

**Quarterly Report-V**  
(October 1 – December 31, 2003)

**Sustainable Development of Drylands in Asia and  
the Middle East**

**A Cooperative Agreement (No. EEE-A-00-02-00050-00)**

**between**

**the U.S. Agency for International Development**

**and**

**the International Arid Lands Consortium**

**February 8, 2003**

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## **IALC Project Activities Summary (October 1 – December 31, 2003)**

### **General Project**

- The initial efforts under the Cooperative Agreement with USAID-ANE were recognized with the renewal of an expanded Cooperative Agreement with the IALC that incorporated the concept of Mission buy-ins, lengthened term to four years and the inclusion of an additional component, Yemen.
- Mission buy-in was successfully incorporated in Components 2 and 4, Jordan and Yemen, respectively. This will allow an expanded range of activities. Mission buy-in for Component 1 for Afghanistan and Pakistan is being negotiated.
- Activities accelerated with the diminishing effects of the war in Iraq, especially in Components 1, 2 and 4. India continues to develop slowly.

### **Component Activities**

- For the 1<sup>st</sup> Component, Afghanistan-Pakistan, the third positive short-course evaluation was received from training held at the Northwest Frontier Province Agricultural University, Peshawar, for Afghan professionals.
- A long-planned trip by the U.S. based project team was accomplished. Drs. John Santas and Oval Myers from the University of Illinois Urbana-Champaign and Southern Illinois University, respectively and Project Director, Bob Freitas, of the IALC traveled together in Pakistan and then in Afghanistan. The purpose was to meet with contacts from key institutions and contacts in both countries. This was accomplished. USAID Mission personnel in both countries were met with and project objectives were discussed. Dr. Abdul Qayyum Kahn, Field Director for the UIUC coordinated, facilitated and accompanied the U.S. personnel throughout the trip.
- For the 2<sup>nd</sup> Component, a long-planned visit to the U.S by Jordanian professionals was realized. A technical study tour visit to the U.S. by faculty and professionals from Jordan research and operations institutions was accomplished during the early to mid December period. Six persons were able to obtain visas in time to travel. The study tour encompassed lecture, labs and field activities. Course evaluations given at the close of the tour indicated a very positive experience (these evaluations will be made available on the project website). The goals of the visit also included extensive faculty to faculty interactions to plan future joint projects
- The Scope of Work for Jordan activities was presented and discussed with the USAID-Amman Mission. In addition to the Project Director, Mr. Mohammad Shahbaz of the Badia Research and Development Programme (BRDP) participated in the discussions. The primary cooperating institutions at this time are the Jordan University of Science and Technology (JUST), the University of Jordan (UJ), the Water Authority of Jordan (WAJ), and the Royal Scientific Society (RSS).

- The identification of faculty willing to travel to Jordan and/or work with Jordanian counterparts to provide technical assistance continues to grow. During this quarter the UofA based technical assistance team grew to 18 faculty and one advanced graduate student.
- The UofA has now hired Dr. Akrum Tamimi, as the Jordan Component Project Coordinator. Dr. Tamimi will allocate .30 FTE of his time to the assist the project in accomplishing the defined scope of work and to provide on-the-ground presence to insure activities continuity. He will meet as necessary with USAID-Amman, the BRDP and with the other cooperating institutions. When able to do so, Dr. Tamimi will travel to the U.S. for reporting, assisting in study tours, and attending project meetings.
- The 3<sup>rd</sup> Component, India, saw activity during this period. The Project Director and component team leader, Dr. Peter Ffolliot, met with Dr. Satish Chandra, former head of the National Institute of Hydrology for initial activity definition and identification of contacts.
- Following establishment of initial contacts with USAID, the government of India, research institutions and regional universities and through the assistance of the CTO, Project Director Freitas traveled to India to initiate the activity.
- The re-designed project web site (<http://ag.arizona.edu/oals/susdev/Home/Home.htm>) has now gone “live” during this quarter and maybe accessed for reports and activities of the project.

**IALC Project Activities Summary,  
following period (January 1 – March 31, 2004)**

- The Technical Advisory Committee (TAC) will hold a conference call which for the first time will include members from Jordan and Israel. The conference call is to prepare for the TAC meeting in Washington, DC set for the first week in March prior to the IALC Board meeting. USAID Project CTO will be invited, as well. Project status will be reviewed by the TAC during the conference call and during the March meeting. The March meeting will discuss strategies in moving the project forward.
- Travel to Jordan. Trips are planned by Dr. Livingston, Dr. Erin Addison, and Ms. Karen Vitkay, from Lanscape Architecture and Planning, UofA. Additionally, Project Director Freitas will travel to Jordan to initiate the planning for the Scope of Work for 2003/2004.
- Travel to Pakistan. The U.S. based project team will travel to Pakistan and Afghanistan in October. Travel clearances have been promised on the part of USAID to allow this to be accomplished. While there the team will meet with USAID-Islamabad and Kabul, RAMP project personnel, the NWFP Agricultural University

faculty and administration, and a number of Afghan governmental and NGO representatives.

- Visits to the U.S. A technical study tour visit to the U.S. by faculty and professionals from Jordan has been confirmed for late November early December period. The goal is to have ten persons visiting the U.S. on the initial study tour but this may be difficult to achieve with the continuing visa restrictions. Planning for this visit will be a major activity for the UofA faculty team as lectures and laboratory exercises in addition to field site visits will take place.
- A Cooperative Agreement renewal is expected to be in place. The Agreement will be for four additional years, with year-to-year from ANE and Mission buy-ins anticipated. The renewal of the cooperative agreement will see the addition of another project component, that of Capacity and Institutional Building of the Agricultural Faculty of the University of Sana'a in Yemen.
- Website materials will continue to be added to the project site.

The following are sections of the report that have been submitted by the three primary Project components: for Afghanistan-Pakistan, by UIUC, for Jordan by the Badia Programme with UofA participation, and for Yemen by NMSU. India continues to be handled by the UofA for the IALC until transfer to another lead IALC institution occurs. Editing and writing by the project director has been done in these sections.

**Component 1.**  
**Afghanistan-Pakistan Activities**  
**(UIUC-IALC)**  
**Quarterly Report-V**

**Introduction**

The principle event during this quarter was the October 8-25 TDY in Pakistan and Afghanistan by the project manager, John Santas, and senior advisor, Oval Myers. Project Director Freitas joined us for the October 12-19 period of this TDY. Appointments and in-country logistical arrangements for our visit were made by Field Office Director, Abdul Qayyum Khan. During the TDY we worked as a team of four, to develop long range plans and make substantial progress toward this component's objectives.

Myers and Santas have written separate trip reports. This was done to give complete coverage to the many items that were in our scope of work and to sufficiently capture the breadth and significance of our accomplishments. Draft reports were submitted to Project Director Freitas for preliminary information on November 5. These draft versions were distributed by the Project Director on November 13. After reaching final-version status, both trip reports were submitted to the Project Director on November 24 to be posted on the web site and placed in IALC files.

**Activities of this period (October 1 – December 31, 2003)**

Our October interaction with AID/Kabul representative Karri Goeldner, resulted in a verbal commitment of supplemental support at the requested level of \$360,000. When added to core funds in our Cooperative Agreement, this will allow us to conduct at least six organized short courses during calendar year 2004. Our present understanding is that the supplemental funding from AID/Kabul will be routed through their contract with Chemonics International for the RAMP Project. We will be able to access those funds by submitting proposals to RAMP for each training activity. RAMP Project funds will then be released to IALC headquarters for subsequent transfer to UIUC.

Having secured this promise of supplemental support from AID/Kabul, Dr. Qayyum used much of his time during the month of November to develop plans for calendar year 2004 training programs. A one-page calendar of possible short course offerings during 2004 is attached to this report, along with an announcement and outline for the first two courses. These courses will follow a pattern very similar to the three courses that were completed during August and September 2003. That is, they will be conducted in Peshawar and the NWFP, using core funds for support. The first two courses for 2004 (Nos. 0104 and 0204) have already been announced and nominations were coming in at a brisk pace. We anticipate having 20 participants in each course.

Dr. Qayyum carried these 2004 plans when he departed Islamabad on December 14 for a one-week visit to Kabul. It should be noted in the course announcements that nominations are being received by M. Sharif Abbasi. One of the objectives of our October TDY was to identify a point of contact in Kabul for IALC training programs. That was accomplished and Mr. Abbasi is serving in that capacity. While Dr. Qayyum was in Kabul, he was involved in a series of in-depth discussions and planning sessions with Mr. Abbasi, to get our 2004 training programs off the drawing board and set into motion. As these two men work together, we will likely discover increasing levels of complementarity and synergy between RAMP and IALC efforts in Afghanistan.

Dr. Qayyum was accompanied by two NWFP-AU faculty members who were selected by the Vice Chancellor as his representatives. They were: Dr. Zar Quresh, Director of Outreach, and Dr. Anwar Chishti, Director of the Institute of Business and Management Sciences. Both made valuable contacts. Professor Chishti is coordinating the course on Enterprise Development and Management Skills that will be held in Kabul March 22 to April 19. He was able to work with Kabul University personnel to make advance arrangements for that course. Professor Quresh visited research stations around Kabul and in the Jalalabad area. He was able to make progress on research collaboration that will lead to “twinning” of selected Afghan and Pakistani research stations. These twinning arrangements will then lead to individualized short-term training programs at research stations in the NWFP-AU system for Afghan scientists. Further details can be found in trip reports that have been prepared by these travelers.

During our October TDY, as part of our wrap-up activities in Islamabad, we met with AID Mission Director Mark Ward and Dr. Margaret Harritt, Program Manager. They expressed regret that the TIPAN Project had been terminated after 10 years (due to the Pressler Amendment) instead of continuing for the originally-planned 15 year period. They also expressed strong support for the IALC training project because it has the potential to develop a “good neighbor” relationship between Pakistan and Afghanistan. At the time of these discussions, it seemed quite clear that any support or buy-in from AID/Islamabad would be invested in strengthening the NWFP Agricultural University; to ensure that they are up to the task of delivering the educational programs that are needed at this stage in Afghanistan’s recovery. The Islamabad Mission is also looking beyond this near-term goal and has visions of the NWFP-AU becoming a regional power in agricultural education and research and a regional center of excellence.

AID/Islamabad requested a proposal which presents ideas on how we might accomplish these two objectives; i.e., 1) Strengthening the NWFP-AU so they can provide training programs needed by Afghanistan; and 2) Helping that university position itself to become a center of excellence in the South Asia region. The requested proposal, presenting 14 specific suggestions, has been prepared by the Illinois team and was submitted to AID/Islamabad on December 4. Margaret Harritt has acknowledged receipt, but we are awaiting a more formal and specific reply.

Progress was made on assembling an advisory committee that can relate specifically to this component. The Afghanistan-Pakistan Training (APT) Group has been formed and will hold its initial meeting on January 13, 2004. At present there are nine members. Half of them are TIPAN project veterans, having served on the resident technical assistance team. The others are active faculty members drawn from both UIUC and SIUC. Prof. Jeff Dawson, UIUC

representative on the IALC Technical Advisory Committee, is also a member of the APT Group. This committee will serve as a valuable sounding board. Members may also be able to take on TDY assignments as needed.

Near the end of this quarter arrangements were being made for the Illinois visit of Dr. Qayyum. The primary reason for his travel is to participate in a January 15 briefing session which has been arranged for staff of the Bureau for Asia and the Near East (ANE) in USAID Washington. Prior to that briefing session, he will be working with colleagues in Illinois on RAMP proposals and a host of other items that need our attention. Dr. Qayyum also participate in the January 13 APT Group meeting.

### **Activities planned, following period (January 1 – March 31, 2004)**

The January 13 APT Group meeting and the January 15 ANE briefing session (subsequently postponed to February 12) are already on the calendar and have been mentioned above. Most of the activities mentioned in the previous section, especially the 2004 calendar of training activities, will require careful monitoring and follow up. This applies especially to proposals and other documentation needed by the RAMP project to keep financial resources flowing. Continuation of the Training Needs Assessment Survey, already initiated by Dr. Myers and explained in his trip report, will require our time and attention as that process moves forward.

Organized short courses and similar types of short term training programs have proven very popular among NGO's, Ministries and other groups in Afghanistan that nominate individuals for training. The NWFP-AU has convincingly demonstrated that they can deliver these types of training programs in a way that will meet everyone's expectations. We are confident that the short courses conducted in Afghanistan in 2004 will also be successful. We will continue to offer these types of training programs. It is also our intent to expand the programs we offer by selecting well-qualified candidates for long-term degree study and getting them enrolled in B.Sc. and M.Sc. programs at the NWFP-AU. Degree level training is needed for sustainability of development in Afghanistan.

Extension and renewal of the Memorandum of Agreement between the NWFP-AU and the Illinois Universities (UIUC and SIUC) is still on our agenda. The review and approval process in Pakistan should be near completion, allowing this agreement to come off the Vice-Chancellor's desk and go to Illinois for final signatures. This agreement will resemble the one that was executed in 1994 at the time of TIPAN Project completion. When that agreement is finalized and in place, we anticipate the negotiation of a subsequent document between the Illinois Field Office and the Vice Chancellor's office. This agreement will deal with logistical, administrative and financial matters related to the delivery of training programs for Afghan agricultural scientists.



## TENTATIVE CALENDAR OF ORGANIZED SHORT COURSES FOR 2004

Announcement No.	Course Title	Location	Duration	Deadlines for nominations
0104	Orchard and Nursery Management	Peshawar	February 9 – March 8, 2004	January 10, 2004
0204	Training of Trainers in Sustainable Use of Water Resources - Engineers	Peshawar	February 9- March 8, 2004	January 10, 2004
0304	Enterprise Development and Management Skills	Kabul	March 22- April 19, 2004	March 01, 2004
0404	Extension Methodology & Technology Transfer	Kabul	March 22- April 19, 2004	March 01, 2004
0504	Preservation of Fruits and Vegetables	ARI/Tarnab Peshawar	May 20- June 20, 2004	April 30, 2004
0604	Integrated Pest Management	Peshawar	June 10- July 9, 2004	May 20, 2004
0704	Irrigation and Water Management Practices for Agricultural Officers	Peshawar	To be announced later	To be announced later
0804	Post Harvest Management and Marketing Skills	Peshawar	To be announced later	To be announced later
0904	Animal Nutrition	Peshawar	To be announced later	To be announced later

**Component 2.**  
**Jordan Component Activities**  
**(UofA & BRDP-IALC)**  
**Quarterly Report-V**

**Introduction**

**Activities of this period (October 1 – December 31, 2003)**

**BRDP Sub-contract**

- A new sub-contract for Year 1 of the project between IALC and BRDP was prepared. The sub-contract was sent to University of Arizona for processing and signing.

**Bio-solid Analysis:**

- The bio-solid characterization project with Royal Scientific Society (RSS) is in progress, the project started on June 2003 and aims to perform detailed characterization of bio-solids generated at three wastewater treatment plants in Jordan as a fundamental step to set guidelines for the acceptability of using bio-solids in agricultural applications. During the last quarter of 2003, more sampling and analysis of the generated bio-solid were performed; also samples of old bio-solid from the Wadi Musa site were analyzed.
- Ms Susan O'Shaughnessy, the Ph.D. student working with Dr. Christopher Choi at University of Arizona, started a visit to Jordan late December 2003 and will extend until mid January 2004. Ms O'Shaughnessy will assist the research team from RSS in establishing an automatic monitoring system in Wadi Musa for bio-solid quality monitoring.

**Technical Visit to Tucson, Arizona:**

- A technical study tour for six water and natural resources specialists from Jordan was arranged during the period of November 28 and December 14. The objective of this tour was to subject the Jordanian water specialists to some of Arizona State experience in the field of reclaimed water and bio-solid reuse. The specialists, who represent academic, government and research institutes, went through a series of lectures and field visits to demonstrate projects using agricultural application of reclaimed water and bio-solid.

**Wadi Musa Visitor Center**

- Dr. Erin Addison, the landscape architecture Ph.D student, is designing the landscape and also interpreting materials to be used at the Wadi Musa Visitor center. She visited the site during December 2003 to collect more information and field data.
- Dr. Addison accompanied the architect, Eng. Sahel Al Hiyari, to visit the site. Eng. Sahel was chosen to do the architectural design for the center and contract negotiation with him were initiated, the contract will be finalized during January 2004.

### **Aqaba Water Conserving Garden**

- Ms. Karen Vitkey, the landscape architecture Master's student, who is designing the Water Conserving Garden in Aqaba, visited Jordan late December to collect more information and field data for the site and prepare preliminary designs. Her visit will extend until mid January 2004.
- Dr. Peter Waller, from University of Arizona, visited Jordan during the third week of December 2003. The purpose of his visit was to gather more information and data in order to do water budget and water allocation of reclaimed water coming from the Aqaba Wastewater Treatment Plant. Due to the growing interest in using reclaimed water in Aqaba and more parties asking for their share of the water, a water budget and water allocation plan is essential for the city to assure the sustainability of any project using the reclaimed water including the planned Water Friendly Garden.

### **Climate Study**

- Dr Ramzi Touchan, from University of Arizona, visited Jordan in mid December 2003. The purpose of his visit was to complete a climate study using tree rings in Jordan that he initiated years ago.

### **Activities planned, following period (January 1 – March 31, 2004)**

#### **Bio-solid Analysis:**

- Sampling and analysis of the quality of bio-solids generated from Wadi Musa, Wadi Hassan and JUST University will continue.
- Ms. Susan O'Shaughnessy, the Ph.D. student working with Dr. Christopher Choi at University of Arizona, along with researchers from RSS will design the monitoring system and process the purchasing and installing of the needed equipment.

#### **Wadi Mousa Visitors' Center**

- Dr. Erin Addison, will present preliminary designs for the visitor center and the final theme design will be decided. Dr. Addison will then proceed in preparing detailed designs.
- The architect, Eng Sahel, will be contracted to do the architectural design. He will present a number of design concepts and one of which will be selected. The necessary preparations that include land survey, geological and geo-technical tests will be performed.
- Communications with Petra Region Authority were initiated and will be followed up to get the official assigning of the land that will that is to be used for the visitors' center.

#### **Aqaba Water Conserving Garden**

- Communications with Petra Region Authority were initiated and will be followed up to get the official assigning of the land to be the water friendly garden.
- Ms. Karen Vitkey, who is designing the Water Conserving Garden, is working on the plans and designs for this garden.

**Component 3.**  
**India Activities**  
**(IALC)**  
**Quarterly Report-V**

**Introduction**

Following establishment of initial contacts with USAID-New Delhi with the assistance of the CTO, Project Director traveled to New Delhi and then to Rajasthan. Mr. Freitas met with representatives of USAID, the government of India, research institutions and regional universities in Rajasthan.

**Activities of this period (October 1 – December 31, 2003)**

**Activities planned, following period (January 1 – March 31, 2004)**

**Component 4.**  
**Yemen Activities**  
**(NMSU-IALC)**

**Introduction**

**Activities of this period (October 1 – December 31, 2003)**

Work during this first quarter began with in-depth discussions of the proposed project strategies and activities involving the NMSU faculty members most likely to be in charge of their implementation. The group of professors that later traveled to Yemen (Dr. Octavio A. Ramirez, project coordinator; and Drs. Bill Gorman and Carlos Rosencrans) met several times to discuss and put together a preliminary scope of work for that visit.

Work during November focused on the logistical and operational planning for the December visit, which required numerous e-mails and phone call consultations with Professor Dr. Towfick Sufian (University of Sana'a); Dr. Doug Heisler, Mr. Scott Christensen and Mr. John Wilson from USAID; as well as Robert Freitas, Project Director from the UoA/IALC. Efforts to coordinate the work with the team of consultants from ARD that was in Yemen at the same time conducting an assessment of the development of agricultural sector initiatives for USAID/Yemen also began in November through contacts with Dr. Scott Thomas, team leader.

These consultations significantly altered the initial plans and helped redefine the main objectives of the first visit, as follows: To assess the quality and qualifications of the Faculty of Agriculture of the University of Sana'a; to learn what their role is and how they relate to the Ministry of Agriculture, the Regional Agricultural Development Authorities and the private sector; and to understand how they conduct and share applied research, provide outreach and extension, train students, and help farmers have a better life.

The goal of this assessment of the status and role(s) of the Faculty of Agriculture of the University of Sana'a (UOS), was to help USAID/Yemen decide if and how to best help strengthen the Faculty of Agriculture so that they can better support the development of the Agricultural Sector in this country and become a more productive partner with other governmental institutions related to agriculture. Particular attention was paid to what they might specifically do to improve agriculture in the USAID/Yemen target governorates.

To this effect, the IALC-NMSU team decided to devote the first visit to conducting extensive consultations with the University of Sana'a Administration and Faculty, the Ministry of Agriculture, the Ministry of Higher Education, the Eastern Regional Agriculture Authority, selected agricultural business leaders, USAID/Yemen mission officials, and other relevant parties. These meetings were coordinated with the team of ARD consultants that was in Yemen during the first two weeks of December.

The IALC-NMSU team prepared a draft report while in Yemen and provided a briefing to Ambassador Edmund Hull and USAID Mission Director Douglas Heisler before departing

from Yemen (attached). This draft summarized the main findings of the mission and outlined a proposed course of action for the strengthening of the Faculty of Agriculture of the University of Sana'a so that they can better support the Agricultural Sector development in a cooperative multi-institutional context. The main findings were:

1. The Faculty of Agriculture (FOA) houses 72 Professors, 19 of them with PhDs from U.S. universities, about 5 with PhDs from Western European Universities, and the remaining 48 with PhDs from Egypt, Iraq and the former Soviet Union. Although all professors have been trained at the PhD level, many could benefit from targeted training to refresh and upgrade their scientific and technical knowledge.
2. The FOA had adequate laboratory and experimental farm facilities and equipment ten years ago; but they have since lacked funds to maintain and update them as needed. They have no operational funds for research or extension activities.
3. As a result, the faculty's current focus is on teaching, with very little involvement in research or extension activities. However, they appear eager to develop or assist applied research and extension programs if provided with the necessary resources.
4. With some additional training, scientific/technical backstopping, basic equipment, and operational expenses the faculty would be well positioned to assist in the task of increasing agricultural productivity and income in Yemen's rural areas.
5. There are opportunities for small farmers to significantly increase their incomes by adopting better farming practices, changing crops and improving their marketing of farm products.
6. Currently, -unlike in the U.S.- the responsibility for direct public assistance to small farmers lies with the Extension Service, which is administratively under the Ministry of Agriculture and Irrigation (MAI).
7. The Extension Service has a large number of employees with centers and agents scattered throughout most rural areas where they can be in contact with farmers.
8. Delivery of expertise and information available at the various departments in the FOA to small farmers must involve the Extension Service as (unlike in the U.S.) the faculty does not have extension personnel in the field.
9. Currently, the FOA, the Extension Service, and the MAI-AREA (Agricultural Research and Extension Authority) research stations do not coordinate any of their activities.
10. Although the Extension Service has an adequate number of personnel, operating funds are extremely scarce. It has little or no money for extension equipment purchases and maintenance, travel, the development and reproduction of training/ information materials, and other basic extension program resources.
11. Extension agents also lack training on extension methods and have insufficient knowledge and little technical backstopping to help farmers deal with their main agronomic and pest problems.

12. Agribusiness professionals are needed to help develop a more “commercial” agricultural sector. The FOA is currently unable to provide specialized training in this field of Agricultural Economics.

### **Activities planned, following period (January 1 – March 31, 2004)**

The three main recommendations were:

- 1. To strengthen the organizational and technical capabilities of the FOA so that it can effectively participate in an integrated research-extension system that will support the long-term development of Yemen’s agricultural sector.**

To accomplish this first objective, we recommended continuing with the implementation of the IALC/NMSU proposal -- expanded to include the possibility of “refresher” and “updating” training of faculty members in several other agricultural fields. Most of the other activities envisioned in the initial IALC/NMSU proposal, such as training and support on institutional/organizational and administrative development, are found to be in agreement with this first objective and with the needs and priorities of the FOA.

To promote agribusiness growth and support small holder – agribusiness interest linkages, we recommended that the graduate-level training envisioned in the IALC/NMSU proposal be focused on Food and Agribusiness Planning, Management, and Marketing. Because of the scarcity of specialists in this field, this training would have to begin at the Master’s level. Some Master’s graduates would return to work in Yemen’s agricultural sector while others could continue on for a PhD in Food and Agribusiness and go back as UOS faculty. This will allow this university to eventually organize its own educational programs to supply the county’s need for these types of professionals.

To strengthen the capability of the FOA to carry out their proposed “Agricultural and Environmental Research and Consultancy Center” initiative, we also recommended that the agreement be expanded to provide training and backstopping in:

- a) Procedures for participatory prioritization of research and extension efforts. These involve all relevant parties (farmers, extension agents, researchers, research administrators, agribusiness owners, policy planners, etc) in a systematic process of determining research and extension priorities (i.e. which crops to work on, on what ecosystems and farm scales, the most pressing problems, the specific technologies that should be investigated or promoted, etc.)
- b) Participatory problem-solving research strategies and methods, which involve farmers and extension agents in the research process thereby increasing the relevance, adequacy, and the likelihood that the research outputs are useful and eventually will be adopted by the target farmers.
- c) Extension strategies and methods directed towards technology “transfer” to small farmers, so that UOS faculty can in turn assist MAI extension personnel in their efforts to communicate and convey information to the farmers.

- d) Procedures to conduct feasibility, cost-benefit and risk analyses of agricultural production systems, agribusiness ventures, and environmental and rural development projects, as well as agricultural and food product marketing studies.

We recommended that the above activities be funded by USAID/Washington through the IALC, at a level of at least \$200,000/year for a minimum of three additional years.

## **2. To provide operational funding for specific short-term projects that will have an immediate impact on small farmer incomes and rural well being.**

Although the FOA is strategizing to develop an eventually self-funded applied research and outreach program through a proposed “Agricultural and Environmental Research and Consultancy Center,” we concluded that the kind of research and extension effort needed to launch the development of Yemen’s agricultural and agribusiness sector can not be self-funded through the sale of services to the private sector only. In addition, this would provide an incentive for the FOA to focus on serving the larger farm operations and agribusiness interests that are able to pay for their services.

Therefore, we recommended that USAID/Yemen fund the procurement of essential equipment for problem solving research and extension support as well as operational resources needed for the FOA to implement priority short-term projects that would have an immediate impact on small farmer incomes and rural well being. The draft trip report provided a somewhat detailed description of four possible high-impact projects identified during our visit.

The report emphasized that a successful implementation of these projects would require further development and planning; specialized training for UOS and Extension Service personnel; and technical backstopping. Therefore, we recommended that NMSU faculty members assist USAID/Yemen and the FOA of the UOS in developing, monitoring, and evaluating the implementation of these projects; and in the identification and design of additional high-impact projects to be implemented in the future.

## **3. To provide for a long-term source of funding for problem-solving research and extension oriented projects.**

We concluded that implementation of recommendation 1. above would institutionally and technically strengthen the FOA so that it can become a leading participant in an integrated problem-solving research and extension system for Yemen. Implementation of recommendation 2. would provide the basic equipment, operational resources, and the specialized training and technical backstopping required for carrying out select cooperative extension-oriented projects that could quickly impact small farmer incomes; i.e. for this system to become operational.

However, past experience suggests that critical applied research and extension activities like those discussed under 2 above would likely stop without continued external funds. Therefore, our third recommendation was that USAID/Yemen encourages the government of Yemen to fund the establishment of and commit to the monitoring of a long-term program that would, on a competitive basis, grant the FOA of the UOS, MAI (i.e. the AREA and the Extension



Service), and any other public or private sector entities to access operational resources for the implementation of specific high impact projects.

We recommended that this program be launched by conducting participatory “priority setting” workshops to determine the applied research, extension and service priorities at each of the five USAID target governorates. This would provide baseline knowledge for the program “manager(s)” to make more informed project funding decisions.

Subsequently, we envision that the program manager(s), in close consultation with UOS and MAI extension agents, specialists, researchers, and administrators, put out periodical calls for competitive project proposals (CCPP). Some of these could be very specific in nature, to address key needs identified by the program manager(s). Others could be more “open” in scope, so that the program can continuously benefit from the experience and ideas of UOS, MAI, and AREA researchers and extension agents.

As needed, some of the CCPP’s could require collaboration between UOS, MAI and AREA, to promote a more effective utilization of the available human resources. The program manager(s), particularly during the initial stages of implementation, should be given some latitude to fund projects on a non-competitive basis, to rapidly achieve a well-defined high priority objective.

In regards to the program administrative structure, we recommended funding for a small management office based in Sana’a, and for significant backstopping from USAID, USDA, and internationally experienced research and extension faculty from U.S. and Middle East universities and research/outreach centers such as ICARDA. We suggested that this backstopping comes mostly in two forms:

- a) A core group of advisors that would help organize and attend the research and extension prioritization workshops, recommend the funding of specific non-competitive projects, provide ideas and guidance for the preparation of the calls for competitive project proposals, review and decide on the funding of the proposals received, monitor and evaluate the progress and outcomes of the projects funded by the program, etc.
- b) Short-term consultants that can be called in to support or carry out specific initiatives that are beyond the realm of expertise of the core group of program advisors.

Suggestions on how USAID/Yemen could secure the substantial amount of funding required for the establishment of this type of program were separately provided by USAID/Washington Senior Agricultural Development Advisor Scott Christensen.