested extension recommendations of the International Center for Agro-Forestry (ICRAF) in Uganda. The Cornell University activity is working with the Bangladesh Agricultural Research Institute and the Bangladesh Rice Research Institute.

#### **IX. Relations between the SM CRSP and USAID**

The SM CRSP maintains a good relationship with USAID. They have fulfilled all necessary reporting requirements in a satisfactory and timely manner. The *CTO* reports that the ME has been helpful and quick in responding to requests for information that have originated from the EGAD center and/or the AFS office. It appears that country missions have been appropriately informed about CRSP activities or CRSP travel in the areas under their responsibility. The CRSP, as noted elsewhere, has also been successful in obtaining supplementary support for some of its activities from USAID bureaus and missions.

The ME and the PIs all commented favorably on their relationship with the CRSP *CTO*. He has been helpful in providing guidance on USAID priorities and regulations. He has attended, as appropriate, meetings of the various CRSP governing bodies. The *CTO* and the *PD* have a collegial relationship and appear to work well together.

## **APPENDICES**

## **APPENDIX 1: SCOPE OF WORK**

### **Scope of Work Administrative Management Review Collaborative Research Support Program (CRSP)**

Project Title: Soil Management CRSP

Project Number: 931-1311

Name of Grantee: University of Hawaii-Manoa

Grant Number: LAG-G-00-97-00002-00

Director/Contact: Dr. Goro Uehara

USAID Project Contact: Dr. Charles Sloger  
Tel: (202) 712-1902

Review Dates: 11 May through 15 June, 2001

#### **I. BACKGROUND:**

Each Collaborative Research Support Project (CRSP) operates under a five-year grant and are subject to a five-year review. The purpose of the five-year review is to determine whether an extension for a CRSP is to be authorized for an additional five years. An important part of the review process is an administrative management review (AMR) that examines the management of the Soil Management CRSP. The review gives feedback to the Agency on how well the CRSP management entity is operating, in accordance with CRSP guidelines, and so as to carry out the agenda set forth in the CRSP proposal. USAID contracts a team of specialists to conduct the review.

An External Evaluation Panel (EEP) has done an in-depth external evaluation of the research program. The AMR panel will be able to draw on the EEP review findings and recommendations. The EEP review will be available for use by the AMR team. Since 1981 the Agency has awarded five-year grants for support of the Soil Management CRSP. An extension proposal must be submitted to USAID to allow processing before the expiration of the previous grant. The Agency would like the Management Entity to address issues raised by the EEP and by the AMR teams.

The purpose of the CRSPs is to conduct long-term research programs supported by DSAID. The research programs are designed and facilitated by collaboration among participating U.S. institutions and institutions in developing countries. Through collaborative research, the participating institutions contribute to an understanding of more efficient agricultural production systems, and management of the agricultural natural resources. Ultimately, this research will contribute to the larger body of knowledge aimed at poverty alleviation through improved production efficiencies and sustainable development.

## II. TEAM COMPOSITION:

The AMR team will be composed of a senior development research administrator, a senior social scientist analyst and USAID Senior program analyst. As appropriate, the team will be accompanied by the USAID cognizant technical office (CTO), who will act as facilitator, but not be a member of the reporting team.

Education and Experience: All members of the team must have 10 years experience in research management or have 15 years experience in USAID program regulations. The team will have extensive combined work experience in the following areas: research management and/or administration, agricultural economics, organizational development, USAID procurement regulations and international development program design and evaluation. The team leader will have at least ten years experience in project management or research administration with emphasis on international development.

Knowledge and Ability Requirements: Team members will possess: (1) an understanding of CRSP project operations, guidelines and evaluation; (2) an understanding of international agricultural development; (3) an understanding of research methodology and implementation; (4) an understanding of organizational development as it relates to collaborative research and project management; (5) the ability to deal effectively with representatives of government, academia and the private sector; (6) the ability to analyze issues and formulate concrete recommendations orally and in writing.

## III. STATEMENT OF WORK

The team will evaluate and report on the following items:

### A. PROJECT MANAGEMENT/ORGANIZATION:

1. The ME is responsible for the grant. The team should determine the ME's management style and comment on the ME's effectiveness for implementing the Soil Management CRSP. The Team should review the Office of the ME, its members, their roles, its annual budget and comment on its effectiveness of working together and managing CRSP operations. The Team should also talk to the University of Hawaii contracts office, appropriate Dean to determine support and their effectiveness to the success of the CRSP.
2. The ME created and oversees a system of governance for the CRSP. The team should determine the effectiveness of the technical committee (TC), board of directors (BOD), and external evaluation panel (EEP). The team should comment of the role and involvement of the ME and USAID's CTO in assisting the TC, BOD and EEP in carrying out their responsibilities.
3. The current ME was only responsible for pulling together separate projects into a five- year proposal that the Soil Management CRSP operates under now. This time the ME is in charge of the entire process for developing a five-year extension proposal. The team should review and comment on the planning process, how it started, unfold and will change the CRSP research project portfolio in the next phase.

The Soil Management CRSP has buy-ins from missions. The team should comment on the extent of mission support, the nature of buy-ins from missions and challenges presented to the ME due to mission buy-ins.

4. The ME makes sub-grants to participating institutions who in turn may make sub-grants to overseas institutions. The team should meet with the PI, students and others to determine their views, concerns, and suggestions about the management of the CRSP at various levels. The team should comment on the degree to which the participating U.S. institutions are supportive of and committed to the CRSP. The team should comment on the extent that administrators/department heads/college deans are interested and supportive of the CRSP projects associated with their institutions.
5. The Principal Investigators (PI) are responsible for their research projects. The team should determine the effectiveness of the PI in leading their projects and their responsiveness to recommendations from the TC and EEP. The views of the PI toward the CRSP management, their own university vouchering system, budgeting issues concerning Agency support should be determined and summarized.
6. The EEP of the Soil Management CRSP evaluates the research program. The team should comment how the EEP has helped to shape the CRSP research agenda and to resolve problems that have arisen.

#### B. TRAINING/INSTITUTION DEVELOPMENT:

1. Training and institutional capacity building are important components in the CRSP. The team should comment the integration of research and training and summarize the impact that CRSP projects have had on (a) U.S. institution research activity/capability and host country institution research activity and/or capability?
2. What impacts have CRSP projects had on agricultural research in host countries?
  1. The panel should comment on level of progress in training of students and/or technicians both overseas and in the U.S.?

#### C. RESEARCH PROGRAM:

##### Collaborative arrangements

1. The team should discuss with PI the effectiveness of the collaborative research process in facilitating access to and exchange of information among U.S. and host country collaborators.
2. The team should talk to the PI to determine the effectiveness of collaborations with overseas scientists in accomplishing the CRSP objectives. What has the CRSP leverage for overseas collaborators?

3. The team should summarize the working relationship between this CRSP and other CRSPs and what it means to the success of the project.
4. The team should determine the role that IARCs, NGOs, governmental organizations, other donors and the private sector play research projects. What have been the lessons learned and how can these relationships be enhanced?

Information dissemination, usage and impact

5. The team should comment on how each CRSP project ensures dissemination and usage of information generated through their collaborative research projects. Comment on outreach gateways to other others. What are some of the impacts attributable to each CRSP project.
6. What is the approach used to synthesize project results for application to other regions?
7. Are concise summary reports of research results issued for use in the host countries? If so, give examples of how the summary reports have been used.

D. FINANCIAL:

1. Has USAID provided funds to the CRSP in a timely manner each year? Has the ME distributed incremental funds to grantee on a timely basis?
2. Have all financial reports and vouchers been submitted in accordance with USAID requirements? What has been the track record of the grantee and sub-grantees in submitting vouchers and using funds in a timely manner?
3. Have the cost matching requirements been met? What has been the effect of the cost matching requirements?
4. Is the cost of the ME appropriate for the size of the CRSP? Is the present structure of the ME cost-effective and efficient? Should the ME administrative funds be increased or decreased? Are there examples of modifications that would improve the performance of the CRSP?
5. Have USAID financial management guidelines been implemented?

E. SUSTAINABILITY:

Institutionalization of US AID supported interventions is critical for long term sustainability.

1. How is sustainability addressed by the CRSP? Is sustainability addressed directly in project design? Is capacity building a part of the project? Is there verifiable progress on institutionalization from project efforts to date?

2. How does the project take into account the financial and institutional requirements to continue operation of the project activities after USAID funding is terminated?

#### F. WOMEN IN DEVELOPMENT:

Gender considerations are implicit in most USAID projects. Agency policy is to emphasize and support participation of, and substantive contributions by, women in the development process.

1. Are gender issues taken into account during project implementation in the CRSP?
2. Can project impact be disaggregated by gender? Do project data reflect gender considerations?

#### **IV. BACKGROUND MATERIAL FOR TEAM**

The team will receive reports and briefing materials for use prior to and during its reviews. The ME will provide the following documents to team members by May 1, 2001:

1. Proposal for Soil Management CRSP program in effect now
2. A sample annual work plan and subsequent annual report for projects (web-based reports are available)
3. In-depth External Evaluation Report
4. A sample trip report (web-based reports are available)
5. CRSP Guidelines.
6. A sample newsletter, as appropriate.
7. A list of all institutions and individuals involved in the CRSP (see annual reports)

The following documents will be made available by the ME upon request.

1. Annual work plans and annual reports (Available from the CRSP Management Office and, on the CRSP Home page)
2. Budget for each participating institution and each project (available at the CRSP Management Office)
3. External Evaluation Panel Report
4. Trip reports (web based for each project)

5. Memoranda of Understanding
6. Technical Committee annual reports
7. Financial reports--vouchers and expenditure reports

## **V. FINAL REPORT**

The team will prepare a draft report that addresses the specific items in Section IV. This report will be presented orally and in written draft to USAID. The team's final written report, including consideration of the comments and suggestions from USAID, should be completed and submitted to USAID. Ten printed copies of the final report and one diskette copy of the report in Word 97 format should be submitted to Charles Sloger, the Soil Management CRSP CTO, Office of Agriculture and Food Security, Bureau for Global Affairs, United States Agency for International Development, Washington, D.C., 20523-2110.

Suggested Format for report:

- Title Page
- Table of contents
- List of Acronyms
- List of Tables
- List of Figures
- Executive Summary
- Report
  - Findings and conclusions (Response to each item in the SOW)
  - Recommendations
- Appendices
  - Scope of work
  - Itinerary
  - Contacts
  - List of Materials reviewed

Each team member will spend an additional five days to draft the individual reports. Presentation of both oral and draft written reports to USAID on/or about June 10,2001. Final reports will be due June 15,2001.

## **APPENDIX 2: ADMINISTRATIVE REVIEW TEAM**

Ray Miller, Team Leader  
Director,  
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Charles Sloger  
CTO, Soil Management CRSP  
RRB 2.11-095  
G/EGADIUSAID  
1300 Pennsylvania Avenue  
Washington, DC 20523-2110  
Phone: 202/712 1902  
E-Mail: csloger@usaid.gov

## **APPENDIX 3: REVIEW SCHEDULE AND CONTACTS**

**Wednesday April 26, 2001  
USAID, Washington, DC**

### **USAID/GIEGAD/AFS**

Charles Sloger, Soil Management CRSP CTO, USAID

**Sunday, May 13, 2001  
Gainesville, FL**

Team travels to Gainesville, Florida.

**Monday, May 14, 2001  
University of Florida, Gainesville, FL**

### **University Administration, Researchers, Faculty, and Students**

Prof. Christina Gladwin, Food and Resource Economics, Principal Investigator Prof. Abraham Goldman, Department of Geography, researcher

Prof. Clifton Hiebsch, Department of Agronomy, researcher

Prof. Peter Hildebrand, Department of Food and Resource Economics, researcher and Director, International Programs, Institute of Food and Agricultural Sciences

Prof. John Gordon, Department Head, Food and Resource Economics

Amy Goff, Master's Student

Amy Sullivan, Ph.D. Student

Schferaw Feeke, Ph.D. Student

### **Grants and Contracts**

Charity Blomely, International Programs (manages travel accounting)

Betty Finn, International Programs (manages general accounting)

Lisette Staal, Asst. Director, International Programs

Rusty Okonowski, Interim Director, Office of Sponsored Programs

Richelle Davis, Accounting, Office of Sponsored Programs

Oliverne Mattson, Coordinator, Pre and Post Award Management, Office of Sponsored Programs

**Tuesday, May 15, 2001  
North Carolina State University, Raleigh, NC**

### **University Administration, Researchers, Faculty and Students**

Prof. John Havlin, Department Head, Soil Science; Board of Directors member

Prof. Jot Smyth, Soil Science, Principal Investigator

Prof. Deanna Osmond, Assoc. Prof. & Extension Specialist, College of Agriculture & Life Sciences

Prof. Frank Smith, Human Resource Development Program, College of Education & Psychology

Prof. Keith Cassel, Department of Soil Science, researcher with T AMU project

Prof. Fred Cox, retired, Department of Soil Science, researcher

Prof. Dan Israel, Department of Soil Science, researcher

Prof. Michael Waggoner, Department of Soil Science, researcher

Dr. Pedro Luna, Post-Doc, researcher

**Administration**

Dr. Johnny Wynne, Associate Dean & Director of Research, College of Agriculture and Life Sciences

**Grants and Contracts**

Sharon Boyd, Assist. Dir., Operations, Office of Contracts & Grants (Post Award)  
Mike Walker, Assistant Director, Systems and Compliance, Office of Sponsored Programs  
Miller travels to Chicago in evening. Blakeney returns to Washington, D.C.

**Wednesday, May 16, 2001**

Team of Sloger and Rubin travels to Bozeman, Montana. Miller meets in Bozeman from Chicago, Illinois.

**Thursday and Friday, May 17-18, 2001  
Montana State University, Bozeman, MT****University Administration, Faculty, Researchers, and Students**

Prof. John Antle, Dept. of Agricultural Economics & Economics, Principal Investigator  
Prof. Myles Watts, Head, Agricultural Economics & Economics Department  
Roberto Valdivia, Master's student, Agricultural Economics & Economics Department  
Allison Todd, Administrative Assistant, Dept. of Agricultural Economics & Economics  
Kitty Ann Squires, Dept. of Agricultural Economics & Economics

**Grants and Contracts**

Leslie Schmidt, Director of Grants and Contracts, Office of Grants and Contracts  
Dale Huls, Office of Grants and Contracts  
Deb Cox, Office of Grants and Contracts  
Keith Pickering, Accounting Specialist, Agricultural Economics and Economics Department

**Friday, May 18, 2001**

Team of Sloger, Miller, and Rubin leaves Bozeman, Montana and travels to Honolulu, Hawaii.  
Blakeney arrives in Honolulu from Washington, D.C.

**Saturday and Sunday, May 19-20, 2001  
Honolulu, Hawaii**

Team meets to discuss report preparation and begin drafting text.

**Monday and Tuesday, May 21-22, 2001  
University of Hawaii, Manoa, Honolulu, Hawaii****University Administration, Faculty, Researchers, and Students**

Prof. Goro Uehara, Director, Soil Management CRSP; Prof., Department of Tropical Plant and Soil Sciences, College of Tropical Agriculture and Human Resources  
Gordon Tsuji, Deputy Director, Soil Management CRSP  
Dean Andrew Hashimoto, College of Tropical Agriculture and Human Resources (CTAHR)  
Dr. Catherine Chan-Halbrendt, Assoc. Dir. For Research, CTAHR

Dr. Harold McArthur, Dir., Research Relations, Office of the Vice President for Research Prof.  
Robert Paull, Chairman, Dept. of Tropical Plant and Soil Sciences  
Dr. Paul Singleton, NifT AL Principal Investigator  
Dr. Harold Keyser, NifTAL, Research Director  
Richard Kablan, Research Associate with NuMass  
Dr. Russell Yost, Dept. of Tropical Plant and Soil Sciences, researcher on NuMass project  
Sharon Hone, Administrative Support Specialist

**Grants and Contracts**

Wayne Wakabayashi, Fiscal Accounting Specialist, Office of Research Services Martin  
Enokawa, Director, Office of Research Services  
Wesley Kau, Fiscal Accounting Specialist, Office of Research Services  
Gail Shibuya, Fiscal Accounting Specialist, Office of Research Services  
Ricky Fujioka, Accounting Clerk, Office of Research Services  
Gilbert Oshima, Director of Finance, Research Corporation of Hawaii  
Allen Shinsato, Administrative Officer, College of Tropical Agriculture and Human Resources

**Wednesday, May 23, 2001**

Depart Honolulu.

**Thursday, May 24, 2001**

Arrive in Washington, DC area.

## APPENDIX 4: LIST OF DOCUMENTS AND MATERIALS REVIEWED

### Project documents:

1. A Restructured Soil Management Collaborative Research Support Program, SM-CRSP, A Proposal Submitted to AID  
Volume I: Global Plan and Budget  
Volume II: Restructuring Document  
Volume III: Workplans  
Volume IV: Biodata/Letters of Commitment
2. Soil Management Collaborative Research Support Program, Annual Report 1997
3. Soil Management Collaborative Research Support Program, Second Annual Report Feb. II, 1998 to Feb. 10, 1999
4. Soil Management Collaborative Research Support Program, Third Annual Report Feb. 11, 1999 to Feb. 10, 2000
5. The Steepland Project, Technical Report Feb., 1999-Feb., 2000
6. HORIZON, Soil Management CRSP Newsletter. Vo1.1, No.2, Dec. 1998
7. Decision Aids for Integrated Soil Nutrient Management. T. Jot Smyth, NC State University
8. Assessment of Soil and Water Conservation Methods Applied to the Cultivated Steeplands of Southern Honduras. Soil Management CRSP, Texas A&M University, Technical Bulletin No. 98-2 April 1998
9. Manejo Sostenible de Tierras de Laderas Tropicales: Un Analisis de Terrazas Con Una Tecnologia Para la Conservacion de Suelo Y Agua. Programa de Investigacion Colaborativo de Manejo de Suelo, Universidad de Texas A&M, Boletin Tecnico No.98-1 April 1998
10. Sustainable Management of Tropical Steeplands: An Assessment of Terraces as a Soil and Water Conservation Technology. Soil Management CRSP, Texas A&M University, Technical Bulletin 98-2 April 1998
11. A watershed-Level Economic Assessment of the Downstream Effects of Steepland Erosion on Shrimp Production, Honduras. Soil Management CRSP, Texas A&M University, Technical Bulletin 2000-01 February 2000
12. La Conexion Entre la Inversion en Servicios de Extension y la Adopcion por Agricultores de Practicas de Conservacion en Sur de Honduras. Programa de Apoyo a la Investigacion colaborativa en Manejo de Suelos, Texas A&M University, Boletin Tecnico Numero 2000-02 Julio, 2000
13. Linkages Between Investment in Extension Services and Farmer's Adoption of Soil Conservation Practices in Southern Honduras. Soil Management CRSP, Texas A&M University, Technical Bulletin 2000-02, July, 2000
14. Soil Management CRSP. External Evaluation Report. December 1999

15. Administrative Management Review Soil Management CRSP. November 1995
16. Nutrient Management Support System (NuMaSS), Version 1.5. Cornell, Hawaii, NC State and Texas A&M
17. Soil Management: the Lifeline to Food Security. SMCRSP
18. Board for International Food and Agricultural Development. 1985 Guidelines for the Collaborative Research Support Programs. Washington, D.C.: Agency for International Development.

SUPPLEMENT PUBLICATIONS-DEVELOPED AND PUBLISHED BY SM-CSR  
COLLABORATORS

1. Guia para la toma de muestras para analisis de tejidos en banano, pina, palimito, pimientay maracuya. Armando Ferrufino, proyecto concade, DAI and NS State University. Diciembre, 2000
2. Manual de Suelos Nutricion de Pejibaye para Palmito. Eloy Molina Centro de Investgaciones Agronomicas Universidad de Costa Rica
3. Manual para la Evaluacion de los Experimentos de Investigacion Participativa en el Tropico de Cochabamba. Proyecto concde, DAI, IBTA and NC State University. Cochabamba, Bolivia enero 2001
4. Respuesta a la Fertilizacion en los Cultivos Comerciales mas Importantes del Tropico de Cochabamba. proyecto concade, NC State University, DAI. Villa Tunari, Chapare, Enero 2001

## **APPENDIX 5: LIST OF PROJECT RELATED WEB-SITES**

### **SOIL MANAGEMENT CRSP WEBSITE**

This is the central site for the Soil Management CRSP. It contains links to all of the sites listed below.

<http://agrss.sherman.hawaii.edu/sm-crsp/>

### **CORNELL UNIVERSITY**

Sustainability of Post-Green Revolution Agriculture: The Rice-Wheat System of South Asia

<http://www.css.comell.edu/FoodSvstems/RW%20proiect-a.html>

### **MONTANA STATE UNIVERSITY**

Tradeoffs in Sustainable Agriculture and the Environment in the Andes: A Decision Support System for Policy Makers

<http://www.tradeoffs.montana.edu>

### **NORTH CAROLINA STATE UNIVERSITY**

Decision Aids for Integrated Soil Nutrient Management

<http://intdss.soil.ncsu.edu/sm-crsp>

### **TEXAS A&M UNIVERSITY**

Soil Management Practices for Sustainable Production on Densely Populated Tropical Steeplands

<http://soilcrop.tamu.edu/research/intemational/proiects/inosteepland/content.htm>

### **UNIVERSITY OF FLORIDA**

Gender and Soil Fertility

<http://wilma.ifas.ufl.edu/CRSP>

### **UNIVERSITY OF HA WAI I - NifTAL CENTER**

Improved Agricultural Productivity through Biological Nitrogen Fixation Technology and Legume Management

<http://agrss.sherman.hawaii.edu/niftl>

### **COLLABORATIVE RESEARCH SUPPORT PROGRAMS HOME PAGE**

<http://crsps.unl.edu>

## **APPENDIX 6: ACRONYMS**

ADS	Automated Directive System
AFS	Office of Agriculture and Food Security
BOD	Board of Directors
CRSP	Collaborative Research Support Program
CTO	Cognizant Technical Officer
DC	Division Chiefs
EEP	External Evaluation Panel
FAO	Food and Agriculture Organization
G/EGAD/ AFS	Global Bureau/Center for Economic Growth and Agricultural Development/Office of Agriculture and Food Security
HC	Host Country
IARCs	International Agricultural Research Centers
ICRISAT	International Center for Research in the Semi-Arid Tropics
ILRI	International Livestock Research Institute
MOU	Memorandum of Understanding
ME	Management Entity
MO	Management Office
NARS	National Agricultural Research Services
NGO	Non-Governmental Organization
NifTAL	Nitrogen Fixation for Tropical Agricultural Legumes
NRM	Natural Resource Management
PD	Program Director
PI	Principal Investigator
TAMU	Texas Agricultural and Mechanical University
SADC	Southern Africa Development Community
SMSS	Soil Management Support Services
SPARE	Strategic Partnership for Agricultural Research and Education
TC	Technical Committee
TSMM	Technology of Soil Moisture Management
USAID	United States Agency for International Development
USDA/ARS	United States Department of Agriculture/Agricultural Research Service

## **APPENDIX 7: ADS GUIDANCE ON GENDER IN GRANTS AND COOPERATIVE AGREEMENTS 303.5.5B**

### **303.5.5b EVALUATION CRITERIA**

Criteria used to evaluate applications shall include, at a minimum, the technical merits of the applications, cost effectiveness and cost realism of the application, and past performance of the applicant.

In addition, USAID policy requires that gender issues be addressed as appropriate in all USAID-funded activities (See Mandatory Reference, USAID Policy Paper, "Women in Development," dated October 1982). If the SO/RP team decides that gender issues will not be incorporated, they must document their decision in accordance with the requirements in E303.5.5b paragraph 4 (E303.5.5b, paragraph.4).

4) A statement outlining gender issues or a rationale for not including such a statement must be included in the competitive RFA or APS, in accordance with ADS 201.3.6.3 (see ADS 201.3.6.3). The appropriateness of the statement or the rationale is determined by the Approving Official as part of the pre-obligation requirements.

5) Whenever gender issues are to be incorporated into the activity, the RFA or APS announcement must state the requirement. In developing specific criteria for evaluating the applicant's plan to incorporate gender issues into the overall activity, the SO/RP team shall consult, to the extent necessary, with the Bureau for Global Programs, Office of Women in Development (G/WID) for guidance on structuring the criterion to evaluate the plan's positive impacts on the socio-economic status of women, any differential impacts on men and women, and methods for measuring these impacts.

## **ME Responses to Recommendations of the Administrative Management Review (AMR)**

The numbers refer to recommendations of the AMR.

6. The Administrative Management Review correctly notes that this CRSP has strong and capable investigators and an inexperienced ME. The ME also agrees that better integration of projects can improve overall program performance. Progress towards an integrated program will require regular face-to-face meetings among the principal investigators. The reduced funding level prevented these meetings from taking place. In recent months, the ME has managed to establish a small reserve account by sharing travel costs with other agencies and organizations and by judicious use of administration fees received from services provided the Ethiopia mission to begin the process of integration. The ME also agrees with the review panel that the ME budget needs to be increased to cover costs of more frequent meetings of the principal investigators. (see also recommendation 16.
7. The ME and the Board of Directors (BoD) met in September to begin the process of revising the operational bylaws of this CRSP into a operation and policy manual. The deficiencies noted by the Review Panel will be incorporated into that manual.
8. The ME concurs.
9. The ME concurs.
10. The SM CRSP website can be found at the following URL:  
<http://tpss.hawaii.edu/sm-crsp>. The site is used to disseminate information on project activities through links to each of the 6 projects. Annual reports, work plans and budgets, minutes of committee meetings are currently posted on the website for general access. The ME concurs with the Review Panel's recommendation to include the policy and operations manual as a page on the existing web site.  
  
The current SM CRSP site is linked to the 8 other CRSP programs through the CRSP web site at <http://ianr.unl.edu/crsps>.
11. The ME concurs. See #6 above.
12. Universities typically operate on a cash-basis rather than an accrual basis. The CT AHR business office asked the ME to consult with AID for specific advice on reporting. The (need form number) is used to report expenditures. The CTAHR business office is working with the ME to develop an accrual system to monitor encumbrances and expenditures.
13. Cost sharing is defined in the 1975 CRSP Guidelines and in the revised Guidelines (2000). Cost sharing requirements and identification and definition of cost sharing will be presented in the SM CRSP Operational Guide and Manual.
14. The ME was not aware of this confusion on definition of cost categories "in the U.S., in Host Countries, and in the U.S. on behalf of Host Countries". The ME will include more precise definitions in its guidelines after conferring with the AID Office of Procurement. The ME's current understanding of "in the U.S." implies on-campus expenditures in support of the CRSP; "in Host Countries" refers to expenditures at overseas locations

where the CRSP projects have formal agreements or understanding to carry out activities in pursuit of project objectives; and "in the U.S. on behalf of Host Countries" refers to expenditures in the U.S. of purchases unavailable in Host Countries or in cases where it may be available but at a prohibitively higher costs, e.g. computers and field laboratory equipment.

15. The recommendations refer to clarification of cost-sharing and the time needed to transfer funds from AID to the ME to participant institutions and to subcontractors of participant institutions. Each institution has its own recognized "checks and balances" in processing and disbursing funds under contractual agreements. While many are common among institutions, the ME is prepared to work with the principal investigators in engaging in communications to expedite the transfer and disbursement of funds. For example, the ME was able to secure adequate documentation from USAID procurement to allow expenditure of funds up to the grant end date rather than the end of the incremental award date.
16. As in #11 above, the ME will encourage participation of host country scientists in on-site non-degree training across projects in this CRSP as a means to collectively improve capacity building among host country and project scientists through workshops and conferences. Academic degree training of students from host countries and the U.S. has been supported by this CRSP to foster scientific discipline and capacity building for both.
17. The report makes it clear that gender is a complex issue and that recent developments in the field emphasize "gender mainstreaming" which looks at the relationships between men and women and their level of access to different institutional frameworks, which sometimes involves identifying and resolving gender-based constraints to poverty reduction.

The CRSP is promoting the use of decision aids by developing country institutions to enable them to screen technologies for adoption by farmers. This approach is based on the assumption that screening generates technology options, thereby enabling men and women to exercise choice in the adoption process. There is a danger that decision aids may weaken, rather than strengthen women's decision-making position, particularly if decision aids succeed in transforming marginal farming operations run by women into profitable enterprises controlled by men. Thus what is good for productivity may not be good for women. On the other hand, increased productivity may free women from the drudgery of farming and allow them to participate in more creative activities.

The CRSP will monitor the import of decision aids on decision-making by men and women and use the result to rectify unintended negative consequences should they occur.

18. The ME concurs and will have an overall plan on training. Academic degree programs encourage interactive learning among U.S. and non-U.S. students. Degree granting programs allows partnering of U.S. and non-U.S. collaborating researchers to increase our understanding of biophysical and socioeconomic processes that impact our global agricultural system. Non-degree training enhances the capacity of our collaborators to participate in programs to improve adoption of technology and practices to improve productivity and protect the environment.

# **Listing of Graduate Students**

**1981-2001**

NAME	YEAR	DEGREE	INSTITUTION	COUNTRY
Benites, J.R	1981	Ph.D.	North Carolina State U.	Peru
Alvarado, A	1982	Ph.D.	North Carolina State U.	Costa Rica
Woolfenden, Robert	1982	Msc	Univ. of Hawaii	U.S.
Gill,D.W.	1983	M.S.	North Carolina State U.	U.S.
Katz, L.B.	1983	M.S.	North Carolina State U.	U.S.
Dowdle, Steve	1984	Ph.D.	Univ. of Hawaii	U.S.
Landeck,J.K.	1984	M.S.	Texas A&M Univ.	U.S.
Trangmar, B.B.	1984	Ph.D.	Univ. of Hawaii	New Zealand
Waweru, F.M.	1984	M.S.	Texas A&M Univ.	Kenya
Alegre, J.C.	1985	Ph.D.	North Carolina State U.	Peru
Daniel, Joshua	1985	Ph.D.	Univ. of Hawaii	India
Louis, P.A.	1985	M.S.	Texas A&M Univ.	Haiti
Makarim, AK.	1985	Ph.D.	North Carolina State U.	Indonesia
Marcelin, F.P.	1985	M.S.	Texas A&M Univ.	Haiti
Newman, L.J.	1985	M.S.	North Carolina State U.	U.S.
Soekardi, M.	1985	Ph.D.	Univ. of Hawaii	Indonesia
Bui, E.	1986	Ph.D.	Texas A&M Univ.	U.S.
Gichuru, M.P.	1986	Ph.D.	North Carolina State U.	Nigeria
Macedo, J.	1986	M.S.	Cornell Univ.	Brazil
Kagabo, Wilson	1986	M.S.	Univ. of Hawaii	Liberia
Pierre-N'diaye, Jean.	1986	Ph.D.	Univ. of Hawaii	Senegal
Palm, Cheryl A	1988	Ph.D.	North Carolina State U.	U.S.
Pfordresher, Anne A	1988	M.S.	Texas A&M Univ.	U.S.
Schultz, J.M.	1988	M.S.	Univ. of Hawaii	
Tuivavalagi, N.S.	1986	M.S.	Univ. of Hawaii	
Wendt, J.W.	1986	M.S.	Texas A&M Univ.	U.S.
Yerima, B.P.K.	1986	Ph.D.	Texas A&M Univ.	U.S.
Aliusius, Djohan	1987	Ph.D.	Univ. of Hawaii	Indonesia
Bowen, W.T.	1987	Ph.D.	Cornell Univ.	U.S.
Hoag, RE.	1987	Ph.D.	North Carolina State U.	U.S.
Huang, RS.	1987	Ph.D.	Univ. of Hawaii	Rep. Of China
Juang, L.L.	1987	Ph.D.	Univ. of Hawaii	
Legowo, E.	1987	Ph.D.	Univ. of Hawaii	Indonesia
Lin, L.	1987	Ph.D.	Univ. of Hawaii	
Lins, LD.G.	1987	Ph.D.	North Carolina State U.	Brazil
Marcano-Martinez, E.	1987	M.S.	Cornell Univ.	Dominican Republic
Mt. Pleasant, J.	1987	Ph.D.	North Carolina State U.	U.S.
Payne, William A, Jr.	1987	M.S.	Texas A&M Univ.	U.S.
Quintana, J.O.	1987	Ph.D.	Cornell Univ.	Nicaragua
Szott, Lawrence T.	1987	Ph.D.	North Carolina State U.	U.S.
Ubiera, A.A.	1987	Ph.D.	North Carolina State U.	Dominican Republic
Ayarza M.A.	1988	Ph.D.	North Carolina State U.	Colombia
Aziz, Taufiqul	1988	Ph.D.	Univ. of Hawaii	Bangladesh
Costa, F.J.	1988	M.S.	Cornell Univ.	U.S.
Gandah, Mamadou	1988	M.S.	Texas A&M Univ.	Niger
George, Thomas	1988	Ph.D.	Univ. of Hawaii	India
Gill,D.W.	1988	Ph.D.	North Carolina State U.	U.S.
Kan, S.	1988	M.S.	Univ. of Florida	
Luchiari, Arioaldo	1988	Ph.D.	Cornell Univ.	Brazil
Macedo, J.	1988	Ph.D.	Cornell Univ.	Brazil
Mirza, Naseer	1988	M.S.	Univ. of Hawaii	Pakistan

Nagachie, V.	1988	M.S.	North Carolina State U.	Cameroon
Subagio, Hardjosubroto	1988	Ph.D.	North Carolina State U.	Indonesia
Zaonago, Christophe	1988	M.S.	Texas A&M	Burkina Faso
Agus, Fahmuddin	1989	M.S.	North Carolina State U.	Indonesia
Buttler, Imo	1989	Ph.D.	Cornell Univ.	Germany
Carsky, Robert James	1989	Ph.D.	Cornell Univ.	U.S.
Davis-Carter, Jessica Gwyn	1989	Ph.D.	Texas A&M Univ.	U.S.
Elsenbeer, Helmut	1989	Ph.D.	North Carolina State U.	Germany
Evenson, C.I.	1989	Ph.D.	Univ. of Hawaii	
Hansen, J.W.	1989	M.S.	Univ. of Hawaii	
Gunaratne, Lokugam	1992	Ph.D.		Slovenia
Hacin, Janez	1992	Ph.D.	Univ. of Hawaii	Slovenia
Mcintyre, Beverly	1992	Ph.D.	Cornell Univ.	
Matungulu, Kande-Mutanda	1992	Ph.D.	North Carolina State U.	Zaire
Muamba, Tshiyombo F.	1992	M.S.	North Carolina State U.	Zaire
Pooyan, Shahriar	1992	M.S.	Univ. of Hawaii	India
Sturm, Linda Susan	1992	M.S.	North Carolina State U.	U.S.
Thompson, M.E.	1992	M.S.	Texas A&M Univ.	U.S.
Dierolf, Thomas	1993	Ph.D.	Univ. of Hawaii	U.S.
Franzleubbers, Kathrin	1993	Ph.D.		Austria
Hung, Xuexin	1993	M.S.	Univ. of Hawaii	Indonesia
Agus, Fahmuddin	1993	Ph.D.	North Carolina State U.	Indonesia
Castedo-Pereyra, Luis Rene	1993	M.S.	North Carolina State U.	Bolivia
Castedo, L. R.	1993	M.S.	North Carolina State U.	U.S.
Desmond, D.	1993	M.S.	North Carolina State U.	U.S.
Heil, Justin	1993	Ph.D.	Texas A&M Univ.	U.S.
Merry, F. D.	1993	M.S.	Virginia Polytechnic Inst.	U.S.
Long, Steve	1989	M.S.	Texas A&M Univ.	U.S.
Manjunath, A	1989	Ph.D.	Univ. of Hawaii	India
Melgar, R.J.	1989	Ph.D.	North Carolina State U.	Argentina
Motavalli, Peter	1989	Ph.D.	Cornell Univ.	U.S.
Smith, Christopher W.	1989	Ph.D.	North Carolina State U.	U.S.
Uribe, E.	1989	Ph.D.	North Carolina State U.	Colombia
Ara, Miguel Angel	1990	Ph.D.	North Carolina State U.	Peru
Caces, Maria	1990	Ph.D.	Univ. of Hawaii	Philippines
Davelouis, Jose Raul	1990	Ph.D.	North Carolina State U.	Peru
Doumbia, Mamadou D.	1990	M.S.	Texas A&M Univ.	Mali
Fernandes, Erick C.M.	1990	Ph.D.	North Carolina State U.	Kenya
Fontes, Mauricio P.F.	1990	Ph.D.	North Carolina State U.	Brazil
Gardiner, J.	1990	M.S.	Texas A&M Univ.	U.S.
Hooper, Jonathan W.	1990	M.S.	North Carolina State U.	U.S.
Nkwine, Charles	1990	M.S.	Makerere Univ.	Uganda
Nyemba, Ronnie	1990	M.S.	Univ. of Hawaii	Zambia
Ouattara, Mamadou	1990	Ph.D.	Texas A&M Univ.	Niger
Payne, William A, Jr.	1990	Ph.D.	Texas A&M Univ.	U.S.
Puentes, Ruben	1990	Ph.D.	Texas A&M Univ.	Uruguay
Rusman, B.F.	1990	Ph.D.	Padjajaran University	
Sow, Abdoul	1990	M.S.	Texas A&M Univ.	Mali
Thies, Janice	1990	Ph.D.	Univ. of Hawaii	U.S.
Woomer, Paul	1990	Ph.D.	Univ. of Hawaii	U.S.
Beck, M.	1991	M.S.	North Carolina State U.	Switzerland
Cahn, Michael	1991	Ph.D.	Cornell Univ.	
Glasener, K.M.	1991	M.S.	North Carolina State U.	U.S.

Grohsgal, B.J.	1991	M.S.	North Carolina State U.	U.S.
Istiglal, Amin	1991	Ph.D.	Univ. of Hawaii	Indonesia
Jintrawet, A	1991	Ph.D.	Univ. of Hawaii	Thailand
Kasli	1991	Ph.D.	Universitas Padjadjarn	Indonesia
Lu, Fhaoliang	1991	M.S.	Univ. of Hawaii	
Osmond, Deanna	1991	Ph.D.	Cornell Univ.	U.S.
Nurwakera, Joachim	1991	M.S.	North Carolina State U.	Burundi
Salazar, AA	1991	M.S.	North Carolina State U.	Peru
Takow, JA	1991	Ph.D.	Texas A&M Univ.	Cameroon
Turk, Robert	1991	Msc	Univ. of Hawaii	Argentina
Bartolini, Marcello	1992	MBA	Univ. of Hawaii	Argentina
Castilla, Carlos E.	1992	Ph.D.	North Carolina State U.	Colombia
McIntyre, Beverly	1992	Ph.D.	Cornell Univ.	U.S.
Schwartz, R.C.	1992	M.S.	Texas A&M Univ.	U.S.
Ursone, Diane	1993	Ph.D.	North Carolina State U.	U.S.
Vega, Silvio	1993	M.S.	Univ. of Hawaii	
Zaongo, Christophe L.	1993	Ph.D.	Texas A&M	Burkina Faso
Doumbia, Mamadou	1994	Ph.D.	Texas A&M	Mali
Gao, Xuesang	1994	M.S.	Univ. of Hawaii	Peru
Jackson, James	1994	M.S.	Univ. of Hawaii	U.S.
Ruiz, Pedro O.	1994	Ph.D.	North Carolina State U.	Peru
Schmidt, John P.	1994	Ph.D.	North Carolina State U.	U.S.
Tong, Z.	1994	M.S.	Univ. of Hawaii	China
Gao, Xuefeng	1995	M.S.	Univ. of Hawaii	
Lambert, Veronique	1995	M.S.	Univ. of Hawaii	Guyana
Luna-Orea, Pedro	1995	Ph.D.	North Carolina State U.	Mexico
Monteith, Stephen	1995	Ph.D.	North Carolina State U.	U.S.
Horowitz, April	1995	M.S.	North Carolina State U.	U.S.
Hussain, Sk. Ghulan	1995	Ph.D.	Univ. of Hawaii	Bangladesh
Ogoshi, Richard	1995	Ph.D.	Univ. of Hawaii	U.S.
Beck, Mike	1996	Ph.D.	North Carolina State U	Switzerland
Choi, Vincent	1996	M.S.	Texas A&M Univ.	Hong Kong
Gilbert, Robert	1996	Ph.D.	Texas A&M Univ.	U.S.
Linguist, Bruce	1996	Ph.D.	Texas A&M Univ.	U.S.
Parveen, Nihkat	1996	Ph.D.	Texas A&M Univ.	India
Pundutama, Martinus	1996	Ph.D.	Univ. of Hawaii	
Sierra, Hector	1996	M.S.	Univ of Hawaii	Honduras
Somarriba, Matilde	1996	M.S.	Univ of Hawaii	Nicaragua
Tewari, Surya	1996	Ph.D.	Univ. of Calif., Davis	Trinidad
Pundutama, Martinus	1996	Ph.D.	Univ. of Hawaii	
Coulombe, Clement	1997	Ph.D.	Texas A&M Univ.	Canada
Ferrufino, Armando	1997	Ph.D.	North Carolina State Univ.	Bolivia
Friday, J.B.	1997	Ph.D.	North Carolina State U.	
Glasener, Karl M.	1997	Ph.D.	North Carolina State U	U.S.
Guo, Fengmao	1977	Ph.D.	Univ. of Hawaii	China
Lambert, Hugh	1997	Ph.D.	Texas A&M Univ.	Jamaica
Salazar, Angel	1997	Ph.D.	North Carolina State U.	Peru
Smith, James	1997	M.S.	Texas A&M Univ.	U.S.
Thapa, Bir	1997	Ph.D.	North Carolina State U.	Nepal
Xinmin, Wang	1997	Ph.D.	Univ. of Hawaii	
Abaidoo, Robert	1998	Ph.D.	Univ. of Hawaii	
Schwartz, Robert	1998	Ph.D.	Texas A&M Univ.	U.S.
Samoya, Ana M.	1999	M.S.	Texas A&M Univ.	El Salvador

Soedarjo, Muchdar	1998	Ph.D.	Univ. of Hawaii	Indonesia
Santos, Hector	1999	M.S.	Texas A&M Univ.	Honduras
Wesch, Richard	1999	M.S.	Texas A&M Univ.	U.S.
Blanton-Knewtson, Sharon	2000	M.S.	Texas A&M Univ.	U.S.
Burdy, Bayyard	2000	M.S.	Auburn Univ.(Texas A&M)	Haiti
Pertotto, Humberto	2000	M.S.	Texas A&M Univ.	Bolivia
Niemeyer, Patrick	2001	M.S.	Texas A&M Univ.	
Greenberg, Wendy	2001	Ph.D.	Texas A&M Univ.	

# **List of Degree & Non-Degree Trainees**

**1997-2001**

Summary of CRSP Training for the Past Five Years

Degree Training	Degree	Specialization	Institution	Current Position	Gender	Country
<b>2000</b>						
Blanton-Knewtson, Sharon	M.S.		Texas A&M Univ.	Plant Ferr. Spec., Ma	female	U.S.
Burdy, Bayyard	M.S.		Auburn Univ.(Texas A&M)	With M.of Agric.,Haiti	male	Haiti
Pertotto, Humberto	M.S.		Texas A&M Univ.	Further study at TAMU	male	Bolivia
<b>1999</b>						
Samoya, Ana M.	M.S.		Texas A&M Univ.		female	El Salvador
Santos, Hector	M.S.		Texas A&M Univ.	with NGO in Honduras	male	Honduras
Wesch, Richard	M.S.		Texas A&M Univ.	Catholic Relief Fund, Madagascar	male	U.S.
<b>1998</b>						
Abaidoo, Robert	Ph.D.		Univ. of Hawaii		male	
Schwartz, Robert	Ph.D.		Texas A&M Univ.	USDA/ARS	male	U.S.
Soedarjo, Muchdar	Ph.D.		Univ. of Hawaii	Research Scientist	male	Indonesia
<b>1997</b>						
Coulombe, Clement	Ph.D.		Texas A&M Univ.	U.S. Envir. consulting firm	male	Canada
Ferrufino, Armando	Ph.D.		North Carolina State Univ.	CONCADEIDAI, Edificio Los Tiempos	male	Bolivia
Friday, J.B.	Ph.D.		North Carolina State U.		male	
Glasener, Karl M.	Ph.D.		North Carolina State U	Washington D.C.	male	U.S.
Guo, Fengmao	Ph.D.		Univ. of Hawaii	ALCAN- Jamaica	male	China
Lambert, Hugh	Ph.D.		Texas A&M Univ.	Calle Atahualpa 2067, Cala Cala, c	male	Jamaica
Salazar, Angel	Ph.D.		North Carolina State U.	US Environmental consulting firm	male	Peru
Smith, James	M.S.		Texas A&M Univ.	North Carolina St. Univ.	male	U.S.
Thapa, Bir	Ph.D.		North Carolina State U.		male	Nepal
Xinmin, Wang	Ph.D.		Univ. of Hawaii		male	
<b>1996</b>						
Beck, Mike	Ph.D.		North Carolina State U	VIP Agronomy Dept.	male	Switzerland
Choi, Vincent	M.S.		Texas A&M Univ.		male	Hong Kong
Gilbert, Robert	Ph.D.		Texas A&M Univ.	Univ. of Florida	male	U.S.
Linguist, Bruce	Ph.D.		Texas A&M Univ.	Agronomist, IIRI LAO Project	male	U.S.
Parveen, Nihkat	Ph.D.		Texas A&M Univ.	Researcher, Mass Gen. Hosp.	female	India
Pundutama, Martinus	Ph.D.		Univ. of Hawaii		male	
Sierra, Hector	M.S.		Univ of Hawaii	NGO in Honduras	male	Honduras
Somarriba, Matilde	M.S.		Univ of Hawaii	National Agric. Univ. Nicaragua	female	Nicaragua
Tewari, Surya	Ph.D.		Univ. of Calif., Davis	Housewife/Community Volunteer	female	Trinidad

<b>Non-degree Training</b>	<b>Training Activity</b>	<b>Field(s) of Training</b>	<b>Location</b>	<b>Current Affiliation</b>	<b>Gender</b>
Abebe, Ato Solomon	NuMass Evaluation		Philippines	Bureau of Agriculture (Ethiopia)	Male
Alvarado, Alfred	NuMass Evaluation		Philippines	Universidad de Costa Rica (Costa Rica)	Male
Asuncion, Quirin	NuMass Evaluation		Philippines	DA-CVRRRC (Philippines)	
Badiane, Aminata	NuMass Evaluation		Philippines	Institut Senegalese de Recherche Agricole(Senegal)	Female
Barroga, Karon	NuMass Evaluation		Philippines	PhilRice (Philippines)	Female
Bell, Mark	NuMass Evaluation		Philippines	IRRI (Phillipines)	Male
Carvo, Manoel	NuMass Evaluation		Philippines	EMBRAPA-CPAC Manaus (Brazil)	Male
Cay aba, Warlito	NuMass Evaluation		Philippines	LGU-DA Hagan (Philippines)	Male
Chinene, Vernon	NuMass Evaluation		Philippines	University of Zambia (Zambia)	Male
Concepcion, Rogelio	NuMass Evaluation		Philippines	BSWM (Philippines)	Male
Corton, Teodula	NuMass Evaluation		Philippines	PhilRice (Philippines)	
Craswell, Eric	NuMass Evaluation		Philippines	IBSRAM (Thailand)	Male
de Miranda, Leo Nobre	NuMass Evaluation		Philippines	EMBRAPA-CPAC Brasilia (Brazil)	Male
Descalsota, Josue	NuMass Evaluation		Philippines	PhilRice (Philippines)	
Doumbia, Mamadou	NuMass Evaluation		Philippines	Institut d'Economie Rurale (Mali)	Male
Dung, Pham Tien	NuMass Evaluation		Philippines	Hanoi Agriculture University (Vietnam)	
Du-Quiton, Jovelyn	NuMass Evaluation		Philippines	University of the Philippines, Los Banos (Philippines)	Female
Evangelista, Perfecto P.	NuMass Evaluation		Philippines	BSWM (Philippines)	Male
Ferrufino, Armando	NuMass Evaluation		Philippines	IBTA-Chapare (Bolivia)	Male
Francisco, Sergio	NuMass Evaluation		Philippines	PhilRice (Philippines)	Male

George, Thomas	NuMass Evaluation		Philippines	IRRI (Phillipines)	Male
Gomez, Arturo	NuMass Evaluation		Philippines	SEARCA (Philippines)	Male
Javier, Leo	NuMass Evaluation		Philippines	PhilRice (Philippines)	Male
Kebbeh, Mohammed	NuMass Evaluation		Philippines	WARDA-Sahel (Gambia)	Male
Kimbi, Gerald	NuMass Evaluation		Philippines	Sokoine University of Agriculture (Tanzania)	Male
Koostra, Sarian	Trade Off Analysis		Montana	(Netherlands)	
Macarubbon, Bonafacio	NuMass Evaluation		Philippines	LGU-DA Hagan (Philippines)	Male
Malabanan, Frisco	NuMass Evaluation		Philippines	PhilRice (Philippines)	Male
Mamaril, Cesar P.	NuMass Evaluation		Philippines	PhilRice (Philippines)	Male
Maniphone, Soulasith	NuMass Evaluation		Philippines	Luang Prabang Rainfed Research Program (Laos)	
Manocharan, V.	NuMass Evaluation		Philippines	IRRI (Phillipines)	
Manson, Alan	NuMass Evaluation		Philippines	KwaZulu-Natal Department of Agriculture (Tanzania)	Male
Mekonnen, Ato Kindu	NuMass Evaluation		Philippines	Male Siringka Research Center (Ethiopia)	
Mite, Francisco	NuMass Evaluation		Philippines	INIAP (Ecuador)	
Molina, Eloy	NuMass Testing		Hawaii	University of Costa Rica (Costa Rica)	Male
Mutert, Ernst	NuMass Evaluation		Philippines	Potash & Phosphate Institute (Singapore)	Male
Novias, Roberto F.	NuMass Evaluation		Philippines	Universidade Federal de Vicosa (Brazil)	Male
Obien, Santiago	NuMass Evaluation		Philippines	Phil Rice (Philippines)	Male
Paningbatan, Eduardo	NuMass Evaluation		Philippines	University of the Philippines, Los Banos (Philippines)	Male
Paterno, Rubuella	NuMass Evaluation		Philippines	Phil Rice (Philippines)	
Quiton, Jonathan T.	NuMass Evaluation		Philippines	IRRI (Phillipines)	Male

San Valentin, Genaro O.	NuMass Evaluation		Philippines	PhilRice (Philippines)	Male
Selassie, Ato Yihenew G.	NuMass Evaluation		Philippines	Adet Research Center (Ethiopia)	
Soulideth, Boun-Ome	NuMass Evaluation		Philippines	Soil Survey and Land Classification Center (Laos)	
Taher, Agusli	NuMass Evaluation		Philippines	Assessment Inst. for Agric. Tech. (Sukarami) (Indonesia)	
Tumanao, Danilo	NuMass Evaluation		Philippines	DA-CVIARC (Philippines)	Male
Valdeavilla, Andrew	NuMass Evaluation		Philippines	PCARRD (Philippines)	Male
Yamoah, Charles	NuMass Evaluation		Philippines	Council for Scientific and Industrial Research (Ghana)	Male
Zavala, Yamily	NuMass Evaluation		Philippines	FONAIAP (Venezuela)	