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**YEMEN AGRICULTURAL DEVELOPMENT**

**SUPPORT PROGRAM, (ADSP)**

**EXTERNAL EVALUATION PROJECT**

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## ABBREVIATIONS AND ACRONYMS

ADSP	Agricultural Development Support Program (number 279-0052, under Title XII)
AID	Agency for International Development
AID/NE	Agency for International Development - Near East Bureau
AID/W	Agency for International Development, Washington, D.C.
AID/Y	Agency for International Development, Yemen
ALIGU	American Language Institute, Georgetown University, Washington D.C.
CalPoly (CSPUP)	California State Polytechnic University, Pomona
CID	Consortium for International Development
CID/T	Consortium for International Development Headquarters in Tucson, Arizona
CID/Y	Consortium for International Development Headquarters in Sanaá, Yemen
Core	Core subproject
CPO	Central Planning Office
CSPUP (CalPoly)	California State Polytechnic University, Pomona
DLRC	Documentation and Learning Resource Center
EOP	End of Project
EOPS	End of Project Status
ESL	English as a Second Language
FAO	Food and Agriculture Organization (United Nations)
FOA	Faculty of Agriculture, Sanaá, Yemen
HITS	Horticulture Improvement and Training Subproject

Ibb/ATC	Ibb Agricultural Technical Center
IBRD	International Bank for Reconstruction and Development
IPM	Integrated Pest Management
ISAI	Ibb Secondary Agricultural Institute
MAF	Ministry of Agriculture and Fisheries, Yemen
MOE	Ministry of Education, Yemen
NMSU	New Mexico State University
OSU	Oregon State University
PETS	Poultry Extension and Training Subproject
PID	Project Identification Document
PIO/T	Project Implementation Order/Technical Services
PP	Project Paper
SPID	Subproject Identification Document
SPP	Subproject Paper
SPTC	Sanaá Poultry Technical Center
TA	Technical Assistance
TCP	Third Country Professional
U of A	University of Arizona, Tucson, Arizona
UNDP	United Nations Development Program
USAID	United States Agency for International Development
YALI	Yemen American Language Institute
YAR	Yemen Arab Republic
YARG	Yemen Arab Republic Government

## AGRICULTURAL DEVELOPMENT SUPPORT PROGRAM

(PROJECT 279-0052)

### I. EXECUTIVE SUMMARY

#### A. INTRODUCTION.

The program external evaluation team visited Yemen between October 14 and November 20, 1983. All of the subproject sites were visited in Yemen and contacts were made with personnel of the Ministry of Agriculture and Fisheries (MAF), Ministry of Education (MOE) and those AID and CID individuals that worked with all of the subprojects. Everyone responded to questions and much helpful information was received in the form of opinions and facts that would assist the team in its evaluation.

The stateside visits to AID/NE Bureau, AID Contracts Office, CID/T, NMSU, CSPUP, and OSU (November 20, December 12) have added additional facts and understanding. The team found considerable difference of opinion concerning contracting and legal obligations among the parties of the collaborative mode.

#### B. STATUS OF THE PROGRAM

##### 1. Program Definition

Initially, the program was not well defined. Emphasis was on subproject design and implementation. In January 1983, AID produced an Agricultural Sector Assessment out of which in June 1983, the Program Strategy Statement was developed. This study defined more adequately the priorities for US assistance to the agricultural sector of the YAR. It contains an institutional development plan for the MAF within the guidelines of the agricultural sector assessment. All aspects of the program are designed around technology transfer by either teaching, on-the-job training, or sending personnel to CID universities or other third world countries for training.

## 2. Program Strengths.

- a. The annual work plan developed collaboratively by CID, YARG, and AID personnel in Yemen is a program strength. Both CID/T and lead universities plus AID/W and YARG have opportunity for input and adjustments to the work plan, which makes it the most collaborative part of the effort. The work plan provides flexibility to make annual adjustments in subproject operations without lengthy subproject revisions.
- b. The preimplementation funding provided by Core for startup activities of new subprojects is also a strength of the program. Without this funding umbrella, delays of six months to 18 months in initiating new programs would likely occur.
- c. Placing advisors in the MAF has encouraged good relationships with counterparts in most instances.

## 3. Weaknesses of the program.

- a. A lack of clearly defined and workable relationships is slowing progress.
- b. Recruitment of technicians and field personnel has been slow.
- c. YARG is too short-handed to be an equal collaborative partner to date.
- d. Inadequately defined program EOPS slows achievements because it directly impacts the program director's understanding of his responsibilities.

## 4. Suggested changes to strengthen the program.

- a. The program still needs to address two important programmatic areas. (1) MAF's inability to address issues of water resources development and soil conservation; (2) the role of the private sector. The first issue can be tackled in the short run by providing an increasing number of long term advisors to the ministry and by investigating the possibility of developing an

**On-Farm Water Management Subproject.** A longer term solution is to implement as soon as possible the Faculty of Agriculture subproject. With respect to the second issue, the private sector may have a role to play in PETS and HITS. This role is further discussed in the subproject section of the Executive Summary.

- b. Develop a mechanism which allows program funds to become legally available to CID in the absence of a contract amendment for new subprojects, and which is not contradictory to the intent of the terms as specified in Contract 1698. (See Appendix G, A, 1 and 2 for potential plans which might accomplish this.)
- c. Develop job descriptions for key personnel to assist these individuals in understanding their responsibilities. (See Appendix G, D, 1-14.) The detailed job description of program director, chief of party, subproject directors and team leaders based on understandings gained from the expanded EOPS will permit a more detailed job description and a more effective operation. Defining the authority and responsibility of these positions will also improve operations.
- d. Financial management appears to be satisfactory from the detail available in the reports. The ISAI costs per man year are about \$156,000, approximately in line with other AID activities. Core costs per man year appear to be high, apparently because of heavy operating costs of the Sanaa infrastructure. Core should investigate possible economies in its support staff and operational cost. All parties would welcome an audit of the dollar account.
- e. EOPS need to be established for the program. The inadequately defined EOPS issue is addressed by the list of end-of-project status statements. (See Appendix G, D, 1-14.)

**5. Conclusions:**

Because of the strengths of the collaborative mode, namely the annual work plan, the flexibility inherent in this approach, the flexibility made

possible by the preimplementation activities, and the use of these two concepts to assist YARG in their developing competence as a collaborator, the evaluation concludes the collaborative mode of operations should be continued.

### C. STATUS OF SUBPROJECTS

The implementation of the components of the various subprojects are contributing directly or indirectly to the achievement of the overall program purpose.

The ADSP has accomplished the implementation of the Ibb secondary school and the Core Subprojects. The PETS and HITS Subprojects have been developed and are technically implemented. The advisors authorized prior to May 1983 are in place and working with their counterparts in the MAF. A management and support system in Yemen has been placed in operation. Procedures, job descriptions, accounting systems, work plans, reports and working relationships have been developed. Most of these are still being refined and fine-tuned, but the basics are in place in the Yemen operation. These activities in Yemen are supported by most personnel in CID, AID and YARG. The United States AID/NE Bureau, AID/Contracts, CID/Executive Offices, and Lead Universities are all supporting the program. CID and lead universities have developed accounting, recruiting and placement procedures, a support system, and an evaluation system.

The status of the subprojects can be summarized as follows:

1. The ADS Program has been operating since the Ibb Secondary Agricultural Institute (ISAI) was authorized in 1979. ISAI status and accomplishments to date include:
  - Ibb school staffed and operating with an expatriate staff since October 1979.
  - Seventy-seven students graduated to date from the three-year course.
  - A curriculum was developed and approved.

- Approximately ten hectares of land have been developed for hands on training of students.
  - Seven students are being trained to the M.S. level in the U.S. plus 15 to the B.S. level in Egypt.
  - A large group of students (105) enrolled in coursework at the institute.
2. On July, 19, 1981, the Core subproject amendment number three was signed by AID/Contracts authorizing the Core operations. Prior to that date, Core activities were authorized under the ISAI subproject in the preimplementation mode. In the 28 months since implementation, Core has accomplished the following activities:
- A fully developed local administration and logistics support office in Sanaá and at OSU.
  - Three resident advisors working with MAF plus an engineer and a technician working on subproject implementation.
  - Two subprojects approved and funded except for signing of amendment number IX establishing their legal basis.
  - Two other subprojects under preparation.
  - The DLRC under construction.
  - Thirty-seven participants sent abroad for degree and non-degree training.

- English language training for MAF staff.
- Studies related to advisory functions.

1. The Poultry Subproject began operations in April 1982 when the team leader arrived. Accomplishments to date include:

- Construction of four poultry houses as satellite demonstration units in Sadah, Sandhan and Jahlia.
- Construction of four brooder houses at the Sanaa Poultry Training Center.
- Installed equipment for brooding at SPTC.
- Constructed two barns at Sadah.
- Work plans for implementation of the subproject have been developed.
- Identified a site for future construction of four pullet houses, fenced the site and had a well drilled for water.
- Developed and had plans approved for the pullet houses.
- Graduated five students from SPTC.
- Three students sent to OSU for B.S. training in poultry. One of these will probably stay for Ph.D. training.
- Nine students identified and placed for English language training prior to B.S. training at OSU. Two of these are eligible to leave for training.
- Over 700 farmers received varying levels of training in poultry production and management.

The poultry subproject is adversely impacted by a shortage of pullet-rearing facilities in the PET subproject which has slowed the progress of PETS.

Facility problems for pullet production in PETS must be resolved. If this cannot be accomplished adequately, the purpose of PETS need to be adjusted. A possible alternative might be to give greater emphasis to assisting development of the private sector in the way of expanded technology in processing of broilers, development of commercial laying operations, and strengthening feed and marketing operations. This approach might also satisfy the YARG's apparent emphasis on production.

4. The Horticultural Subproject team leader arrived early in 1982. The HIT subproject accomplishments include:
  - The Al Irra site, containing about 11 hectares, was cleared of rock, leveled, and fenced.
  - The buildings necessary for storage, housing and operations were designed and are being constructed.
  - An irrigation well was drilled, an irrigation pipeline system installed.
  - A citrus mother block (300 trees, 18 varieties, six root stocks) was planted.
  - Lined out 4,300 apple trees and 3,000 peach trees.
  - Windbreak planted around Al Irra station.
  - At Jarouba 34,000 budded citrus trees were produced by MAF in 1983.
  - A new shade house was constructed.
  - Two new planting blocks were developed by adding six-inch underground irrigation lines.

- Ten thousand citrus seedlings were lined out for fall budding, and an additional 45,000 root stocks were taken from the shade house to the planting block to be budded in February 1984.
- Sixty-four Yemeni were trained in budding and nursery practice and management.
- Twenty Yemeni have been identified for training abroad in various areas of horticulture and plant protection and are presently receiving English training.

The HITS progress has been adversely affected by inadequate housing in Jarouba and its isolation.

The YARG desires increased production emphasis in the HIT subproject. By expanding inputs of YARG personnel, developing a new irrigation well, building a new shade house, etc., as described in greater detail in chapter VI, it is feasible to accommodate increased budded citrus production at Jarouba while maintaining an acceptable level of training. It should be understood this expansion in production capability will require approximately two years before the number of trees for sale would be at the level requested of 100,000 per year.

##### 5. Conclusions:

Progress to date in accomplishing the ADS Program purpose has been slow when compared to SPPs and work plan expectations. Recruiting of personnel for long term positions in Yemen (two years or more) has been slow. Work plans were too optimistic. Delays in signing approvals to the work plans have been disruptive. The 1983-34 work plan was the only one signed in a timely manner. All other work plans obtained final signatures late in the work plan year or after the work plan year was over. The present level of detail of the work plans is adequate and there is no need for further refinements.

Some of the basic assumptions of the SPPs were overly optimistic, particularly the availability of competent university personnel to send to Yemen and the availability of trained Yemeni personnel to implement subprojects.

#### D. RECOMMENDATIONS.

1. The ISAI subproject should be continued for an additional five years in order to establish a trained Yemeni cadre in all agricultural teaching positions and to complete the development of the ISAI's academic and training components. Changes in the subproject emphasis over the next five years should include: (a) expansion of the farm to about 50 hectares to permit adequate training of students and the production of crops to support other activities of the institute; (b) continuation of duties of the present expatriate staff as stated in the contract; (c) establishment of an operational library system; (d) institutionalization of the outreach/extension program. Several other changes in emphasis are presented in Chapter IV, M (pages 40-42 of the report).
2. The Core subproject should be continued for an additional five years. The advisory function should be expanded and separated from the administration and support function. The Core team should appoint a Chief of Party in charge of the advisory cadre.
3. The MAF should consider developing procedures for handling funds generated from sale of trees, pullets and other farm products so these funds accrue to the MAF on a revolving fund basis. This would assist in program stability and greater self-sufficiency.

## II. AGRICULTURAL DEVELOPMENT SUPPORT PROGRAM (ADSP)

### A. SUMMARY

#### 1. Introduction

"The Agricultural Development Support Program (ADSP) (Project 279-0052) is a long term 10-15 year program."<sup>1</sup> "The program has been operational since the signing of the contract Number 1698 between the Consortium for International Development (CID) and the Agency for International Development (AID) on 10 July 1980."<sup>2</sup>

#### 2. Status of ADSP Program.

"The status of the ADSP can best be understood when it is recognized that the budget for the ADSP comes from the funding authorizations given to the subprojects and that the ADPS does not have its own budget. The subprojects are not subordinate to any project, only to the ADSP program."

"The ADSP is being implemented under a collaborative assistance-type contract to aid the Yemen Arab Republic Government (YARG) in undertaking a program of modernizing and revitalizing Yemen's agriculture sector."<sup>1</sup>

"The program strategy is:

- To provide the Ministry of Agriculture, the Ministry of Education, and the University of Sana'a advisory services and staff training to improve their capacities to plan, evaluate and manage agricultural development programs (education, infrastructure, and production),
- To develop and initiate specific subprojects at the production level to take advantage of agricultural growth opportunities and to ease critical constraints to development."

The ADSP's goal, purpose and end-of-project status objectives are to be accomplished through implementation of a series of subprojects.

"The purpose of the Title XII Program, also the subgoal of its component subprojects, is to improve the capacity of YARG and Yemeni Agricultural producers to develop and sustain an agricultural sector which effectively and efficiently uses Yemeni natural resources, is integrated into the economy, and is supportive of a broad based<sup>5</sup> and equitable social and economic development."

"Besides contributing toward the achievement of the ADSP goal and purpose, each subproject has its own specific development objectives. The ADSP purpose is the same as the subgoal of each of its component subprojects. Each subproject purpose relates to one or more of the ADSP end-of-project status objectives."<sup>1</sup>

The Agricultural Development Support program as specified in the contract and in amendment number three (3) to the contract is defined as the composite activities of the subprojects implemented to date and those additional subprojects in various stages of development. Amendment number three (3) Annex B entitled Core subproject, says "In addition to the Ibb secondary Agriculture Institute,, it is expected that at least five additional subprojects will be designed."... "Core will work with the YAR government in establishing priorities for selection and implementation of other subprojects. Some of the subprojects designed may be funded by the YARG or other... donors and/or lenders." This document further specifies that program priorities will be developed collaboratively by CID, YARG and AID."<sup>2</sup>

The evaluation team concludes that emphasis thus far has been on subproject development and implementation and not on the program per se. Given the background and the pressures for subproject development, this approach appears logical. In the future greater emphasis should be on the Program and those activities which would strengthen the program.

"The Agriculture sector assessment list of general strategy recommendations correlates well with the program strategy of the ADSP thus far. The team concludes from this comparison that the program as defined is appropriate."

"The program strategy statement of the ADS program was developed and published on May 4, 1983." This document was developed to more specifically present a strategy for U.S. assistance for developing the agricultural sector of the Yemen Arab Republic. The document links ongoing and proposed subprojects, by definition the program, to the agricultural sector assessment (ASA) and sets forth specific recommendations for subproject development in a prioritized listing.

The team agrees that the implemented and proposed subprojects are prioritized correctly and have the capability in the expected life of the program to accomplish the purposes of the program and the goals of the subprojects envisioned in the Program Strategy Statement.

The evaluation scope of work established a detailed set of criteria for the evaluation of the ADS program and four subprojects. (See Appendix B for detailed Scope of Work.) Listed in order of their approved subproject papers, these include:

- Ibb Secondary Agriculture Institute (ISAI).
- Core subproject (Core)
- Poultry Extension and Training Subproject (PETS).
- Horticulture Improvement and Training Subproject (HITS).

The ADS program has accomplished the implementation of the Ibb secondary school and the Core Subprojects. PETS and HITS have been developed and are being technically implemented. The advisors authorized prior to final approval of the 1982-83 work plan are in place and working with their counterparts in the MAF. A management and support system in Yemen has been placed in operation. Procedures, job descriptions, accounting systems, work plans, reports and working relationships have been developed. Most of these are still being refined and fine-tuned, but the basics are in place in the Yemen Program. These activities in Yemen are supported by most personnel in CID, AID, and YARG. The United States AID/NE Bureau, AID/Contracts, CID/Executive Offices, and lead universities are all supporting the program. CID and lead universities have

developed accounting procedures, recruiting and placement procedures, a support system and an evaluation system. The collaborative mode is understood differently by different people, but most personnel express a positive view concerning collaboration. There are many refinements currently being developed or implemented. The evaluation team finds accomplishments that have been made that likely would not have been without the collaborative mode. These cover a gamut of activities from reorganization to better definition of terms.

The CID-University organization and working procedures, are being internally evaluated, by CID executives and lead universities subproject directors, in an attempt to reduce some observed and perceived conflicts which would improve responsiveness.

The roles of program director and chief of party are being re-worked. Efforts to more explicitly define responsibilities and authority of these key personnel and operating parameters for U.S. and Yemen operations are in the process of being reworked.

The preliminary evaluation of the PETS and HITS subprojects in Yemen, although clouded with contradictions, regarding dates, funds available etc., was completed on the basis that both HITS and PETS had been implemented and were operating after approval of subproject papers, as implemented subprojects. The signed grant agreements by AID, and YARG, and the funding authorization by PIO/T requests by AID/Yemen were considered by the team as supporting this understanding. All of these approvals were made and are required but authorized only a pre-implementation mode as presently defined by the CID-AID contract.

The annual work plan determines the funding level and activities for each subproject for the operations year, after work plan approval by all parties. According to the universities, the mechanism and legal documents (contracts) to get the funds to CID and the universities, not covered by the contract between CID and AID, or a signed amendment to the contract, does not exist. What CID/Y and CID/T sign as far as work plans are concerned cannot legally bind a university without a contract because no one except the university contracts officer can do that. Those unaware of these facts are now alerted as to the problem. This problem can be solved by collaborative effort. It is not good business to operate in a quasi legal manner on the part of any of the collaborators.

All activities of HITS and PETS to date, as described above have been accomplished under the Core subproject as pre-implementation activities.

Much of the criticism for lack of recruitment efforts on the part of HITS, Core and PETS lead universities stems from the inability to pass funds to the university and to legally authorize them to expend funds for hiring long-term contract employees.

Contract amendment number three, annex B, Article I,C,7, establishes some parameters for activities which could be conducted before implementation and establishes funding limits prior to full implementation. These limits can be modified by appropriate authority and have been in the case of HITS or PETS. Much of the effort of subproject personnel has gone into planning and facility organization and installation. These activities are absolutely essential, but effort expended on these developments is effort that cannot be expended on program operations. This explains to a degree what appears to some to be a lack of accomplishment of subproject goals.

A more detailed description of the program status comes from analysis of the status of the subprojects. These are covered in chapters III-VI of this report.

The Agricultural Development Support Program (ADSP) is progressing toward accomplishment of its purpose, goals and objectives. The evaluation of necessity, deals in part with the success of Core in handling pre-implementation activities. The transition to subproject leadership by the lead universities of the HITS and PETS subprojects has progressed beyond pre-implementation in spite of delays in signing a contract amendment. These delays are due to slow and lengthy pre-award audits of the lead universities.

The HITS and PETS subproject accomplishments to date have been less than desired. The areas of plant protection and citrus tree indexing are urgent needs and will be treated more fully in chapter VI of the subproject recommendations. PETS pullet and chick raising facilities are required to bring this subproject on target. These will be more adequately treated in Chapter V.

Using the contract signature date by AID/contracts office as the official implementation date, as

specified in Paragraph II of the contract or appropriate amendment, of PET and HIT Subprojects and projecting until the end of the project as designed, allows ample time for these subprojects to achieve their goals and objectives. The evaluation team concurs in the ability of the ADSP, through planned and implemented subprojects, to achieve its EOPS objective of increasing income and improving the quality of life of rural inhabitants in the context of broad-based and equitable social and economic development.

The team concludes that the Title XII collaborative assistance approach being utilized in implementation of the ADSP has both advantages and disadvantages as a mode of operation in Yemen. Over three years of conscientious effort has been expended by many people to get this mode of operation to its present level. The accomplishments thus far are many. Operating procedures have been developed. Parameters and responsibilities for operation are better understood by each party, but the parties are not in total agreement. Adjustments in policies have been made and additional adjustments still need to be made. Working relationships have been developed. In short, much of the hard work and frustration created by a new method is now in the past. Modifications in procedures, more appropriate communication, more concise contract definitions and continued effort to improve working relationships could reduce conflict, increase the ease of doing business and minimize frustrations.

There are some disadvantages in working with the collaborative mode:

- There is a tendency to continue to want to do business in traditional ways rather than adjust to the collaborative approach.
- Contracts and laws take much time and in many cases lengthy negotiations resulting in inefficient or delayed operations.
- Universities have been competitive rather than cooperative as institutions; this has resulted in a need to change attitudes to accommodate this new approach.
- AID contracting procedures are bound by legal constraints; to change these constraints is time consuming and requires great effort.
- Management decision making needs to be done as close to the place of action as possible. When accomplished in this manner, the correctness of the decision is more likely to be correct. This is not being done this way at present.

## B. EXTERNAL EVALUATION METHODOLOGY

### 1. Primary Reasons

The primary reasons for this external evaluation are to:

- a. Evaluate the results and effectiveness to date of the Agricultural Development Support Program (ADSP) and each of its four ongoing subprojects as they impact on increased income and improved quality of life for rural inhabitants in the context of broad-based, equitable, social, and economic development. This requires development of qualitative and quantitative measures of inputs and outputs to indicate progress in achieving ADSP and subproject end of project status (EOPS) objectives to date.
- b. Evaluate the Title XII collaborative assistance approach being used to implement ADSP and make recommendations for its continuation and/or modification.
- c. Assess the CID organizational structure with the view of recommending appropriate alternatives, if deemed necessary. The evaluation should specify how the activities of the CID Board of Trustees, other CID organizational components, and the individual lead universities have impacted overall program performance.

### 2. Methodology Utilized

Because of the diversity of the ADS program, several evaluation techniques have been employed. These include:

- a. Conference sessions with Ministry of Agriculture and Fisheries (MAF), Ministry of Education (MOE) and Central Planning Organization (CPO) personnel, responsible for the collaborative effort coordination for the Ministries,

- b. On-site visits to the subproject operating sites in Yemen,
- c. Conferences with CID and AID personnel working in various capacities of project management and operation,
- d. Individual team members interacting with subproject leaders, CID and AID managers and other personnel in collection of data, discussing operations, problems, relationships and gaining insights into the collaborative mode.
- e. Review of published reports, work plans, evaluation reports, contracts, subproject papers (SPP), subproject implementation documents (SPID) and cable traffic files, operating procedure manuals, and management styles being used in planning, operation, and evaluation of the program,
- f. Visits to and discussions with other MAF and MOE operations or projects directly or indirectly involved with overall program or subproject operations.
- g. Visits with AID/W contract personnel, and with AID/W NE Bureau personnel to clarify confusion about authority to expend funds, at different levels, and beginning dates of subproject implementation.
- h. The team visited CID/Tucson headquarters. At the CID Executive offices we discussed CID operations, received answers to many questions, observed the accounting procedures and discussed them. Had a day long conference on CID operations.
- i. New Mexico State University was visited. Discussed the Ibb school (ISAI) and received answers to our questions. Reviewed operations of the subproject as received from the campus viewpoint. Visited with several administrators on campuses about CID, university relationships and procedures.
- j. The University of Arizona was visited. discussed DLRC and U of A involvement.
- k. California State Polytechnic University at Pomona (CSPUP) was visited. Recruiting was discussed in detail with the subproject director and with administrators. Problems

in operations of the horticulture subproject were discussed. The Foundation was toured and operation and expenditure documents reviewed.

1. We visited Oregon State University. Met with the Controllers office, Poultry department and subproject director, CID/OSU personnel, Core subproject director, CID Program Director at OSU and the OSU International program director. Purchasing and Support procedures were discussed. OSU-CID relationships were discussed.

### C. BACKGROUND

Meaningful evaluation of the overall Agricultural Development Supports Program (ADSP) requires a broad perspective of the relationships and purposes of each subproject that is to be evaluated.

"The ADSP is a long-term (at least 10-15 years) program to develop Yemen's agricultural potential. The Program strategy is:

1. To provide the Ministry of Agriculture, the Ministry of Education, and the University of Sana'a advisory services and staff training to improve their capacities to plan, evaluate, and manage agricultural development programs (education, infrastructure, and production), and
2. To develop and initiate specific subprojects at the production level to take advantage of agricultural growth opportunities and to ease critical constraints to development.
3. The ADSP's goal, purpose and end-of-project status objectives are to be accomplished through implementation of a series of subprojects. Besides contributing toward the achievement of the ADSP goal and purpose, each subproject has its own specific development objectives. The ADSP purpose is in effect the goal of each of its component subprojects. Each subproject purpose relates to one or more of the ADSP end-of-project status objectives.
4. The ADSP is therefore a total "program" for U.S. agriculture assistance in Yemen over 10-15 years.

The individual projects within the ADS program are called subprojects. The subprojects are not subordinate to any project, only to the ADS program. The Core subproject, whose primary purpose is institution-building, will exist for the life of the ADS program and will design, administer, and coordinate a series of other subprojects. Each of the other subprojects is supposed to address a particular set of on-farm problems and also specific objectives related to the ADS program EOPS.

5. "The ADSP is being implemented as a Title XII program by one contractor, the Consortium for International Development (CID). CID identifies/selects lead universities among its eleven members to implement each individual subproject. A distinguishing feature of the ADSP is the collaborative assistance mode used in its implementation with the contractor, AID, and the Yemen Government, equal partners in the design, implementation, and evaluation of the activities. The project paper establishes the goals and purpose of each subproject, but there is considerable flexibility left to the contractor to determine or adjust the implementation schedule and level of effort required to accomplish the goal and purpose. The annual work plan... establishes the annual budget, and the inputs and outputs for each subproject. Expenditures are authorized through the annual work plans which are approved by the three collaborating partners."

## II. EXTERNAL FACTORS

1. There are some economic conditions which, if they continue to progress in the direction they appear to be going at present, could adversely affect this project.
  - a. The Ministry of Agriculture and Fisheries' (MAF) budget for operations is having a difficult time keeping up with the rapidly needed expansion of the MAF. Should the economy slow its expansion or if the inflows of capital from Yemeni workers outside the country should materially decrease, the MAF with its best effort could be slowed in its personnel expansion and operations. The

already low levels of pay would be placed under more pressure and the ability of MAF to hold its trained personnel would become even more critical to the success of the ADS program effort.

- b. The broiler industry has expanded rapidly and the private sector has developed at an almost unbelievable pace. Broiler production, using mostly imported feed will continue to expand, because imported feed is less expensive than locally-grown feeds. It is likely broiler prices will be reduced by larger supplies and the private sector will see the opportunity to move into egg production where profit potentials have apparently not been recognized to date. The MAF must recognize the speed of this potential. It will require rapid technology transfer, through expanded training programs, to prevent failure of laying operations from lack of understanding of production technology. Poultry adjustments can be expected to occur in a much shorter time frame than other agricultural products, i.e.; horticultural adjustments.

- c. The YARG has implemented import controls to reduce imports of fruits into Yemen. This will likely increase the prices of home-produced citrus and fruits. With a reduced supply and expanding demand, prices will trend upward. Outflows of capital will be reduced because of the controls. Increased demand will make market prices for fruit and citrus produced in Yemen increase and the planting of citrus and fruit trees will be encouraged. In the first few years of this program, production won't be expanded to meet demand. Only after trees mature and begin to bear, four to six years or longer after planting will the results of this policy change be effective. The long-term effects will be positive. The short-run effects, except to reduce the outflow currency, will not be of much economic value because expanded production will not be able to keep up with expected quantities demanded.

## **E. INPUTS**

- 1. The ADSP capability to furnish to the YARG English language training is being met in a variety of

ways. The special language training for MAF personnel by Core plus the language training conducted at Ibb school and the additional availability of the YALI school are available sources. The ability of Yemeni to achieve a TOEFL score of 500 in country in a reasonable time is another matter and is discussed later.

2. MAF and MOE personnel, during interviews expressed their appreciation for assistance being received from the Program as obtained from the subprojects. Most personnel also expressed their acceptance of the U.S. contribution as helping in Yemen development.

The YARG contribution and support of the subprojects has been mixed. HITS has received good financial and personnel support and high MAF ratings at Al Irra. The Jaroub site has had support in that MAF has done what it agreed to do with the road development and has taken actions toward handling traffic problems through the station. Counterparts and other personnel have not been supplied. This may be due to the failure of HITS to place the personnel agreed to in a timely manner at Jarouba.

MAF support of PETS leaves much to be desired. Facilities intended for use of PETS have not been available for use to date. This has had a very negative impact on the subproject in its ability to achieve goals and objectives. Failure of MAF to supply personnel for training and for counterparts has also adversely impacted PETS' efforts. The dormitory to house students to be trained is not constructed. The team concludes MAF failures to accomplish agreed upon inputs is responsible for many of the problems in PETS. MAF agrees that training is desirable and would like more pullet production, but seems unaware that their use of facilities is preventing the PETS from achieving their goal and purpose. The evaluation team recognizes MAF money problems and personnel availability constraints. Possible solutions to these problems will be covered in the PETS evaluation.

3. ADSP subprojects need to develop systems for better follow-up on tracking of outputs. The team observed the great effort required to quantify the outputs of fruit trees, pullets, bees, students,

trainees, etc. Systems to better keep track of what has been accomplished need to be developed in most areas. CID Advisors are aware of these needs and systems are being developed to resolve the problem areas.

4. The following observations are made concerning organization and implementation strategies.
  - a. The ADSP as an overall program is generally understood by most personnel involved. The way the subprojects interact and support each other is less well understood. CID has observed this and is taking action at this time to improve this situation. Regularly scheduled work meetings with subproject directors on the campuses have been initiated. Problems are discussed with the program director and subproject directors. Coordination of the program activities, problems and operations are being resolved. In Yemen, the chief of party and team leaders also meet regularly. Ideas, suggestions, roles and procedures are communicated between the field and the campuses. These efforts will have a positive effect on the interactions of subproject and program operations.
  - b. To date most institutional ties developed are between MAF and the universities. Most MAF personnel are aware of the university or universities with which they interact frequently. University personnel coming to Yemen on long term or short term assignments create friendships and Yemeni students and MAF workers who go to the U.S. develop an understanding of individual and university capabilities. Relationships observed between counterparts are excellent.
5. The effectiveness of CID to accomplish a variety of things has been discussed and the following analysis is made.
  - a. CID is a legal entity under the corporate law of Utah of a group of universities. Management exchanges between CID/executive offices and those universities directly involved in the Yemen program are frequent.

CID/executive office and chief of party in the field have had less direct contact because of the program director placement at OSU. Slippage in information exchanges has occurred because of this. This slippage applies both ways--to the field and from the field. The chief of party, as CID field operations manager, has been able to represent CID with YARG, and AID, and information exchanges have been frequent and regular. The lead universities team leaders in the field also have MAF counterparts and communication is frequent. Most major needs or problems are communicated but some nice to know information between CID, AID, MAF and the universities slips and is sometimes not communicated, especially between the field, CID/T and the lead universities. CID/executive office is in the process of redefining responsibilities and authority of their program director and chief of party. It is proposed that the program director be located at Tucson and that the two hats worn by the program director of ADSP and Core subproject director be split for both the program director and the chief of party. These changes will require fewer man years of effort and are discussed in detail in the Core subproject evaluation.

- b. CID does not provide a link between the collaborating universities and their respective state legislatures, except as CID/executive office generates information, which might be utilized by the universities in dealing with their state legislatures per se. University relationships with state legislatures is controlled by law and CID is outside this line of authority and interaction.
6. CID, AID and YARG have made many changes to accommodate the collaborative mode. Several of these were discussed in the summary. Some of these changes are still being implemented.

There is discussion of other adjustments among the various parties. YARG is re-aligning several areas in the ministry, some are being upgraded to

accommodate increased work loads, or adding new sections as need dictates. CID-proposed changes have already been discussed. AID has made adjustments to accommodate the collaborative mode. The annual work plan concept is excellent and results in collaboration and development of understandings. The problem of getting funds thus authorized to CID has already been addressed. AID is evaluating some of these modifications in an attempt to be more responsive. The accomplishments thus far have been made because of efforts to collaborate. CID has assumed several roles formerly considered AID domain. CID has had more responsibility in design, of SPID and SPP documentation. AID has relinquished some of their traditional responsibility in these areas. Firm parameters are still in the process of adjustment to more adequately define who is responsible for what and to what extent. CID has acquired the services of a former AID design officer to help CID improve its design capability--apparent failure of several SPIDs and SPPs to be approved. Failure of CID and AID/Y to accomplish these in an acceptable manner indicates their weakness in design. This also indicates AID/W may have been too removed from its traditional role in specifying and communicating what was really desired and in what format and what the appropriate funding level might be. In the collaborative mode these disapprovals reflect failure on AID's part as an equal partner.

7. Advantages of the collaborative mode include:
  - a. Flexibility in operations because of the annual work plan concept which permits annual adjustments in activities during work plan development.
  - b. Flexibility in pre-implementation activities as a result of the umbrella funding of Core to permit expenditures prior to full subproject authorization.

These are major advantages of the collaborative mode and in the life of ADSP will have very positive effects on the ability of ADSP to accomplish its purpose.

8. Some of the advantages of the collaborative mode have been discussed previously. The ability of ADSP to initiate pre-implementation activities for new subprojects has already been stressed. How to evaluate realistically when a project has been technically in pre-implementation but operationally in implementation is a problem. If you assume the most legalistic point of view, everything accomplished is a bonus that otherwise would not have occurred. Conversely, if you evaluate most critically, you fault and condemn such efforts and accomplishments because constraints kept the subproject from accomplishing all that might logically have been expected under full implementation. Evaluation using the log-frame procedure leads the evaluator to conclude that many things have not been accomplished. However, it is difficult to observe the accomplishments and fault the pre-implementation concept.

9. The CID organizational structure was evaluated.

a. CID is organized under the non-profit corporation act of the State of Utah which sets the legal parameters and controls its operations. Most state statutes are similar, and have a federal statute umbrella. CID operates under a set of by-laws and articles of incorporation. CID is controlled by a board of trustees, usually two trustees per university. The board has a five-man executive committee elected from among the university trustees. The executive committee conducts the business of the corporation. The executive committee hires an executive director who conducts the day-to-day operations of CID under broad guidelines of the executive committee within the legal authorization of approved by-laws and articles of incorporation. The executive director has the authority given to him by the board as long as the authority is exercised within the limits set by laws of the state under which CID is incorporated. CID contracts with lead universities for all personnel for subprojects operations. Expansion of CID's management and operating boundaries to deal within the collaborative mode of operations with AID would be helpful.

- b. CID is presently redefining roles, responsibilities and authority of its program director and chief of party. These role definitions should make management more responsive, coordinated and understandable. In the universities, personnel hired are approved by the institutional councils or similar entities by different names, depending on the university. Universities are affirmative action equal employment opportunity employers and must meet federal guidelines in all hiring and personnel matters. Guidelines specify advertising time limits and requirements for new positions. The affirmative action, equal employment opportunity officer designated by the university audits all hiring, advertising for positions and selection procedures. This process is expensive and time consuming--the procedure is also a given factor when dealing with any university or group of universities. These personnel actions by law cannot be delegated to an outside entity or group such as CID. CID designates a lead university for each subproject and contracts with the lead university for all recruitment and personnel management activities. There are alternative organizational potentials, however, the consortium concept has been in vogue for some time and the potential role of CID in collaboration is just beginning to be understood. The team has reviewed the costs of CID. Much of the work CID has done would have to be done by someone where actual costs are the basic for overhead formula, we can't logically see much total cost difference with or without CID. The team concludes a change at this point would be disruptive because an additional crisis for the universities creates a negative image for AID, and adversely impact the Program..
- c. The team recommends the proposed modification in chief of party and program director role definition and responsibilities and authority specifications be completed and approved by all collaborators. CID coordinates recruiting and assists in informing universities of personnel needs.

- d. CID coordinates and assists Core and other universities in campus backstopping for the field program, and in procuring commodities. CID program director works directly with subproject directors in the states and with the chief of party in the field who, in turn, works with the team leaders in program, development, coordination and operation.
- e. Criteria for collaboratively selecting participants for training at U.S. universities are established and coordinated by the Core training advisor. Participants are identified which meet requirements of TOEFL. They apply and are accepted in a department for study leading to the desired degree. The I-20 (the form which permits foreign students to enter the U.S. for an education) is authorized. All AID approvals are met. Then the applicant is sent to the university. Each university has its procedures for enrolling foreign students which are similar but not exactly the same. All entities, universities, CID/executive office, AID/Y and YARG are involved in the participant selection. It is recommended that TOEFL scores required for Yemen trainees be reduced from 500 to 450-470. Comparing the increased costs of this proposal with the delay in qualifying students to pass the 500 TOEFL score in country is difficult but the team concludes delays are too costly to the Program and the adjustment needs to be made. It is further suggested that the student be sent to his desired university for a period of about six months for intense English and to make the adjustment to academic life, while improving his TOEFL score. Several institutions offer programs where one or two classes per quarter could be taken to begin the transition and test the English capability.
- f. Logistical support has recently been undergoing evaluation at OSU. The present organization for handling procurement, shipping and transportation should improve responsiveness and procedures.
- g. The earlier evaluation recommended changes in the incountry accounting procedures.

for CID. This has been accomplished. CID/Executive offices have also adjusted their procedures so that costs for each subproject reporting period are broken down quarterly by line item Cost Category for the quarter and the life of the subproject to date. These are printed out on a quarterly basis. A copy of this appears as appendix.

- h. Reporting. Amendment #3 dated June 19, 1981 authorized establishment of the Core subproject. Appendix B. to Amendment 3, Article I, D specifies the reports required. These include:
- 1) The life of program Work plan was accomplished for all authorized subprojects plus HITS and PETS by completion of the Program Strategy Statement dated May 4, 1983.
  - 2) The life of Subproject Work plan was accomplished by Life of program Work Plan.
  - 3) The annual Subproject Work Plan was accomplished for 1983-84 and was available to the evaluation team while in Yemen.
  - 4) The Core Subproject is to complete an Agriculture sector analysis prior to submission of the Annual Work plan for 1982. This was completed by an AID team in December 1982. The Ag. sector analysis was utilized in the life of Program Work Plan. Thus this requirement has been satisfied. The requirement for an annual update of the Ag. sector assessment is unrealistic until the statistical reporting capability of the MAF is operational to help generate better data. It is recommended this requirement be dropped on an annual basis and periodic Ag. sector assessments be authorized as needed as determined by the collaborators.
- i. CID has conducted annual internal evaluations. These reports have been studied.

Actions taken have been noted and generally the recommendations have been implemented or are being implemented.

9. The evaluation team concludes that the collaborative planning process has produced the required documents. Some have been slow. The slowness to an extent was a result of the quantity to be developed. The annual work plan concept and format should be collaboratively reviewed as a method to replace some of the required reports. The annual work plan, in the opinion of the team, meets or exceeds the reporting requirements in most areas. Because of the pre-implementation mode which authorizes expenditures under Core, progress and accomplishments which are substantial have been possible, which under the more traditional AID project implementation procedures would have been delayed one year to 18 months or even longer. In the case of HITS it is likely the Jarouba station Mother tree nursery would have been lost because of lack of care, had not this mode of operations made it possible to bridge termination of one project and start up of another.

#### F. Outputs

1. The subprojects each focus on a critical area of development in the country. MAF as a collaborative partner has regular input into keeping the subprojects on target. The annual work plan development allows each subproject to focus on specifics and permits adjustments in emphasis, agreed to by the partners to better accomplish the ADSP program objective.
  - a. The Ibb secondary Agriculture Institute (ISAI) has graduated 77 students in the two classes, completing the three year long course, to date. ISAI has 105 students in training now. This training is contributing directly to the manpower needs of YARG and particularly to a source of better qualified extension workers.

The ISAI contributes to preservation of resources and in a broad sense supports conservation, and restoration of natural resources and development of the human

resource through training of extension workers and increasing the abilities of the Government to accomplish the ADSP objective. The ISAI is a priority item with MOE and MAF. Greater cooperation between MOE and MAF in selecting students for Ibb could result in increased class sizes, to 50 students each, and expanded enrollment to the maximum dictated by available space.

The evaluation team recommends extension of the ISAI subproject for an additional five years. An expansion and some re-direction of present goals and objectives has been treated in greater detail in the evaluation of the ISAI subproject.

- b. Core subproject outputs. The Core subproject became operational with the signing of amendment number 3 to the basic contract on 19th June 1981 by the contracts office of USAID.

The Core subproject is the basic mechanism for the overall implementation of the ADS program. This is accomplished by institution building, planning and logistics support of other subprojects and development of CID's linkages with Yemen and the institutional capacity of MAF, MOE, and Sana'a university to support a long term program.

- 1) Core has worked closely with MAF through the Chief of Party and those advisors authorized prior to August 1983. These daily contacts with advisors has resulted in good relationships to date and responsiveness to those identifiable needs of agriculture.
  - 2) Advisors are having a positive influence on MAF personnel with whom they work in developing programs, activities, and training. The on-the-job type effort of advisors has a strong positive effect.
- c. The PETS, and HITS subproject papers and annual work plans have given guidance as to what is to be accomplished as funding is authorized and available. Both of these

subprojects contribute by assisting farmers through the extension staff, trained in part by HITS and PETS, in poultry meat and egg production and citrus and deciduous fruit production. These activities will improve the standard of living of farm families. Sale of fruit, meat and eggs would also contribute to the self-sufficiency of Yemen in fruit and egg production. In turn imports of these commodities will be reduced and balance of payments improved. Both subprojects have the capability of contributing to the accomplishment of ADS program goal and purpose. These two subprojects, through their emphasis on training, will contribute to the target group, small farmers, chiefly by improving production levels and income.

2. The ADSP through the subprojects, with their various areas of emphasis, contributes to efficient management of Yemen soil and water resource conservation by the training of MAF leaders and improved technology and information by the Extension effort.
  - a. HITS, through development of the Al Irra station, is demonstrating different irrigation application techniques such as drip, sprinkler and flood systems.
  - b. PETS has utilized different methods of feed purchasing, from various sources at different prices and demonstrated results from different feeds. Most feed for poultry is imported. These techniques demonstrate market differences, cost differences, and feed differences.
  - c. Advisors from Core are assisting MAF counterparts and the departments dealing with marketing, planning, extension, policy analysis, evaluation, design and implementation to do more and better technology application in all of the above areas.
  - d. Assistance in data gathering and development of a statistical section with country wide data collection capability are in the planning and early development stages.

Personnel to man these sections of the MAF are being selected, majors for study in the U.S. are being identified and potential Ministry officers are being trained already in the CID universities.

- e. An extension advisor position has recently been approved and personnel will soon be selected and functioning to advise MAF in establishment of a country wide extension service capable of working with farmers to assist in communicating research needs to the researchers and taking findings of research to the farmers.
- f. The University of Sana'a Faculty of Agriculture SPP, about completed, has planned not only for the capability of the training of agricultural students to the graduate level but also provides an experiment station modeled after the U.S. land grant research stations to research problems of agriculture and find answers to problems.
- g. A Paper for a water use and management subproject has been prepared and the team recommends implementation of this subproject at an early date; this could be done by YARG or another Donor. It is essential to place an advisor capable of assisting MAF with water policy planning, identification and development of surface and underground water policy and water use development plans. This effort could potentially have a positive impact on conservation of scarce resources, more effective utilization of available water supplies for irrigation and expanding the capability of the MAF to provide services to private farmers.
- h. The FOA is essential to the operation of the sector-wide program envisioned by the collaborative mode and implemented by a single contractor, CID. This subproject will impact the MAF and MOE abilities to accomplish their assigned roles in a more adequate manner and improve the capabilities of the MAF and MOE to serve Yemen Agriculture and Education.

3. The FOA subproject is being developed collaboratively by CID, AID, and YARG, with jointly determined planning, priority setting, and implementation approaches. The joint efforts in designing this subproject are geared toward the establishment of one of the most needed components of the ADSP, and also to develop long-term linkages between YARG and the CID universities. AID/Y contributions and guidance during the design process have added more value to the FOA planning documents and guided the CID universities' personnel to achieve their tasks.
  
4. The organizational structure devised for implementation of the collaborative mode needs to be better understood. The contract states specifically that the collaborating partners are to be equal partners in design, implementation and evaluation. This is not being achieved and greater effort is required. In some ways it may be more cumbersome and certainly more people are involved, and thus creates delay, as the extended period of time taken to implement HITS and PETS shows. The delays have caused conflicts. Differences of opinion in what was and was not authorized have caused arguments. AID/Y and MAF feel that the universities have failed to do all they could have done. They are critical of the universities to perform because they interpret the full implementation as authorized when they signed the agreement with USAID. CID, CSPUP and to a lesser extent OSU feel that they have not been in a legal position to act as required, over and above the difficulties they have with recruitment. Finally, in the case of MAF, subproject implementation has been slowed by lack of understanding and cooperation among key officials. Possibly the events and circumstances surrounding PETS and HITS could be used to build alternatives for the future. At least no one should be surprised if similar situations result in similar delays and create similar performance by the collaborators.

The team concludes the outputs achieved at this early date are below what they should be. However, the Program should continue so potential progress will be enhanced.

#### G. PURPOSE

The purpose of the ADS program is to improve the capacity of the YAR Government and Yemeni agriculture producers to develop and sustain an agricultural sector which effectively and efficiently uses Yemeni natural resources, is integrated into the economy, and is supportive of a broad based and equitable social and economic development.

The ADS program through the subprojects, implemented and planned, addresses all aspects of the purpose. The purpose is broad, the goals and objectives of the subprojects collectively are also broad. The long term aspect (10-15 years) seems far away but progress must pick up, if the project purpose is to be achieved.

The ADS program through training of Extension agents at Ibb and by HITS and PETS training activities has potential capability to reach farmers directly through production programs. These programs over time (10-15 years) could potentially decrease imports, increase exports, lower production costs by increasing yields, improve managerial ability of farmers and train many more students in agriculture. The program through Core advisors to MAF will improve markets and market structure and improve the MAF capability to provide technical advice and services to farmers. The Core advisors working with MAF counterparts, and MAF personnel being trained in the U.S., all contribute to the MAF capacity to meet the purpose of the ADSP. Because of lack of statistical reporting capability, the changes in the above growth areas at this early date would not be statistically significant. The Bench Line Study accomplished in 1979 does give a basis for assessing the changes which seem likely to occur as influenced by the ADS program.

The MAF capability to plan, design, implement and evaluate programs through training by advisors and through increased education of staff at CID universities and elsewhere, is being developed. The MAF will have expanded competence to initiate and support a more dynamic agricultural sector. This will in some cases increase exports or reduce imports of selected products; e.g., eggs, broilers, fruit, citrus, etc. These programs will also result in improved technology which should reduce costs of production, because of improved yields.

The training emphasis of each subproject will result in a level of agricultural education considerably above what is presently available. Better educated Yemeni educators will have a lasting effect on an increased level of agricultural education.

The MAF is presently evaluating its capability to conduct a countrywide extension service and to more adequately develop a marketing division to positively influence the development of a market system.

#### H. GOALS

The goals of the subprojects impact directly the activities and accomplishments of ADSP. The implementation strategy utilized, thus far compared to the Ag. Sector assessment recommendations is on target and consistent. Training emphasis has always been recognized as a plus and this is still of great importance. The team concludes the development thus far, even though behind schedule, is an effective manner to provide U.S. assistance to develop Yemen's potential. Assuming U.S. assistance levels to Yemen are to remain as at present, the Program is appropriate.

The Core subproject goal is increased income and improved quality of life for rural inhabitants in the context of broad based and equitable social and economic development. Core is addressing this goal by assisting YARG through advisors and through advanced training in the U.S. and elsewhere. When FOA is established, this will have a positive impact on this goal and its achievement.

The ISAI school has established an excellent model for training agricultural students for middle level

management and has met this goal in establishing the ISAI.

The poultry subproject's goal to increase egg and poultry meat production has the potential to be accomplished through training extension workers and small scale producers as planned in the subproject.

The HIT subproject goal, to increase rural income in the YAR through agricultural development, with the subgoal, to increase the quantity, quality and diversity of fruits produced in the YAR, is contributing to the ADSP purpose by training extension agents in horticulture and training other MAF personnel and nurserymen in budding, and management practices.

This breadth of effort appears to make the ADSP capable of accomplishing its purpose within the time constraints of the program.

Potential constraints to the ADSP accomplishment of its goal or purpose include:

1. Continued slowness in recruitment could adversely impact the program. The number of personnel in the process of nomination and selection as of early January 1984 appear to reduce this concern.
2. A potential constraint would be the elimination of a subproject without full consideration of the adverse impact this would have on the ability of the program to accomplish its purpose.

#### I. BENEFICIARIES

The beneficiaries of the ADS program are all of the people of Yemen when viewed from the broadest point of view. Farmers are definitely the beneficiaries as is MAF, MOE, and to a lesser extent other ministries of YARG.

#### J. UNPLANNED EFFECTS

(See same section in chapters III, IV, V and VI.

#### K. LESSONS LEARNED

1. There is a vagueness created by the introduction of a new or different mode or concept of operation. This vagueness over time leads to

frustration which is often expressed as criticisms. Frustration can be minimized by appropriate communication, by development of more explicit parameters of operation, by specific definition of terms and by better understanding. This statement also identifies some areas where additional collaborative effort is appropriate and desirable at this time.

2. It was unrealistic to expect, based on experience of this program, that the AID, CID, YARG collaborative mode of operations could have been accommodated by existing operating and management styles of each partner without some trial and error type adjustments over an extended time frame. AID and CID need to truly collaborate to be of greatest assistance to the development of YARG.
3. Adjustments made thus far in management, procedures, style of operation and contractual relationships will continue to need change and fine tuning to permit improved operations and better understanding.
4. The collaborative mode as operating in Yemen has a built in flexibility, that although not perfected, has permitted accomplishments in Yemen. Improvement will come with continued collaborative effort.
5. The least developed resource in Yemen was a trained leadership. The emphasis on training is a sound basis for accomplishing the program objectives.
6. The various parties have not tried hard enough to understand each other's problems. Concerns need to be expressed, responses solicited and communication openly encouraged. All parties must continue to act in good faith, and with open, receptive minds over extended time periods if ultimate success is to be achieved. Problems must be collaboratively discussed.
7. It is necessary to prioritize recruitment qualifications into one or two major requirements and list other considerations as desirable.

L. SPECIAL COMMENTS

1. The procedure or mechanism for making program funds legally available to CID, without a contract or an amendment on a new subproject, in a manner not contradictory to the intent of the terms of contract Number 1698, does not presently exist. The annual work plan as now developed does not accomplish this. (See Appendix G, A, 1 and 2 for possible solutions.)
2. Collaboration is not understood nor is it operating as defined in the basic contract number C-1698 for the ADS Program. (See appendix G, B.)
3. There is a lack of adequately defined, workable relationships, which permit partners and individuals to favorably accomplish their responsibilities. (See Appendix G, C.)
4. The End of Program Status Statements are not properly specified for the program director to adequately accomplish his responsibilities. (See Appendix G, D.)
5. Recruiting procedures are inadequately defined for ADSP. (See Appendix G, E.)
6. Procurement and shipping procedures are not adequately developed or understood by all universities. (See Appendix G, F.)
7. Pre-implementation fund levels and definitions are constraints to better operations. (See Appendix G, G.)

M. RECOMMENDATIONS.

1. The Title XII Collaborative Mode utilized by ADSP, has made progress in developing procedures and improving working relationships. The operating procedures and relationships developed should continue to be expanded and refined to improve understanding and communicate expectations. This mode of operation should be continued.

The following specific items are suggested:

- (a) Written steps in the recruitment and submission process of nominations for

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long-term positions in Yemen need to be spelled out, published, and agreed upon by the lead university, CID/T, CID/Y, AID/Y and YARG. The CID Program Director should take the leadership in establishing these procedures.

- (b) Definitions of recruitment and placement need to be prepared and agreed upon by all parties.
  - (c) AID should critically evaluate their role thus far in collaboration and become a truly equal collaborative partner in design, implementation and evaluation activities.
2. It is recommended that the CID Executive Deputy Director/Yemen take the leadership in developing job descriptions for the Program Director and Chief of Party, as presently visualized by suggested changes. Descriptions should address the responsibilities and authority parameters of these two key program positions. CID universities should concur and operate within the context of the terms agreed upon. The CID Executive Board should designate a representative to assist in development of these job descriptions.
  3. The team recommends priority implementation of the faculty of agriculture subproject. This subproject it is felt is the basis for a strong agriculture program in Yemen.
  4. Development of the Water Use and Management Subproject is encouraged. The team considers this project essential for increased agriculture production, especially on small farms.
  5. The Core subproject should be extended to July 1986 when the present project completion date arrives. This institution-building entity is giving assistance to MAF in structuring the Ministry, advising and counseling with counterparts, and, through training, assisting MAF personnel to better accomplish their assignments.
  6. Extension of the Ibb Secondary Agriculture Institute Subproject is recommended when its completion date arrives. Ibb is the source of

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middle-level manpower as well as the stepping-stone to higher education.

7. The MAF could consider developing procedures for handling funds generated from sale of trees, pullets and other agriculture production so these funds accrue to the MAF on a dedicated credits or revolving fund basis. This would assist in program stability and greater self-sufficiency, as well as giving more flexibility in operations.
8. MAF and MOE staffing career development plans need to be studied by ministries and CID personnel in order to develop realistic subproject interactions with MAF/MOE organizations.
9. It is suggested that AID/Y and AID/W personnel visit the lead university campuses occasionally to become acquainted with recruitment procedures and constraints faced by universities, and to meet subproject directors in order to improve perspective.
10. The situation concerning poultry facilities previously constructed that were assumed to be for use of pullet production and as satellite farms, needs to be clarified and resolved.
11. Pullet placement schedules need to be adjusted to fit the facilities available for pullet production. If pullet production is a priority consideration, the possible use of contract rearing could be considered.
12. Pre-implementation needs to be defined and the definition adopted that would clarify the accepted meaning and understanding as used in the contract documents as contrasted to use by some.

## CORE SUBPROJECT

### A. SUMMARY

#### Subproject Status

By December 1983, Core had been in operation for 42 months. Its accomplishments to date were:

- a fully developed local administrative and logistical support office in Sanaa,
- a fully developed staff at OSU to back-stop Core/Yemen three resident advisors working with the MOA, plus an engineer and a technician working on subproject implementation,
- Two subprojects approved and de facto being implemented and two others under preparation,
- The DLRC under construction,
- 37 participants sent abroad for degree and non-degree training,
- English language training for MOA staff,
- Studies related to advisory functions.

#### Progress in Relation to Design

The outputs projected in the PP will be achieved in the main by the end of the first phase, in mid-1985. In one key activity, training, the subproject is well ahead of PP targets. In terms of progress as outlined by the work plans, implementation had been slow on nearly all activities in the first two years, partly because the work plans were too optimistic and partly because it took some time for the institutions involved to work out operating modes. Currently, the main delay is in the timely recruitment of approved long-term advisors.

#### Major Problems

Given the cultural differences between the Yemen, and U.S. institutions, the history of AID's involvement in Yemeni agriculture and the totally untried nature of this particular Title XII collaborative mode of operation for all parties concerned, it is not surprising that the major problems were in developing a modus operandi in the

first two-three years of this subproject. It seems that this exploratory phase is now over. However, some basic assumptions of the PP have not been fully confirmed in practice, particularly those relating to YARG's ability to recruit and assign necessary staff to the subproject and the CID institutions' actual ability to deploy the required inputs in time from their own resources.

## B. BACKGROUND

The Core subproject is the basic mechanism for the overall implementation of the Agricultural Development Support Program (ADSP). It will exist for the life of the program, serving the following functions:

- a. support the YARG in expanding the capacities of its agricultural and agriculture-related institutions.
- b. design, administer and coordinate all the subprojects, including the Core, so they operate as one program.
- c. develop CID's linkages to Yemen and its institutional capacity to support a long term program there.

The Core PP was written in December 1979 by CID and USAID. This PP detailed the activities for the first five year phase (the subject of this evaluation). The Core subproject actually began in June 1980 under a pre-implementation funding of \$500,000 provided through the on-going Ibb subproject. This enabled CID to initiate activities prior to signing of Amendment 3 of the 0052 project, which occurred on August 31, 1980, formally establishing the Core subproject and authorizing its direct funding. During this period when Core was being funded through the Ibb subproject, CID carried out a number of baseline studies to determine the range and scope of the YARG's agricultural needs that could be supported by USAID, and thereby constitute the ADSP. These studies were financed under a separate contract, No. 1613, and were completed in September 1980.

Core activities began in July 1980, when the program director was hired and leadership changed from the University of Arizona to OSU. In September 1980, a Chief of Party was recruited and sent on a TDY to Yemen. In November/December 1980, a draft interim work plan was worked out and approved by CID, USAID and YARG. The plan covered the period July 10, 1980 to March 31, 1981, with a continuing resolution through July 31, 1981. In early 1981, the MAF assigned a full-time co-manager to the Core.

The annual work plan is the basis of operation of this subproject, since it and not the project paper establishes the annual budget, inputs and outputs of each subproject activity. Expenditures are authorized through the annual work plan which are approved by each of the collaborating parties. The project paper establishes the goal and purpose of each subproject, but through the work plan mechanism, the collaborative parties have considerable flexibility to determine and adjust the implementation schedule and level of effort required to accomplish the goals and purpose.

The Interim Work Plan, developed by CID/Y and USAID, with YARG concurrence, set out an extremely ambitious program of work for the coming year, given the fact that the contractor had only the COP in field, with no previous experience in setting up projects abroad, let alone in a country like Yemen. The projections for the year were:

- 1) establishment of Core University support program,
- 2) establishment of Core team in Yemen, consisting of 7 resident experts.
- 3) development of relationship with YARG and USAID/Sana'a,
- 4) design and implementation of Wadi Jawf Water Impoundment Project,
- 5) design On Farm Water Use Project to follow Wadi Jawf Water Impoundment Project,
- 6) design Sana'a Area Demonstration, Extension and Farmer Training Farm and implement preliminary engineering and construction activities,

- 7) in collaboration with MAF, select six MAF staff members for participant training in the US in Organization and Management,
- 8) design and begin implementation of a poultry outreach program at the village level,
- 9) preliminary design of a Horticultural Program with emphasis on citrus fruit production,
- 10) preliminary design of a water resources program with emphasis on water use policy and legislation, and,
- 11) preliminary design and initial implementation of a documentation center to be established in the Ministry of Agriculture.

None of these targets were achieved, and some were not even started. The planning, by CID and USAID, was not based on a realistic assessment of what could and could not be done in Yemen and on campus in the time frame, and within the management and cultural context of the institutions involved. During this period though, local offices and housing were rented, the Jarouba station was taken over (from Tuskegee and University of Arizona), contacts with MAF developed and priority areas identified (Poultry, Horticulture, Water Management and a Documentation and Learning Resource Center). Project design on the Poultry and FAO subproject was also initiated. All parties were under pressure to get the program going, before the key issues, such as policies and procedures of program formulation and implementation, between CID and USAID, and within the CID system, had been clearly identified and gone through the process of resolution.

The First Annual Work Plan, covering the period May 1, 1981 to April 30, 1982 was approved in June 1981. The outputs proposed were:

- 1) Establish a cost accounting system in Yemen and U.S., which identifies and tracks subproject costs,
- 2) Complete Core commodity procurement,
- 3) Recruit expatriate personnel on time,

- 4) Establish a Documentation and Learning Resource Center,
- 5) Complete the Agricultural Sector Assessment,
- 6) Coordinate subproject activities with overall program development activities and planning.

This work plan was also rather ambitious, and several of the key outputs were not achieved. The expatriate staff recruitment was slow; of the twelve resident expatriates expected to be in Yemen for 10-12 months by the end of the work plan, only four were on post for six months or more, three of whom had arrived only on the last month of the plan year. The Agricultural Sector Assessment was incomplete, and the Poultry subproject PID approval was withheld by AID. An Integrated Crop and Water Management PID team came, but lack of a suitable site eventually precluded any project that AID could consider. Finally, the DLRC activity was delayed, as AID/W held onto a concept of a DLRC being just a library in the MAF, while USAID, CID/Y and YARG envisaged a center with its own building.

In August 1981, a year after it had started, Core had four different TDY teams in the field; FOA, Agricultural Sector Analysis, Poultry and the Integrated Crop and Water Management Subprojects. However, at the same time, the incumbent COP was abruptly recalled to the U.S., and his replacement came to Sana'a in September 1981 on a TDY, prior to taking up residence in January 1982. The removal of the first COP was a unilateral action by OSU, and resented by other parties in the way it was done. Intra-faculty personality clashes overrode the wider interests of the program and other partners, undermining the foundations to Core's management, besides creating a vacuum in Sana'a at the most crucial time. The first COP stayed only ten months, his administrative support staff were all TDYs, and there was no resident administrative officer until late 1982. In fact the new chief of party, and the Agricultural Advisor, who first arrived in Sana'a in September 1981, were the first senior Core persons who managed to stay their full terms.

In December 1981, an in-house evaluation was carried out by CID, dwelling mainly on the problems of implementation details. These basically involved lack of efficient communication between CID/Y and AID/W, particularly in the flow of documents reporting program

operations, expenditures, work plans and future plans. Recommendations were made on establishing procedures to improve communications, most of which are in place, although the semi-annual reporting on program implementation has not been accomplished. Comments were also made on the apparent inability of the Corvallis office to recruit personnel to support Core/Yemen, with the suggestion (page 20) that "...if OSU/Core office is not providing or cannot provide support, other alternatives should be pursued...".

The evaluation concluded that the Core's main weaknesses were due to the inadequate management of resources it deployed in 1980/1982 in setting up the Sana'a office, and in the preparation of subproject PIDS and the ASA.

The Second Annual Work plan was prepared with input from the evaluation team in December 1981/January 1982, to cover the period May 1, 1982 to April 30, 1983. However approvals were late in coming; CID's in September 1982 and MAF's not till May 1983. The plan period was in any case extended to 30th September 1983, to both accommodate these delayed approvals and to mesh with AID's financial year. The activities programmed were:

1. Continuation of ongoing administrative and logistic support and advisory functions
2. Add 6 new long-term advisors
3. Design and implement the HITS subproject
4. Design and implement the PETS subproject
5. Develop a PID and a PP for the FAO
6. Limited pre-PID activities in water use and management.
7. Erect a DLRC building, staff and run it.

The HITS and PETS subprojects were approved during the plan period; the former in September 1982 and the latter in December 1982. AID approval of the six new advisors was delayed pending the results of the Agricultural Sector Assessment, which was carried out in October/November 1982 and reviewed by AID/W in

February 1983. Subsequently, in August 1983 the scopes of work of four advisory posts were approved but none had been selected by December 1983. The DLRC was also delayed, as AID did not formally accept the YARG/CID/USAID concept of the DLRC (it favored a simple library) until mid-1983. Consequently, construction could not begin until the next (83-84) work plan and the advisors could not be in place until the building is ready. The FOA PID was prepared and approved in the work plan period, but the proposed water studies were put off to the next plan period.

Up to the end of this work plan period, one of the weakest elements of the Core subproject was the management of the local currency budget. To save money AID did not allow the posting of a seasoned resident administrative officer to accompany the first COP when he came in 1980 and, in fact, not until late 1982 was there such a person in Yemen full time; the position, as mentioned earlier, had been filled by three different TDYs between October 1980 and October 1982. It was implicitly assumed that the USAID controller's office would have the necessary backstopping but, for various reasons, including lack of resources and established procedures, this was not so. The subsequent local budget management problems were such that USAID called for an audit, which was carried out in late 1982 by the regional Inspector General's office and published in January 1983 (Audit Report No. 5-2-79-83-4).

The audit questioned and suspended 24.5% of the \$1.8 million applied against the contractor's advance. Much of this applied to the first six months' operations when no accounting procedures existed. Internal control problems were found in managing cash, accounting for advances, reimbursing for salaries and travel, and using project equipment. The audit also found controls over the shipping and receiving of commodities procured for Core to be inadequate for AID, that insufficient information was flowing between OSU and the Core subproject to know what was being ordered, shipped, or received. The audit also noted that project work plans required by the project agreement had either not been prepared or their approval had been delayed to the extent that their usefulness was questioned. It stated that the contractor personnel were having difficulty preparing work plans acceptable to AID; although USAID officials set the work plan

format and helped in the preparation, it was AID/W that later rejected them for lack of sufficient content and unacceptable format. CID admitted that some of the problems were of its own doing, but it is clear that the major cause of problems was the lack of proper communication between AID/Y and AID/W.

The audit also noted YARG's noncompliance with certain terms and conditions of the AID grant, particularly provision of houses for Core long-term advisors. Apparently AID/Y's view was that these grant conditions should not have been written, and the grant agreement be adjusted accordingly.

The audit made eight recommendations relating to management of funds, procurement and production of pertinent work plans. These recommendations are now in progress, after appointment of qualified staff, at Core/Yemen, CID/Tucson and OSU. It is felt that all plant, management and accounting procedures, and output of work plans, will be in order by mid-1984. However, the auditor-general still wants CID/Y and AID/Y to resolve the undocumented expenditures of the first six months, which would require considerable accounting resources to do.

A major step in work plan formulation and implementation was the Joint Annual Field Review which took place in June 1983. This brought together senior decision makers from AID, CID, and OSU to work with AID/Y, CID/Y and the YARG to pass the next or Third Annual Work Plan. In this way, delays and misunderstandings inherent in the usual system (of consequent reviews in Yemen and Washington) could be by-passed, and in this respect the exercise was extremely efficient. The PP had actually proposed that this technique be employed from the first annual work plan (originally March 1981), but it took two years before most, though not all, players could be brought together in one place at one time.

The current work plan, the Third Annual Work plan, covering the period October 1, 1983 to September 30, 1984, received its final signature in November 1983. The outputs projected are:

- Completion of the DLRC and its staffing.
- Implementation of the HITS and PETS subprojects.
- Finalizing project papers for extending the Core and Ibb subprojects.
- FAO SPP completed and mobilization for the FAO Demonstration/Teaching Fair.
- Participant training.
- Water Use and Management PID completed.
- Recruit four additional Core advisors.

The DLRC is under construction and should be ready by March 1984; the approved advisor and referenced librarian are currently being recruited by the University of Arizona. The HITS and PETS subprojects have hit a legal constraint in that the contract amendment has not been signed by AID due to circumstances beyond AID's control (discussed on page III-5), although all parties approved the subproject and its financing in late 1982. The lack of signature has not slowed the implementation of PETS.

The Core and Ibb subproject extension papers will be written up subsequent to this evaluation. The FAO subproject activity is on schedule, and the Water Use and Management PID team visited Yemen in September/October 1983. The third Core advisor, on training, arrived on post in late 1982, but the four additional advisors, originally proposed in 1982 and approved in August 1983, have still to be identified by OSU.

At the time of this evaluation, in December, 1983, Core had been in operation for 42 months. Its accomplishments to date were:

- a. A large local administrative and logistical support office in Sana'a, with a staff of 27; the COP and four others under the dollar budget and 25 under the local currency budget. In addition there is the warehouse with 15 employees and 16 drivers, for a total staff of 58.
- b. A State-side on-campus staff of 6.5 full-time personnel, split 7.5 FTE at OSU, including the Program Director, and 1.0 FTE at the University of Arizona backstopping the DLRC. In addition, there is the CID/Tucson involvement, where the Yemen program accounts for 40% of all activity, about 3 FTE. The university staff are directly billed to Core, while the CID personnel are paid under CID's G&A income from the subproject.

- c. Three resident advisors working with the MAF, plus one engineer and one technician.
- d. Two subprojects (HITS and PETS) approved and de facto implemented. As the HITS and PETS subprojects are legally at the pre implementation stage, awaiting contract signature, the resident HITS and PETS experts two advisors/team leaders, three technicians are part of Core for budgetary purposes. The HITS Jarouba station manager/horticulture specialist ended his tour in mid-October 1983 and his replacement is still to be recruited.
- e. The DLRC under construction.
- f. The FAO PP and a Water Use and Management PID under preparation.
- g. 37 participants sent to the U.S. and Egypt for degree and non-degree training.
- h. English language training established at the MAF and YALI for all MAF personnel who want to learn English at individual levels of proficiency and effort.
- i. Studies related to the Agricultural Sector Assessment, life of programs and subprojects, program strategy statement, program procedures and policies, and sewage effluent treatment.

### C. EXTERNAL FACTORS

The key external factors impacting on the subproject involve the explicit and implicit assumptions underlying the PP and in the planning of the work plans. Following is a list of assumptions that could have been examined more carefully.

1. The timeliness of the collaborative mode of operation in YAR.

YARG ministries and agencies, as modern organizations, are only 10 years old, and still at an embryonic stage of development. Furthermore, unlike any other country where AID is engaged in institutional building, YARG institutions have very little experience in dealing with US organizations. In particular, there is no cadre of Yemen officials at management levels who have been educated in the U.S. Given this setting, and the cultural environment, it takes some time for relationships and mutual confidences to build up, and this stage has yet to be reached in some agencies e.g. the MOE. However, the collaborative approach assumes a roughly equal tri-partite modus operandi, implying a considerable history of experience and mutual interaction between the three partners. This is not so, and as a result, decision making takes a lot longer, in turn creating more problems e.g. slowness in recruiting and approving experts and signing of work plans, adherence to agreements regarding sites and other inputs, unilaterally changing a previously agreed course of action for a subproject, etc. Such AID "communications problems" or "cultural variances" are not unique to Yemen, but seem to be more acute there. The point is that in this context, the collaborative approach may not have been the most efficient way for AID to operate in Yemen.

2. The capabilities of the CID institutions to actually implement the ADSP without undue delays.

Although CID is the contractor for the ADSP, it does not manage the resources deployed, since they are the responsibility of the lead universities. Working together, and sharing responsibility, for a complex program in a foreign country is a unique experience for the otherwise competing

institutions. In the PP, it was assumed that the universities and CID would quickly work out the management guidelines and establish policies and procedures for program implementation. It takes however a lot of time for a group of universities to mutually agree and then adhere to a common set of policies. At present, there is no hierarchy nor a defined channel of communications, and a great fear that individual universities have too much blocking power in the CID Board of Trustees, and that too much decision making remains in the hands of the trustees. Thus there is too much diffusion of responsibility, and more chances of confusion and delay, i.e. universities have their "communication or cultural" problems too.

For example, CID/Y and USAID/Y interpret subproject approval as definite grounds for lead universities to spend the agreed sums. However, CSPUP is loath to put its full effort into recruitment without a signed contract, fearing legal consequences if its auditors question any expenditure without a signed contract. Or where one university feels it has done its recruitment duty when it submits curriculum vitae to OSU, although CID/Y might think the recruitment process is not complete until these curriculum vitae have been scrutinized in Sana'a. The proper chain might involve eight equal parties e.g. CSPUP - OSU - CID/Y - CID/Y - Subproject team leader - USAID - COP - MAF and back. Slip-ups and delays can and do occur at each of these stages, and the party most involved is easily aggrieved at all the others. Diffusion of authority is such that important decisions are made between USAID and the lead university, without involving CID in the process from the beginning, although ultimately CID is the contractor.

3. That CID universities had the management and technical resources to assign to Yemen.

The universities did not, and still do not, have the right long-term expertise to assign to Yemen in a timely manner. The actual pool of faculty available for foreign assignments is actually very small; in fact, every university has had to go outside its own staff and the CID system to recruit the needed individuals. The potential pool is further narrowed by the attitudes of some of the departments, where a foreign assignment is a career impediment except to someone close to

retirement. Consequently the universities' approach to recruitment for Yemen is not very rigorous; in the U.S., if they had a \$6 or \$8 million project in a new environment, it is certain that they would assign one or two very senior members of the faculty to manage the project in the field. However, the same size project in Yemen, a vastly more difficult environment demanding high level management and people-oriented skills as well as technical competence, is paradoxically thought to be a job suitable for retirees, even if they have just tenuous links to the university concerned. The universities have also not been able to provide the necessary short-term technical expertise at times, as experience with PID and PP design has shown.

4. That the AID system understood its responsibilities and the complexities of implementing: a) a program in Yemen, and b) within the collaborative mode with CID.

Since USAID has been intimately involved with CID from the beginning in the work plan formulation, including establishing outputs and the number of experts to be assigned, it shares with CID in the successes and shortcomings of the Core subproject. USAID could have been more cautious in approving outputs in the earliest work plan, which were overly optimistic, and should have insisted on more resident management and administrative resources to accompany the first COP to help with program mobilization. As already mentioned, the first COP, helped only by a string of assistants on TDYs, was expected to have an office organized and the program going with one year, working in a totally foreign environment and without knowing any Arabic. Such a task requires two to three full-time professionals, with previous experience in this activity, knowledge of pertinent local customs, as well as command of the language. Also, in planning the strength of the Agricultural Sector assessment team, only two TDYs were approved by AID for this job, although experience over the years indicates that a lot more people are required: AID fielded 10 men to do the task in October-November 1982. Finally, there seems to have been communication problems between AID/W and USAID in the early days of the Core. For example,

PIDs developed by CID and approved by USAID were subsequently turned down by AID/W (the first water subproject, the DLRC and the Poultry subproject).

Other external factors that came to bear on the subproject after implementation were:

1. The decision by UNDP and World Bank to terminate at the end of 1982 their TA project which had funded seven expatriate advisors and operational executives in the MAF for 5-8 years. These experts had build up the MAF from its earliest stages, so their departure was keenly felt, and greatly enhanced Core's advisory role in the MAF. Aside from the one UNDP/WB advisor still in the Ministry, the three Core advisors are the only other senior experts working directly with the MAF's general directors
2. Unlike governments in other developing countries, the YARG maintains an agricultural policy that permits farmers to receive the highest possible prices for their products. These incentives were further enhanced by bans on the import of vegetables (1981) and fruit (1983). The latter put a great deal of pressure on the Core-HITS subproject. The demand for fruit seedling and budwood shot up, and MAF, reacting to this demand, wanted the CID to immediately switch emphasis from training to production, and to expand the projected output for planting material. These pressures were keenly felt, especially for a subproject which had been delayed through slowness in recruitment.

D. INPUTS

The inputs detailed in the PP for the first phase were:

1. Training: Funding/identification of candidates for a) B.S., M.S., and PhD degrees for 24 staff members of the central MAF and MOE.

To date, 10 participants are studying at CID and 6 at Egyptian universities. Fifteen participants are to be sent to the US, and four to Egypt. This activity is well ahead of schedule, although the participant pool is very small for the following reasons:

- (i) The MOE has not contributed any participants through Core; it has sent participants to CID and Egyptian universities only under the Ibb funding.
- (ii) The MAF participants are expected to make a lifetime career in the ministry. This is a constraint, since potentially a large number of candidates who want to study agriculture have no desire to work for the MAF (a common syndrome in developing countries, where MAF have low status and pay).
- (iii) USAID, and some of the universities insist on participants achieving a score of 475 in the Teaching of English as a Foreign Language (TOEFL) test in Sanaa before they proceed to the U.S. This level is very difficult to achieve in Yemen, partly because English instruction is new in the local school curriculum and taught adequately in very few secondary schools.

**b. Specialized academic and non-academic training for 40 staff members.**

To date, twelve staff members have participated in this training, 6 more are being processed, and four slots await MAF nominations. Core can send more, but the bottleneck seems to be the MOA's inability to find the candidates within its cadres, plus reluctance to nominate deserving people outside the ministry.

**c. English language training for 200 MAF staff members.**

Core runs classes at the MAF and places students at YALI. In the former, there is currently a regular attendance by 8-10 functionaries, and others would attend more frequently if their schedules (work load in Sanaa and regular out-of-town assignments) would permit. At YALI, Core has arranged to place 20 participants per term, four terms per year, and these are fully taken up. It is expected that by the end of the first phase, over 200 MOA staff members would have received some English training.

## 2. Funding and Resources.

The PP set out the following inputs for the first phase:

- 34 person years long-term T.A.
- 45 person years, short-term T.A.
- 15 person years, U.S. support
- 40 person years, Participant training
- \$1.5 million worth of commodities

The total cost was projected at \$21.5 million AID grant, and \$1.8 million plus unspecified indirect contributions, from the YARG. The actual rate at which inputs would be provided would be adjusted in accordance with the work plans submitted by CID and AID/Y, and approved by AID/W.

Changes have been made in the relative deployment of these inputs, while still holding onto the original budgeted financial totals. Over the first phase, the long-term T.A. is expected to increase, and the short-term T.A. reduced. U.S. support is expected to increase to 20 person years, while the amount budgeted for commodities is likely to rise to \$2.0 million, to account for AID's approval to fund the DRLC, plus other minor purchases.

## E. OUTPUTS

The Core subproject evaluation SOW specifically asks for evaluations of fourteen objectives (pp 8-9). These are discussed below.

### Advisor-Related Objectives

1. Improved YARG capacity for agricultural planning, sector analysis and project design, evaluation and implementation.

This objective is really the ADSP's overall purpose, and its attainment in any significant form is a long-term exercise, implicit in the 10 to 15 year commitment that AID has made. The MAF is only ten years old, and extremely short of trained and experienced cadres at all levels. Until the end of 1982, much of its senior experienced management complement consisted of seven operational executives provided by a

c  
World Bank/UNDP grant. Currently, it has only one of these advisors, plus three from Core. Of these three, one has been in the country for two years, and two have just arrived: one to take up a new post, another to replace the Agricultural Advisor finishing his two-year tour. These advisors are making their contribution, but for Core to have real impact, more time and advisors are needed. Although Core received approval in August 1983 to recruit four more advisors, OSU has yet to nominate them; it tried the CID system first, which failed to produce suitable candidates, so now it is advertising nationally. The MAF can definitely do with more agricultural economists as well as advisors in agricultural engineering, soil conservation, livestock, forestry and extension in addition to the approved Extension/Communication post. Building up a viable extension service is a vast task for MAF, needing several advisors.

2. An Agricultural Sector Assessment, up-dated periodically, used as a basis for determining development objectives and identifying technical assistance needs.

Core was to have carried out the ASA in late 1981, but was permitted only 2 TDYs for this task. This proved to be inadequate, and AID/W therefore fielded its own ASA in late 1983. CID followed in early 1983 with a Program Strategy Statement, and these two documents adequately outline the future development objectives and technical assistance need for the ADSP. Up-dating of the ASA receives close attention from the Agricultural Planner as and when he and others generate new data and analysis.

3. Documentation and Learning Resource Center established and making materials available.

The Center is now under construction and will be completed in March 1984. If the University of Arizona recruits the DLRC advisor and the reference librarian, by then the Center should be fully operational by the end of the current work plan (September 1984).

4. Design of projects for implementation by other donors or the YARG.

Given that there is only one Core Agricultural Planner in the Ministry and that other donors have their own very definite project ideas, this is rather an unrealistic objective during this phase.

Nevertheless, it is a very large task and a high-priority objective for the YARG, with support from the World Bank and the Arab funds, among others. Consequently, it is recommended that more long-term advisors, supported by TDYs, be approved in the next work plan, as already suggested under Objective No. 1 above.

5. Coordination of the ADSP activities with the Ministries and donors participating in agricultural development in Yemen.

This coordination is taking place, formally and informally. The Core and other ADSP subprojects do link-in with other related agricultural projects.

6. Training

Training output is defined as participants coming back from degree and non-degree courses abroad. Currently, only 12 participants have returned from training (non-degree) in the U.S. All the others have still to complete their degrees.

7. Institutional development/training plan completed for each directorate of the MAF where long-term advisors exist or where positions have been approved.

Where advisors are at post, planning is in process. Given the current state of development of the MAF as an institution and the advisors' workload, instituting a comprehensive planning exercise in each directorate is a task that takes time, and may not be fully implemented until the end of this next five-year phase.

## Management-Related Objectives

1. Design of other subprojects for implementation by Project 279-0052.

To date, Core has designed four subprojects, Poultry, Horticulture, FAO and Water Use and Management. Core's involvement with the Poultry subproject began under the interim work plan, and four poultry houses were constructed in 1981 at Al-Hasaba. Design activity by OSU began in February 1981, and the design team visited Yemen in August-September 1981. The PETS subproject was approved a year later, in September 1982.

Core's involvement in horticulture began in October 1981, when it took over the Jarouba station, and its three experts, formerly with Tuskegee and the University of Arizona. Design activity took a year and the HITS subproject was approved in December 1982.

FOA involvement began in July 1981, and in March 1982, a team came to design the demonstration farm. AID intends to fund only the technical assistance and the farm components of the FOA; it assumes that the building costs, some \$20 millions, would be provided by Arab donors. Although YARG is confident that it will get the building, there has been no firm commitment yet, and this has slowed the design process. In any case, AID has approved the PID, and an PP team, which visited Yemen in late 1983, and is expected to formally submit its report in early 1984.

CID's involvement in designing a water project predates Core. In 1980, under a separate contract, a CID Water Team visited Yemen to identify a water project. Its report was published in early 1981, and in August 1981, a CID team came to Yemen to design a subproject for a specific 22-ha. site. However, just after the team's arrival, it turned out that the MAF didn't really own the site, and it was "collaboratively" decided that the team, instead of returning home empty-handed, would do a PID for the development of Wadi Sahiya in Kwolan. When this report was submitted to Washington in early 1982, AID/W rejected it on the grounds that it was an investment, not a technical assistance project.

Another effort at a water activity was not attempted until September 1983, when another team came to Yemen. This team has developed a concept paper for potential CID involvement in water management in Yemen. It will be studied by AID before any PID is decided upon.

There are two basic problems in these subproject design activities:

- (1) lack of clear assignment of design responsibility, and
- (2) communication problems between the parties involved.

Project design, which is more an intellectual process rather than just a technical skill, is an important capability for a contractor to have a priori, but it seems that none of the CID institutions had it. The first water project, submitted directly by OSU to AID/W, was rejected because of this reason. Subsequent PIDs apparently were submitted through USAID, but were still rejected by AID/W as inadequate. All this created very lengthy delays, to the frustration of all. In 1982, CID/T brought in an experienced design officer on secondment from AID/W; it still needs a full-time design officer on staff.

2. Mobilization assistance to subprojects before they are added to the CID contract.
3. Technical, logistical and administrative support being provided to other subprojects.

These activities seem to be well in hand. A minor problem seems to be the perennial jealousy between universities--in this case, between OSU and other universities. Up to now, OSU has nominated the Program Director, who also heads Core subproject. The other universities are not happy with this dual function, and the CID trustees have decided to make the Program Directorship a CID post, based in Tucson, effective early 1984. This change in structure is highly recommended, as it not only removes the source of friction between the universities, but also gives CID, the contractor, real ability to carry out its fundamental program coordinating function. Once the post is filled,

it is recommended that all formal communications between Sanaa and the universities pass through the Program Director in Tucson. See Recommendations.

4. Long-term links established between YARG and Oregon State University, the Core subproject lead university.

OSU is the major participant, and beneficiary of the CID/Yemen program, since it has the lead for both the Core and the Faculty of Agriculture subprojects. The main responsibility of OSU is the timely recruitment and posting of qualified experts for approved long-term assignments. This OSU has not been able to do, and has been criticized by other parties, including the in-house evaluation. Basically, OSU lacks the commitment to efficiently serve its Yemen obligation, as its faculty network is not geared to achieve this yet. It shares this shortcoming with other universities, who can send someone abroad only by specifically recruiting him or her, and only after a very lengthy and procedure-laden process established by state and federal statutes. As a result, it takes up to a year to fill an assignment, even though such a post might have been approved much earlier. Universities, as contractors for AID projects, just do not have the needed resources or flexibility that the collaborative mode presumes, but which are available amongst private or other non-profit AID contractors.

It is hoped that once the FOA subproject is under way, OSU will be able to give a stronger support to its Yemen activities. Unless it does, these long-term links with YARG will be limited to its Yemeni alumni coming under USAID auspices.

5. Leadership provided to coordinate the efforts of all subprojects into a single program.

Core is doing well in this role, and would enhance the program orientation as it begins to concentrate its resources on the FOA and the advisory functions; the less subprojects and

universities involved, the better the coordination of goal objectives.

6. Establishment and application of criteria for determining priorities among subproject activities.

With just five subprojects implemented or under design, and all selected by the PP in 1979, there is no need to develop such a priority list.

7. Establishment of common standard systems, procedures, and policies for all subprojects covering personnel, recruitment, accounting, procurement, reporting, etc.

General management systems in Yemen and the U.S. are being adequately developed, as manuals, guidelines and computer capacities are being put in place. A problem seems to be the tendency for the individual universities to interpret some procedures to fit their own convenience.

This has created problems in certain recruitment cases and equipment purchases. This is inevitable since universities are fiercely independent and subject to different state laws. Perhaps a more formal structure, where Core program responsibilities are vested in CID/Tucson, as proposed, would improve cooperation between the lead institutions.

#### G. PURPOSE/GOALS

The purpose of Core is to improve YARG's capacity for agricultural planning, sector analysis and project design, evaluation and implementation. This is being done by the advisory cadre in the MAF, the design of the FAO and the Water Use and Management subprojects, and the training of Yemeni cadres. Given the resources budgeted for these purposes, and the institutional environment that prevails, the current program of Core is adequate.

"The goal of the Core subproject is increased income and improved quality of life for rural inhabitants in the context of broad-based and equitable social and economic development. (PP p.20.). Core's subgoal, the PP states, is "... to improve the capacity of the YARG and Yemeni agricultural producers to develop and sustain an agricultural sector which effectively and efficiently uses Yemeni natural resources, is integrated into the economy and is supportive of a broad-based and equitable social and economic development." (p.20.).

Core is addressing these goals/subgoals by enhancing the professional capacities of the MAF cadres it is training, and by giving appropriate professional advice to the MAF and the University, which are key YARG institutions serving this predominantly agricultural nation.

#### H. BENEFICIARIES

The major direct beneficiary of Core's activities in Yemen has been the MAF, since it receives the bulk of Core's resources that are transferred to YARG. The University of Sana'a is the next beneficiary. Both these institutions have received resources in terms of participant training, advice and some commodities. Indirectly, through Core's coordinating role, other beneficiaries have included the MOE, through CID support to the Ibb School some poultry producers through PETS and some fruit growers through HITS. The poultry and fruit beneficiaries include a range of farmers, from the smallest to the largest, including public sector establishments.

The small farmer, labor intensity and urban-rural inequality issues do not apply to Yemen on the same scale as in the other developing countries. The YAR is unique in that there are no macro or micro-policies that adversely affect the rural sector. In fact, the reverse is the case. The major source of economic activity, remittance income, accrues directly to the rural sector, particularly the poorest families that otherwise would have surplus labor. Emigration to generate this income has created a general labor shortage. Furthermore, Yemenis have an inherent preference for local products and are prepared to pay

substantial premiums for local, over imported (even better quality) produce. Government does not attempt to suppress prices of rural products; in fact, the opposite is true, as import laws on fruit, vegetables and gat certify.

A major thrust for Core should be to encourage maintenance of the status quo regarding agricultural price policies, while seeking ways to increase yields and reduce unit costs of production, by transferring technology to the farms and encouraging efficient rural mechanization through an enhanced MAF capability.

#### **I. UNPLANNED EFFECTS**

The termination of the UNDP/World Bank technical assistance project to the MAF considerably enhanced Core's importance to the Ministry. With the departure of the UNDP/WB personnel, MAF had to rely heavily on Core advisors. Conversely, the MOE's unwillingness to accept American advisors prevented the planned Core involvement in that Ministry. An agricultural/education advisor did in fact come in 1981 on a long term assignment, but after two months the MOE cancelled the arrangement, and the post was abolished.

#### **J. LESSONS LEARNED**

The Core has been in existence for just over three years, in the initial stage of a 10-15 year involvement in Yemen. Obviously, a lot of learning has been acquired, whether on the general level as to how the various institutions are working out their inter and intra relationships, and at the personal level, of individuals learning how best to perform in their professional and social environment. Yemen is also a society undergoing rapid changes, which affect the ADSP and the Core subproject, regarding initial assumptions and expectations, and future alternative.

The PP outputs envisaged for this phase were classified as follows:

- a. Training of Yemenis, either by CID advisors in country or at universities in the U.S., and to a minor extent, in Egypt.
- b. Sector and sub-sector studies.

- c. Agricultural Documentation and Learning Center (DLRC)
- d. Subproject Design and Implementation - Some seven were envisaged by the SPP.
- e. Support services.
- f. CID/YARG linkages.

The critical outputs are the training, the studies, the DLRC and the subprojects design. The training outputs have been attained beyond original expectations, the DLRC will be built, but the studies and subproject design outputs are bottlenecks.

One main lesson of these bottlenecks is the lack of YARG resources, particularly of middle and upper level cadres. These are so short that sending a number of them to universities abroad creates a big gap at the senior level in the Ministry. This shortage particularly affects design and implementation of ongoing, let alone new subprojects.

Another lesson is the difficulties the CID universities are having in recruiting personnel to staff the long-term posts. The universities do not have the available staff resources, as perhaps assumed when the collaborative mode approach was decided for Yemen. This constraint can be partially overcome by insisting on all recruitment being done nationwide from the beginning, rather than the present system of exhausting first the lead universities, then the CID system and finally going nationwide: the process is too lengthy, and severely hurts the implementation of the ADSP. The CID institutions defend their monopolization of staffing as part of the CID/YARG linkage development. It would be better at this stage if the universities concentrated on meeting their obligations to CID, YARG and USAID by prompt recruitment; the linkages grow out of this process, as well as from having Yemeni students attend their campuses. In this respect, it is interesting to compare NMSU's record with that of OSU or CSPUP. To meet its Ibb School obligations, NMSU immediately went international to recruit the necessary staff. In the process, it assembled about the best team in the region and admirably managed its subproject. In contrast, OSU has been very lethargic, such that after four years it still has not changed its attitude or style to long-term recruitment, claiming that it is

difficult to find people to go to Yemen. A more determined and less parochial recruiting effort will generate a number of qualified U.S. citizens quite prepared to go to Yemen.

#### K. SPECIAL COMMENTS

##### 1. Actions taken on prior evaluation recommendations.

Almost all the recommendations have been resolved (see page\_III-9). The main issue still needing attention is the slowness in recruitment by OSU.

##### 2. Revisions to log frame as necessary.

The PP log frame still holds, except that no more subprojects be undertaken (output No.7), but that the resources be shifted to expanding sector and subproject assessments, studies and analyses (output No.5). Basically this means a much greater concentration on the advisory role in the next phase of this subproject. This is more fully discussed below in Recommendations.

#### L. RECOMMENDATIONS

The Core activity with the most positive impact on YARG has been its advisory services. It is evident that the MAF greatly appreciates the work of the three advisors assigned to work with its general director, and that more would be welcome. The need is obvious, given that the ministry is only ten years old, and aside from the three Core and one UNDP/WB advisor, has no other resident expert. So acute is the shortage of senior staff that the ministry still sends people at the director general level for post-graduate training; a sign of its embryonic stage of development.

It is clear that the highest priority should be given to expanding the Core cadre of long-term advisors in the MAF, in addition to the four new posts already approved. The MAF could definitely do with more agricultural economists, plus advisors in livestock, soil conservation, range, management, forestry, agricultural engineering and extension, i.e. an expert cadre strength similar to that existing in other

countries in the region with same level of population. Not all these have to be provided through AID, but certainly USAID can increase the number of advisors it currently has through CID. Every functioning ministry of agriculture has to have this expertise, and even if MAF cannot find the required counterpart for each and every advisor, the necessary work can still go on until the trained Yemeni cadre is built up in 5-10 years. In addition, relations have to be developed with the MOE, so that one or two advisors can be placed there, as originally envisaged in the PP book in 1979.

The alternative to expanding the Core advisory role is, as per the PP, to develop more subprojects. Given the experience to date, this is far less efficient than adding more Core advisors. With the FOA almost at the PP stage, to embark on any other subproject would involve another year spent on design, on TDYs rather than resident advisors. Once the subproject is approved, it is certain that MAF will have the greatest difficulty in allocating its share of funds and counterparts. In addition, another subproject means extra on-campus staff, and its overheads, at the lead university. Expanding the Core advisory group by-passes all these problems, because all the incremental resources could be devoted to putting expertise into the MAF, rather than have them spread all over, as has been CID's experience to date with subproject design and implementation. Enhancing the advisory role presumes that OSU will improve its recruiting capabilities markedly in the future.

It is therefore recommended that the Core subproject concentrate on expanding its highly effective advisory activity, and that no more new subprojects be entertained. If this recommendation is accepted, then the Core would become a normal technical assistance activity. With a large advisory team in the country, logically its team leader must be the COP, who is the CID Associate Program Director, not the Core team leader, who represents basically OSU.

Even without an expanded advisory team, the COP must be the Associate Program Director, since CID is the contractor, and must have, as a fundamental management rule, its man in charge in the field. Furthermore, such a person is responsible only to CID, whose commitment to Yemen is far greater than any university, where Yemen is but a small and peripheral activity.

In this evolution then the Core advisory activity gives the ADSP a distinct manifestation, and the logical next step is to split Core into two, with the advisors under the CID COP, and the administrative and logistical functions under the Core team leader who would be an administrative officer. By concentrating on the advisory role, there would not be the need for a large on-campus staff at OSU; the current 7.5 FTE could be cut to the Core subproject director, an assistant and an accountant/expeditor. In Sanaá, there would not be the need for a staff of 58 people.

#### **IV. IBB SECONDARY AGRICULTURAL INSTITUTE (ISAI) SUBPROJECT**

##### **A. SUMMARY**

During the past four years this subproject has advanced substantially in initiating a progressive program in technical agricultural education in Yemen. Efforts devoted to the development of the institute have introduced new approaches for training agricultural manpower and contributed to the development of new perspectives for Yemen's capacity for technical agricultural training. Significant progress has been made in upgrading the quality of educational activities within the institute to make them more relevant to indigenous life and culture and more suitable to the various needs of the agricultural sector.

Now starting its fifth academic year, the ISAI graduated 48 students in 1981/82 and 29 in 1982/83. At present 105 students are enrolled in its three academic classes. The ISAI has, in general, made significant progress towards achieving the subproject purpose, which is "to establish a training center capable of serving Yemen governmental and rural sector needs for personnel with middle-level agricultural skills." On the whole, annual work plans have been geared to developing educational elements essential to proper, logical operation of the institute's daily activities. Basically operational at present, this center includes a campus, living quarters for students and faculty, classrooms, laboratories, offices, equipment, teaching materials, administrators, expatriate faculty and Yemen counterparts, support personnel, students, utilities, officially approved curriculum, ongoing instruction, practical experience opportunities and a ten-hectare school farm.

The ISAI's current training capabilities and programs and their future development will significantly contribute to the achievement of the overall ADSP purpose, which is "to improve the capacity of the Yemeni agricultural procedures to develop and sustain an agricultural sector which effectively and efficiently uses Yemeni natural resources." The ISAI subproject's role in achieving this purpose could consist of providing the MAF with the qualified middle-level management personnel badly needed for the establishment of a national agricultural extension

system in Yemen.

The ISAI's progress to date in recruiting, training and graduating capable manpower may be considered a prerequisite for achieving the overall goal of the subproject and the ADSP, which is "to increase income and improve the quality of life for rural inhabitants." Graduates of the first class (1981-82) have finished their military service, and are ready to accept government positions. As extension agents they will help farming communities to improve their agricultural practices and production methodology. As future graduates become available, the agricultural sector will benefit increasingly from their training. The MAF in particular, and the agricultural sector in general, through proper utilization of trained manpower, will acquire new capabilities in the dissemination of proper and advanced technologies and procedures to Yemeni farming communities. All of this will improve agricultural production and farm income.

Since the beginning of implementation in 1979 the development of different educational components within the ISAI subproject has been negatively influenced by various problems summarized below and discussed in detail in the various sections of this report.

- 1) Inadequacy of the student accommodations and educational facilities provided by the IBRD.
- 2) Delay in the IBRD's delivery of necessary quantities of laboratory and farm equipment and tools.
- 3) Delay in the acquisition of more agricultural land by the MOE and its consequent adverse effect on practical training and on developing a school farm and integrating it into the curriculum.
- 4) Integration into the regulations of the MOE of Yemeni sociocultural norms and values preventing the enrollment of female students in the ISAI program.
- 5) The MOE's inability to recruit enough qualified counterparts and support personnel and assign them to the ISAI in a timely manner; hence adverse effects on the development of teaching procedures and the implementation of a training program for 30 Yemeni

participants destined to obtain M. S. degrees in the United States.

6) The Yemeni participants' insufficient knowledge of English and the amount of time needed for bringing their English proficiency to the equivalent of a TOEFL score of 500 preparatory to enrollment in a U. S. university; hence delay in the accomplishment of the M. S. training program.

7) The inadequacy of the MOE's budgeting system, resulting in unavailability of funds for many of the ISAI's activities or delays in the implementation of its annual work plan.

8) A general political and ideological environment within the MOE unfavorable to the American presence in Yemen and/or American policies regarding the Middle East, hence the hindrance of the development of a collaborative relationship between the MOE and AID/Y, CID/Y or NMSU and the formulation of any definite or approved long-term links between MOE and NMSU.

9) The absence of well-defined working relationships and lines of authority among NMSU, ISAI and MOE on the one hand and between these and the Yemeni Government's components of the Ibb Governate on the other hand, resulting in delays in implementing the ISAI's informal, nonacademic educational and training programs.

10) Insufficient numbers of students seeking enrollment in the ISAI program because of disregard in Yemen for the values of agricultural education and the absence of an adequate method of student recruitment.

11) The MOE's lack of administrative and technical know-how for operating agricultural educational institutions, and the resultant absence of an efficient decision-making process for the practical development and implementation of the ISAI's annual work plan.

12) Continuous turnover of Yemeni personnel designated for assignment to the ISAI; hence delays in the establishment of a well-formulated organizational structure and management procedure within the ISAI.

Progress towards the solution of the problems outlined above will depend on the MOE's willingness to respond effectively to suggestions from AID/Y, CID/Y and NMSU,

and, to a great extent, on the expansion and improvement of the communication and coordination mechanism in which the various interested partners are involved. Furthermore, within the Yemeni management of the ISAI, CID/Y, NMSU, AID/Y and the MOE expansion and proper organization of methods of coordinating respective responsibilities must occur.

Even though the working environment, because of the problems listed above, is impractical for all parties concerned, many of the ISAI's planned activities have been achieved within the time frame specified in its contract. The quality of these activities, however, and of their subsequent effect still needs to be brought up to the desired standards specified in the subproject paper (SPP) and related planning documents. Section M of this report contains recommendations regarding the present and future development of the subproject's educational and training programs, and the need for extending its life span by at least five more years.

#### B. EVALUATION METHODOLOGY

The methodology used in the evaluation of this subproject was basically the same as that stated in the guidelines for the evaluation of the program (ADSP - Section II). See also item 4 of Appendix B.

#### C. BACKGROUND

The Ibb Secondary Agricultural Institute (ISAI), previously known as Ibb Agricultural Training Center (ATC), was originally proposed in 1973 as a component of the first education sector loan of IBRD. In 1976 YARG and IBRD entered into a contract in which IBRD provided funding for the construction of the ISAI, including dormitories, staff houses, classrooms, a cafeteria, farm buildings and all facilities relating to operations, and for the purchase of equipment and tools for the institute's laboratories and farm. No funds were provided, however, for the institute's operational costs nor for employing an initial (expatriate) staff and developing a Yemeni professional staff.

Early in 1977 IBRD asked AID to assume responsibility for the ISAI's program and administration, including all staffing requirements. In view of the urgency of assisting the Yemen Arab Republic's first agricultural

school and supporting the Yemeni Government's massive efforts to reach an adequate manpower level for developing the agricultural sector and rural communities, AID agreed to provide support for the ISAI's future. Thus the ISAI came to be included as a priority subproject under the AID-financed Agricultural Development Support Program (ADSP), project number 279-0052 (under Title XII) which had been proposed as a long-term, sector-wide approach to the problems besetting Yemen's agricultural development. AID/W authorized the ISAI subproject on May 30, 1979, to provide staff members, technical assistance and related support for Yemen's first secondary school designed to provide agricultural education.

Pre-design work was done in December 1978 - January 1979 in an effort to meet the ISAI's planned opening date of September 1979, and constituted the completion of the analysis required for the ISAI subproject. Findings and recommendations produced at that time led to the initiation of an interim "mobilization project" in July 1979, the main purpose of which was to provide the limited assistance needed for starting full-scale activities as close as possible to the above-mentioned planned opening date, and to begin institution-building aspects of ISAI development as efficiently as possible.

Also in the early months of 1979 AID selected CID as the umbrella implementing contractor for the ADSP, and NMSU was chosen as the lead university contractor for the ISAI subproject under CID. The duration of the contract was 5-1/2 years, from September 1979 to August 1985. In May 1979 a CID representative from NMSU was involved in the preparation of initial activities relating to the ISAI's planned opening date. The ISAI was officially opened on September 26, 1979, and general as well as agricultural instruction began there the following month.

The ISAI subproject was the first ADSP component to be started in Yemen. Its implementation was initiated well before that of other ADSP subprojects and before the establishment of CID headquarters in Yemen. During the period from August 1980 to April 1982, when the implementation of other subprojects was started and the organizational structure and management practices of CID/Y were being worked out, the ISAI subproject was instrumental in providing the funds needed for Core subproject requirements. When CID/Y headquarters were completed, responsibility for financing the CORE subproject was shifted to the proper channels.

Later, this situation resulted in a certain amount of confusion concerning lines of communication between CID/Y headquarters, AID/Y and the NMSU managers of the ISAI subproject. Better organization between the NMSU-ISAI team leader, the NMSU-ISAI subproject director, and the related administrative and technical components of AID/Y and CID/Y is still needed. While this problem has not impaired NMSU's ability to carry out its duties in the subproject, clearly defined, practical relationships among all entities involved in the whole ADSP are recommended as a means of enhancing this program's chances of success. It is essential that policies and procedures be clear and effective so that all staff members of CID/Y, AID/Y and NMSU understand their respective responsibilities and are in a favorable position to accomplish them.

During the design of the ISAI subproject and related preimplementation activities, care was taken to connect all aspects of the subproject with the mainstream of activities planned for the achievement of the ADSP objectives. The activities of the subproject were geared to the establishment of educational and training programs contributing directly or indirectly to the development of rural communities as shown below:below:

1) The ISAI's formal academic and training program will provide the Yemeni Government with a flow of personnel qualified as middle-level managers in agriculture. The use of ISAI-trained personnel in the agricultural sector will facilitate the establishment of a) a Ministry of Agriculture with a staff competent in the implementation of effective agricultural development programs; b) a national agricultural extension system able to identify and solve farmers' problems; c) a national research system suitable for identifying agricultural technologies and adapting them to Yemen's needs.

2) The ISAI's informal nonacademic and training programs for the Ibb community, e. g. classes for farmers, in-service training for extension agents, and outreach/extension demonstrations, are designed to a) educate rural citizens and prepare them for the acceptance and efficient utilization of modern technologies and innovations; b) bring them to appreciate and implement the Yemeni Government's agricultural development programs; c) enable them to exercise judgement in selecting agricultural technologies suited to their specific needs.

3) The ISAI's facilities and equipment are entirely appropriate for carrying out a great variety of training programs, and the staffs of other subprojects can use them for conducting their planned training programs.

4) Graduates of the ISAI will constitute a source of trained manpower for the various activities to be carried out under other subprojects, as well as a pool from which students for training abroad under other subprojects may be selected.

The foregoing facts clearly indicate that the activities of the ISAI subproject are essential to the achievement of the ADSP goal, and are directly related to steps required for carrying out the ADSP.

#### D. EXTERNAL FACTORS

Since the ISAI subproject was initiated in 1979 the factors outlined below, external to the development of the ISAI's agricultural curriculum and training process as well as to the duties of its staff members and manager, have continued to necessitate action.

During the design of the subproject, certain assumptions concerning some of the inputs were deemed relevant, but in time, as implementation advanced, were found to be less applicable than originally thought. A brief discussion of these assumptions follows.

- "Physical facilities to be provided by the IBRD will be suitable for the accommodation and training of 270 students."

While IBRD construction of the main physical plant may be said to have been completed on schedule, some secondary facilities were not completed and others were not provided at all, e. g. livestock and food processing. Laboratory facilities are inappropriate for practical training. Dormitory facilities are generally considered inadequate for the planned capacity of 270 students (90 per class), since existing buildings can accommodate only 150 students (50 per class). Living quarters for students are poorly designed and inconvenient, and such facilities as a student union and a physical education gym were not provided. Expansion and renovation of most of the facilities are required for meeting the ISAI's present needs. See section E of this report for further discussion and recommendations.

- "Laboratory and field equipment and tools to be provided by the IBRD will be adequate, i. e. quality- and quantity-wise, for the practical training of the ISAI students."

It appears that provision of the IBRD's basic list of equipment either was not completed or was inadequately supervised. The quantity and quality of the equipment provided are insufficient for the practical training of the students. Some of it is incomplete or damaged, and certain items never appeared. These inadequacies have negatively influenced the quality of training, and have caused delays in the development of the academic programs. See section E of this report for further discussion and recommendations.

- "The MOE will collaborate and cooperate with AID/Y, CID/Y and NMSU to establish an organized mechanism and relationship for the proper development and implementation of the ISAI subproject."

The general political and ideological environment existing within the MOE is unfavorable to the American presence in Yemen and/or American policies towards the Middle East. This environment has often obstructed attempts to improve, develop or expand the collaborative mode and concerns linking the MOE, AID/Y, CID/Y and NMSU, and explains the absence of well-defined relationships between the ISAI's NMSU managers and its Yemeni managers and various Yemeni Government components of the IBB Governate. This state of affairs has been a serious setback, and has adversely affected administrative, education and technical decisions in the ISAI subproject, negatively influencing or preventing many of the institute's activities, such as a) the formulation and full implementation of in-service short courses for extension agents, farmer training courses, outreach/extension programs and women's development programs; b) the establishment and implementation of policies and procedures needed for institutionalizing the ISAI's daily activities, the result being a lack of an efficient record-keeping system concerning students and of an efficient mechanism for enforcing disciplinary rules.

YARG, AID and CID should take measures to solve this sensitive problem and establish clear relationships among all parties involved in the ISAI subproject so that all may acquire a good understanding of their responsibilities and objectives.

- "The MOE will be capable of providing the required agricultural land for the establishment of an operational school farm integrated into the curriculum and providing practical training experience relevant to Yemen's agriculture."

So far only seven of the 47 hectares of agricultural land originally promised by the MOE have been made available to the school. The improvement of these seven hectares of flat land necessitated much work, including leveling, tree planting, the installation of irrigation facilities, and preparation for cultivation. Consequently the student farm training program was not implemented in the first academic year. Moreover, the MOE's inability to acquire more land, especially terraced land, has caused practical training to be irrelevant to agricultural working conditions in Yemen. It is imperative that the MOE make every effort to locate terraced, rain-fed land to give to the ISAI. See section B of this report for further discussion of this matter.

Three assumptions emphasized in the subproject reflect factors crucial to the achievement of the project purpose and perhaps the overall ADSP goal. Considered external in the general sense, these factors should be regarded as being beyond the director or indirect control of the subproject. The assumptions in question are discussed below.

- "A sufficient number of students will seek enrollment to maintain a student body which will graduate 90 students per year."

The projected number of 90 students graduating each year is very high. The present facilities of the ISAI cannot accommodate more than 50 students a year, i. e. a total of 150 students in the institute's three academic years. Even so, from 1979 to the present the number of students seeking admission to the ISAI program has been insufficient, and all of them have been unconditionally admitted. Student records of the

ISAI indicate that 53 enrolled initially in 1979-80, 30 in 1980-81, 32 in 1981-82, 47 in 1982-83 and 35 in 1983-84. Dropping out has also been an important factor in decreasing the total number of students enrolled in the institute. See Tables 1 and 2 of Appendix D for more details.

Recruitment plans which might have been more effective than existing ones were drawn up but never implemented. Low student enrollment is explained only in part by inadequate recruitment procedures. Yemeni disregard for agricultural education and careers in agriculture may have caused low enrollment. Another possible cause is the fact that student stipends and other incentives were below those set for other schools. (In March 1981 these stipends and incentives were adjusted to a more equitable level.) The MOE and the MAF have not formalized a policy guaranteeing future employment to ISAI graduates, and assuring them of income and future career development. In addition to the above-mentioned problems, the ISAI's location in the southern region of the country has mainly attracted students from that region only. Table 3, Appendix D shows low student enrollment from other regions. Competition between various technical institutions, both agricultural and nonagricultural, to recruit students for their respective programs from the small number of graduates of intermediate (i. e. junior secondary) schools contributes indirectly to the low enrollment at the ISAI.

To determine whether or not the critical assumption relating to this matter is valid the MOE and MAF must collaborate in the establishment of a sound recruitment procedure which should take the following criteria into account in addition to those already covered in the existing procedure:

- 1) Four or five students from each governate should be recruited. With the assistance of the Directorate of Agriculture in each of the eleven governates the MAF should assume responsibility for this as well as for guaranteeing the students' employment in their respective governates following their graduation from the ISAI.

2) Employees of the MAF, particularly those holding intermediate school degrees, should be offered incentives to upgrade their educational level through enrollment in the ISAI. It is suggested that the MAF facilitate such enrollment for at least ten employees each year.

- "The loss of ISAI graduates from the public and private sectors of agriculture will be minimal."

The 1981-82 ISAI graduates have just finished their one year of military service, and those of the 1982-83 graduating class will be called up for their military service soon. Interviews with 15 of the students of the first class indicate that most of them are seeking employment with the MAF. Few students are seriously considering continuing their education in one of the Arab countries, and none has shown interest in employment opportunities in the private sector. It is thus too early to assess the validity of this assumption.

- "The YARG will pick up recurrent costs."

AID assistance to the Yemeni Government for the ISAI subproject was mainly for start-up expenses, including pay for expatriate agricultural teachers and management personnel, training programs for Yemeni counterparts and ISAI graduates outside Yemen, purchase of initial agricultural instruction equipment, and general support for the agricultural portion of ISAI activities. The YARG has to budget all other ISAI recurrent costs annually. This annual budgeting process has not been carried out appropriately. Delays in the financing of certain activities and nonavailability of funds for others occur frequently and negatively affect many important daily functions. The active participation of ISAI managers and staff members and the expatriate team leader in the institute's budget planning process must be increased and accepted, since continuation of the MOE's present practice of disregarding real needs in budgeting for the ISAI hinders further development. See section E of this report for further discussion of this subject.

In addition to the foregoing external factors, consideration must be given to the following points.

1) Although the ISAI's technical and educational characteristics make it different from other educational institutions in the country, the MOE still considers it to be like any other secondary school. The resultant effect on decisions regarding the implementation of ISAI activities is negative. As mentioned above, the MOE does the ISAI's budget without consulting with the institute's management. Women were not allowed to pursue their education at the ISAI as they are at other secondary boys' schools. The activities and location of the outreach/extension program were restricted. Discussion concerning the issues of women and outreach is provided in section F of this report.

2) Progress in the establishment of agricultural secondary schools in Yemen has surpassed the MOE's administrative and management abilities. Consequently many of the MOE's decisions concerning technical and vocational aspects of agricultural education in Yemen have been erroneous. As a solution to this problem the improvement of the MOE's management abilities to bring them more in line with the needs of agricultural schools is urgently needed, and the MOE, along with NMSU, AID/Y and CID/Y, must take measures to train Yemeni staff members quantity- and quality-wise in various aspects of agricultural education management. Further delay in this area will adversely affect the future development and expansion of the existing agricultural education system.

3) Having been introduced into Yemen quite recently, agricultural education is in its first stages of development there. Despite agriculture's great importance to the country's economy (most of the people of Yemen depend on agriculture for their livelihood) it is generally looked down upon as a focus for education and a field for careers. One reason for this may be that in Yemen the salaries of persons engaged in careers in agriculture are low compared with those earned in careers in other fields and even with those of relatively uneducated persons working in commerce.

4) Both the subproject paper and the grant agreement between AID and YARG urge that "the ISAI subproject, at the earliest possible appropriate time, develop a variety of programs to capitalize on women's potential for further accelerating the agricultural process," many women already having actively assumed responsibility for on-farm production in Yemen. It had been expected that, among other things, women would be

encouraged to pursue formal agricultural studies at the ISAI. There does not appear to have been adequate application of this intent. The two women who did enroll there were withdrawn subsequently in accordance with instructions from the YARG. While it may be that tradition and religious customs deter women from participating with men in technical education environments, it should be noted that most Yemeni officials interviewed during this evaluation responded affirmatively when asked if Yemeni women should be included with men in formal agricultural education at the secondary level. See section F of this report for further discussion and recommendations concerning this question.

5) From July 1981 to March 1982 the ISAI was closed most of the time because of a tense security situation in the Ibb area, and expatriate staff members and their families were evacuated to Sana'a. They were allowed to return to their residences in Ibb at the end of this period; during and after it, however, they were not allowed to travel within rural communities, being restricted to certain areas at certain times of the day. This situation has negatively affected progress in the development and implementation of the outreach/extension demonstration programs, farmers' training courses and other informal educational activities planned as a part of the ISAI subproject.

6) Most students enrolled at the ISAI have shown much disdain for field manual labor and a disinclination to participate in practical agricultural production activities on the school farm. Such distaste for farm work is probably attributable to the fact that most ISAI students are from urban areas and well-to-do families. The lack of rules for student discipline within the ISAI makes it difficult for the teachers to pressure students to accept and perform their academic and training duties.

## E. INPUTS

The ISAI subproject paper identifies the essential inputs to be provided by the parties concerned for efficient implementation of the subproject's various educational components. These components include technical assistance, staff, facilities, substantial commodities, equipment and funds for training, as discussed below.

### 1) Expatriate Staff

The ISAI subproject design commits the lead university

to provide one agricultural education administration advisor to the Yemeni director of the ISAI for the full five years of the subproject contract, and seven (7) advisors (teaching staff) to cover nine (9) specialty areas.

The school opened in the fall of 1979 with one instructor and a director. Most of the first year was spent locating staff suitable for teaching at the ISAI. The instructors to be employed by NMSU had to meet three criteria: (1) speak and write Arabic and English; (2) have at least a master's degree in the agricultural area in which they were to teach; (3) have some teaching experience. Americans meeting these three criteria could not be located; therefore instructors from different Arab countries were employed, and each of them had at least one degree from the U. S. AID coined a new phrase, Third Country Professionals (TCPs), corresponding to the uniqueness of these staff members and the special employment considerations relating to them.

At present the administration advisor (team leader) and six TCPs are in place. The MOE having cancelled the extracurricular activity course, the seventh teaching staff position was replaced by positions for a school farm manager and an English teacher. For further information on this subject see table 4, Appendix D.

The TCP instructors are properly teaching all of the agricultural courses included in the ISAI curriculum except the one in apiculture. Since beekeeping practices are important in improving and increasing crop production and providing extra income to farmers, it is strongly recommended that the ISAI be provided with a very well trained instructor in apiculture.

NMSU's efforts in recruiting highly qualified teaching personnel have been very successful. The sociocultural background, educational qualifications, and previous experience of these teachers are well suited to Yemen and the needs of the ISAI development process. It is strongly recommended that until the return to Yemen of the Yemeni teaching staff being trained in the U. S. the present teaching staff be retained to continue performing their duties as stated in their employment contract. It is also recommended that there be a one-year overlap between the arrival of each U.S.-trained Yemeni staff member and the departure of each TCP counterpart being replaced. This one-year

overlap will serve as a preservice and an in-service training program for the newly graduated Yemeni staff members and will also acquaint them with the teaching and training procedures established at the ISAI in their respective specialties.

## 2) TDY Specialist Support

The lead university for the ISAI subproject is providing TDY specialists. From April 1981 to November 1983 twenty-two (22) TDY specialists were in Yemen to provide the support required for the ISAI subproject. Eleven of them provided supervision and follow-up on administrative and management aspects of the ISAI subproject, while the other eleven provided general technical and educational support for ISAI activities. (For more details see Table 5, Appendix D.) In general it can be said that during the past four years there has been no organized, well-coordinated plan concerning TDY specialties, the duration and purpose of visits or other related matters. Therefore the procedures outlined below are recommended for organizing the TDY process in support of the activities of the ISAI subproject.

a) The specialty and duration and purpose of the visit of each TDY person should be organized and coordinated with the instructors in each agricultural subject. The purpose of the visit should include evaluation of the teaching process and materials and the assessment of needs for the future development of specific educational or training programs.

b) The specialty and duration of the visit of each TDY person should be coordinated and interrelated with similar needs of training programs being carried out in other subproject activities. In this manner the TDY person's presence in Yemen will be fully utilized and economized, its cost will be justified, a collaborative mechanism will be created among the various activities of different subprojects, and YARG officials will become better acquainted with the significance of TDY support.

## 3) In-service Short-term Training Programs for the ISAI Staff

Since the ISAI's first academic year (1979-1980) the provision of nonacademic and nondegree training programs (up to 100-200 months) for Yemeni and expatriate staff has been established. The general approach for conducting these

programs, however, needs improvement. No timetable or schedule of events has been produced or identified. Within the past four years only two programs were conducted. NMSU should reorganize its planning approach for such activities and direct its efforts towards the identification of other needed in-service training programs for ISAI staff members. For more information on this subject see item 5, section F of this report.

**4) In-service English Language Training Program for Counterparts**

The English language training program for Yemeni counterparts nominated for M. S. degrees is in place. On the average counterparts are receiving 3-4 hours a day of English language training. The effectiveness and outcome of this program will be discussed in item 6, section F of this report.

**5) B. S. and M. S. Training Programs for Yemeni Staff**

AID has furnished all funding required for providing a B. S. training program for potential Yemeni staff in one of the Arab countries, as well as for training in the U. S. to the M. S. level for 30 Yemeni participants. A major objective of such training programs is to prepare Yemeni professional and administrative personnel to provide YARG with manpower capable of a) directing and managing the ISAI's educational programs; b) developing and administering additional new agricultural secondary schools based on the educational model established by the ISAI subproject.

Experience in implementing these two training programs indicates that the B. S. program is progressing very well, whereas the M. S. program, beset by a variety of difficulties, is lagging behind schedule. Further discussion of the outcome of these programs will be presented in items 7 and 8 of section F of this report.

**6) Yemeni Counterparts**

The MOE is supposed to recruit at least ten Yemeni counterparts at the beginning of each of the ISAI's first three academic years. These counterparts are to be employed at the ISAI as teaching assistants and prepared for enrollment in the M. S. program in the United States.

MOE efforts to recruit Yemeni counterparts to expatriate staff members were and still are falling behind schedule. The target of at least ten Yemeni counterparts for annual assignment to the ISAI has never been attained. In the first academic year (1979-80) six were recruited: four faculty and two administrative. In the second academic year (1980-81) two more Yemeni were assigned. A request for fifteen counterparts for assignment to the ISAI during the academic year 1982-83 resulted in the recruitment of only eight, and two of these are administrators.

To date the pattern of the recruitment of counterparts indicates the impossibility of attaining the target number unless the YARG places a much higher priority both on improving recruiting procedures and expanding sources of recruitment to increase, in turn, the size of the pool from which these counterparts are identified and selected.

#### 7) Agricultural Land

YARG is to provide the ISAI with agricultural land (a total of 47 hectares) for the purpose of establishing an operational school farm integrated into the curriculum and giving the students practical training relevant to Yemen's agriculture. Only 7 hectares of flat land out of the 47 hectares promised have been made available to the institute. This land had been decreed public grazing land over 800 years ago by Queen Arwa, and no plow had touched it in all that time. The wadi flowing through the land had caused extensive erosion, changing its course many times, and frequently flooding the area. In addition, a partial straightening of the wadi above the site had caused the ISAI building site to be flooded more often than usual. Thanks to the excellent cooperation of ISAI administration, ISAI teaching staff, SURDP, the Ibb Governor's Office, AID/Y and NMSU, all but a fraction of a hectare of this land has been converted into farm land that is usable, though perhaps not always the most desirable.

The MOE has also located several other farm lands that can be added to the present school farm. A very good piece of farm land was located and fenced, and a fair price for it was established with the owners. This land was adjacent to the ISAI, and contained, terraced land typical of Yemen. To date the it has not been paid for, and thus is not available to the school.

Further discussion and recommendations regarding this matter will be presented in section F of this report.

#### 8) ISAI Operating Budget

YARG is to provide funding sufficient for recurrent cost items such as monthly salaries of Yemeni teaching and support staff members, student allowances and expenses, supplies and farm operations. From its first year of operations (1979-80) to the present ISAI has received limited YARG funds, the level of which appears to be based on an arbitrary amount, presumably justified on the grounds that there is no operational experience on which to base budgeting. These limited funds are inadequate to cover many anticipated as well as unanticipated yearly expenses, and are made available to the ISAI only after the completion of complicated, time-consuming, bureaucratic procedures. For the past four years, and even for this year (1983-84) the ISAI budget has been disregarded upon being submitted to the central government. Furthermore, experience during this period indicates that even if the ISAI budget is approved, the availability of funds for the ISAI is not guaranteed. Therefore implementation of all of the institute's activities is rendered unnecessarily difficult, planning for them being divorced from the budgeting and control of funding. For more information on this subject see section D of this report.

To overcome the above-mentioned problem MOE, CPO, AID/Y, CID/Y and NMSU should have a meeting to analyze and understand the financial difficulties facing the MOE, and formalize appropriate alternatives for providing on a timely basis the funding required for ISAI activities.

#### 9) Funds for Commodities

AID provided funds for procuring commodities needed for developing the educational and training activities of the ISAI, including educational and farming equipment and supplies, school furniture, four vehicles, and eight mobile homes for the expatriate staff. Despite the availability of funds for basic commodities, however, the institute still needs more, quantity- and quality-wise, educational and farm equipment, machinery, supplies and tools, as well as dormitories, classrooms, laboratories, and library furniture and accessories. Therefore it is recommended that NMSU provide a TDY specialist in agricultural and extension

education to conduct a current comprehensive survey of the equipment and supplies which the institute needs for the effective academic and practical training of its students. YARG and AID should negotiate ways and means of providing the funds required for commodities.

AID funds for the purchase of the eight mobile homes have helped NMSU to overcome the problem of housing the expatriate staff. Originally houses built by IBRD were to be used by NMSU staff. Early in the preimplementation stage of the project the MOE decided that these houses should be used for Yemeni staff assigned to the school. Alternatives for accommodating NMSU staff were explored, but very few suitable solutions were found. Adequate housing not being available in Ibb at that time, the only solution was to house the staff members in Taiz and let them commute daily, or to import housing. Following a review of the economics of the matter, a decision to import double wide mobile home units was reached. Rent in Yemen amounts to about \$25,000 a year, and \$10-15,000 for furnishings must be added to that figure. A mobile home unit, including furniture, costs \$26,000 and the related shipping costs are \$13,000. A comparison of these figures led to the conclusion that it would be more economical and practical to house the staff in mobile homes. The results of this decision have proven beneficial not only from an economical point of view, but also because staff members and their families could be located at the school, and thus closer camaraderie developed.

#### 10) Physical Facilities and Equipment

The IBRD provided the initial funding for the construction of the ISAI's main physical plant and for supplies and equipment, as explained below.

a) Physical facilities: These were to include classrooms, laboratories, offices, dormitories, faculty housing, and secondary educational facilities. The ISAI's main buildings were completed on schedule, but secondary facilities either were not completed or were not provided at all, e. g. livestock and food-processing facilities. Dormitory facilities are generally conceded to be inadequate for the planned capacity of 270 students (90 per class) inasmuch as, at a maximum, they can accommodate 150 (50 per class). Existing dormitory cubicles accommodate two students rather than four as originally foreseen. They are not

suitable for student living, and need to be renovated to provide some measure of privacy. Lavatory and latrine facilities in the dormitory are inadequate in number and substandard. Student-related facilities such as a student union, areas for sports and recreation, etc. do not exist. Classrooms and meeting rooms are not suitable for delivering lectures, and need acoustical tile ceilings. The design and layout of the laboratories are not well suited to education or practical training. At present all basic facilities are in place and are being used except for the food industry which is not functional. Housing units for the Yemeni staff are constructed and fully occupied. A shortage in the number of units for accommodating the present number of the Yemeni staff is very apparent, and will become more acute when all ISAI Yemeni staff members are in place.

b) Equipment and supplies: Two years before the school opened, the IBRD purchased teaching, laboratory and farm equipment and supplies for use by the ISAI, and stored them in various places. Later, at delivery time, a considerable percentage of the equipment and supplies was found to be either broken, missing or inadequate in number and quality. An appeal to the IBRD for assistance brought NMSU the response that IBRD was no longer involved. Insurance on the equipment, obtained at the time of its shipment, had expired, and nobody knew the whereabouts of the missing equipment and supplies. A shortage or lack of equipment, supplies and tools for the school laboratories and farm continues to hinder the use of these facilities for practical training. As a result, standards and procedures in the practical training of the students are below par, and practical training sessions are irrelevant to classroom lectures.

Even though the IBRD and the MOE are responsible for building the facilities and providing a complete initial set of equipment for the educational facilities and school farm, AID and CID should give MOE advisory assistance to correct problems relating to equipment and facilities. AID and CID should also provide a certain amount of annual funding to purchase or replace essential equipment and tools for practical training. Funds should also be made available to assist the MOE in the maintenance and repair of physical facilities. Moreover, AID and CID should help the MOE to persuade other donors to provide additional funds for improving and expanding physical facilities and purchasing

required teaching and training equipment, supplies and tools.

**F. OUTPUTS**

The ISAI subproject paper, the contractor's scope of work (i. e. the life-of-the-subproject work plan), and the three annual ISAI work plans for the period of January 1, 1980 to April 30, 1983, have specified the progress to be achieved with regard to outputs. The evaluation of the current status of outputs is as follows.

**1) Development of the ISAI Curriculum**

The past four years have been a period of change and development where this curriculum is concerned. From June 1980 to September 1982 numerous meetings of the parties involved and two workshops were held to analyze or discuss all or parts of the curriculum. The announcement of the MOE's official certification and acceptance of the curriculum dates from October 1982. An integrated, comprehensive curriculum document for all ISAI course work has been submitted to Egyptian, Iraqi and Syrian authorities for accreditation and an indication of the equivalence at the secondary school level of the degree which the ISAI grants to its students. Examination of the final revised curriculum shows that for the time being it is systematic and commendable. (For details see Table 6, Appendix D.) Future curriculum development should include (a) the addition of course work in forestry and fisheries; (b) the incorporation of more materials relating to conditions and agricultural practices in Yemen (e. g. lectures, laboratories and practical work); (c) more emphasis, following the establishment of a farm and the availability of adequate laboratory and farm equipment, on practical information, and greater efforts to make practical training in the laboratories and on the farm more consistent with lectures and more relevant to students' needs; (d) more hours per week for practical training; (e) practical laboratory and farm training sessions should be based on "learning by doing" rather than on the plain or field-labor or academic observation approach; (f) emphasis in student grading and evaluation procedures by basing the course grade on learning ability and student participation in practical work.

## 2) The Establishment and Implementation of an Outreach/Extension Demonstration Program for the Ibb Area

A general, simple community survey instrument was developed and utilized by the ISAI staff and students for acquiring the socioeconomic data needed for the structure of this program. Accordingly the program was started during the 1980-81 academic year and included (a) limited numbers of demonstration plots in the Ibb area for corn, beans and potatoes; (b) three in-service training programs held with extension workers; (c) cooperative programs developed to involve ISAI students and staff with British Mechanization Unit, Rada Rural Development Project, Dhamar Dairy Farm, Wadi Zabid Authority, Tahama Development Authority, Tahama Region Extension and Seed Introduction Project, Adult Education Staff of Zabid, Ibb Agricultural Extension Center and Southern Upland Regional Development Project. Ambitious planning and activities in this program were slowed down by various external factors, mainly (a) insufficient cooperation and interest from Yemeni ISAI management; (b) the security situation in the Ibb area, restricting mobility, particularly during 1981-1982 when evacuation occurred; (c) the nonissuance of travel permits from the Ibb Governor for travel and visits by the expatriate staff; (d) a lack of adequate means of transportation for the bad roads connecting various villages; (e) a lack of financial support from the MOE for active participation in the program by the Yemeni staff. Likewise a lack of financial support from the MOE limited the number of demonstration plots and other activities.

For continuation, this indispensable program should be organized to include (a) institutionalization leading to recognition of the program as the ISAI's most important permanent component; (b) the official involvement of MOE, MAF and the Ibb Governor in program planning and implementation and full coordination with ISAI management; (c) the establishment of a community committee for liaison between the school and local people (in the past there has been no effort to establish such a committee); (d) the employment of women instructors by the ISAI as members of the outreach program to facilitate communication with rural women; (e) the providing of all the technical facilities and equipment which the program needs for success in adult education; (f) the development of a comprehensive survey format for collecting a wide range of data, on such matters as the needs of farming

communities, problems relating to agricultural production, and farmers' ideas concerning means of solving their problems and increasing or improving their production practices and capabilities.

### 3) Training Programs for Farmers

Since December 1982 a major beekeeping program has been established, in accordance with directives from AID/Y, to assist earthquake victims in the Dhamar area. Its goal is to construct and supply 400 hives to replace those which the earthquake damaged, and to provide training programs in modern and advanced beekeeping practices. Other activities which it includes are (a) the hiring of a beekeeping specialist to work in Yemen for one year (he arrived there in March 1983); (b) training in beekeeping for two Yemeni women at Ohio State University; (the provision of beekeeping equipment and supplies to the farmers; (c) temporary duty in Yemen for 40 days starting in May 1983 of a beekeeping specialist to assist with the establishment and improvement of beekeeping practices.

This highly successful program has enhanced the ISAI's credibility. It would be advantageous to develop others of its type, since such training programs tend to strengthen relationships between the ISAI and farming communities. Conducting training programs during summer sessions would facilitate providing room and board for farmers and the utilization of other ISAI facilities.

### 4) Programs for Women's Development

Encouraging the enrollment of female students has been the only approach used for creating a climate favorable to women's development. Through its expatriate staff NMSU has initiated an informal campaign and personal contact in Ibb and neighboring communities to persuade citizens to encourage their daughters to enroll at the ISAI. Two female students did indeed enroll, but because of sociocultural factors and Yemeni educational rules an MOE directive resulted in their withdrawal from the school. In view of the religious, sociocultural values of Yemeni society, YARG regulations regarding women's education, family attitudes towards it, progress achieved in it, women's experiences at different levels of Yemen's educational opportunities, and social and official acceptance of ways and means of educating women, it is clear that there are very special ways of dealing with women's education and related activities. Specifically mixed

education is not allowed or accepted in primary and secondary schools; women's education and related activities must be conducted by a female teacher; Yemeni society is more willing to accept Yemeni women educators than those of other nationalities; women are allowed to seek education in the area where their families live, but are discouraged from seeking it in more remote areas; families in large urban areas (e. g. Sana'a) give their daughters more freedom to attend coeducational technical schools and institutions of higher learning.

The foregoing information makes it apparent that at present it is impractical for the ISAI to attempt to conduct formal or informal educational programs for women. Efforts to establish any activity relating to women's development are weakened by the nonavailability of women on the institute's teaching staff or the injunctions precluding their employment in nonacademic activities (e. g. the outreach extension program). The following steps are required for enabling the ISAI subproject to implement activities relating to women's development: (a) Yemeni women must be trained in the United States or an Arab country to obtain a B. S., M. S. or some other certificate qualifying them as permanent staff members of the outreach/extension program. (b) Yemeni women must be hired specifically as laboratory teaching assistants, library managers, members of the administrative support staff or in some other capacity relating to the involvement of women. The employment of Yemeni women in any of the above-mentioned positions would also facilitate and accelerate the future enrollment of female students at the ISAI.

### 5) In-service, Short-term Training Programs for the ISAI Staff

During the past four years only two in-service, short-term training courses for the Yemeni and expatriate staff were conducted, i. e. (a) a six-week curriculum development program held at NMSU campus in the United States in June and July 1980; (b) a curriculum development seminar held at the ISAI campus in Yemen July 11-23, 1981.

Considering the variety of educational activities already established or to be established in the ISAI subproject, it is clear that more numerous and diverse in-service, short-term training programs are needed to enable the ISAI staff to meet proposed

standards. These programs could include such matters as the development of course outline, lesson plans, classroom materials and handouts for students; the production and use of audio-visual materials; methods of conducting community surveys, assessments of students' needs, evaluations, etc. To identify and plan necessary training programs, NMSU should conduct a professional survey to evaluate the teaching staff's educational planning capabilities.

6) In-Service English Language Training Program for Counterparts

The English language training program for the Yemeni counterparts has been established since the ISAI's first academic year. A full-time English instructor has been assigned to the Institute. Three or four hours of English instruction are provided daily to the counterparts nominated for the M. S. program. The counterparts' attendance at English lectures is irregular and unsatisfactory. Currently all of them either are in the English language class, or they sign in at 8:00 a. m. and disappear. Therefore they are not available to expatriate instructors as effective counterparts. The counterparts' progress towards English proficiency is slow and discouraging. The possibility that any of them will soon achieve the required TOEFL score is very slim. In general, it can be said that at the ISAI in particular and in Yemen in general the working, sociocultural and educational background, educational opportunities in English and overall learning conditions are by no means conducive to encouraging Yemeni students to improve their proficiency in English to the extent of being able to meet the TOEFL requirement. Fulfilling this requirement within the Yemeni context necessitates an intensive, time-consuming English-learning program of at least two years' duration, as well as English-teaching facilities far more advanced and better organized than those now existing in Yemen. In the situation described above, the proper formulation of solutions to the problem, as required by AID is not possible. If, however, consideration is given to experience gained in educating seven Yemeni students at NMSU and three assigned to ALIGU in Washington, D. C. to study English, implementation of the alternative suggested below should be envisaged, and structured according to the following sequences: (1) When the counterparts are selected and before they are employed at the ISAI, they should be enrolled at YALI in a specially organized intensive English language training

program of 3-6 weeks' duration. (ii) Upon achieving a TOEFL score of 400 or more, the counterparts are assigned to the ISAI to carry out their respective teaching responsibilities, and also to continue their English language training within the school's ESL program. (iii) When the ISAI academic year ends, the counterparts will be allowed to travel to the U. S. to attend, for a period of 6-9 months, the English and preadmission educational training program for international students at NMSU campus. This program proved efficient in preparing the seven Yemeni students currently enrolled in the M. S. graduate program at NMSU.

MOE, CID, AID and NMSU should find better ways of upgrading the English proficiency of the M. S. students. Furthermore consideration should be given to flexibility in admitting these students to U. S. universities on a provisional basis. If agreement regarding this matter cannot be reached, the process of Yemenization of the ISAI teaching staff will not be achieved within the desired time frame.

#### 7) B. S. Training Program for Yemeni Staff

For the past two years, the B. S. training program has been carried by selecting candidates among students graduating from the ISAI program. The top fifteen students who have graduated from the ISAI program (six from the 1981-82 class and nine from the 1982-83 class) have already been selected, and are currently pursuing their B. S. studies in various universities in Egypt. No problems are anticipated in continuing the implementation of this program.

Despite successes achieved in its implementation, the B. S. training program's future contribution to the establishment of a pool for selecting Yemeni participants for training in the U. S. is likely to be quite limited. Most, if not all, Yemenis who have been educated in Egypt or other Arab countries, have little proficiency in English, and extensive time and efforts would be needed to bring their knowledge of this language up to a level qualifying them for admission to U. S. universities. Therefore to tie the B. S. program in properly with the future implementation of various training programs in the U. S. relating to ADSP subprojects, Yemeni B. S. students should be assigned to universities which simultaneously provide academic and English language training, such as

the American University of Beirut, the American University of Cairo, the University of Khartoum in Sudan, the University of Juba in southern Sudan or similar universities.

**8) M. S. Training Program for Prospective ISAI Yemeni Staff**

A program has been established for training 30 Yemeni participants to the U. S. level in different fields of agricultural and extension education in the United States. The 18 M. S. nominee counterparts whom the MOE has recruited at irregular intervals during the past four years are at different stages of enrollment within this program. Seven are pursuing graduate work at NMSU campus in the United States and are expected to graduate by September 1984. Three are enrolled in an English language training program at ALIGU in Washington, D. C. and are expected to be enrolled at NMSU by March 1984. The eight newly recruited counterparts are teaching at the ISAI and receiving English language training preparatory to their enrollment in the M. S. program.

Delay in the full implementation of this program might be attributed to one or more of the following interrelated factors. (a) The MOE's inability to recruit at least ten Yemeni agricultural counterparts for each of the first three academic years of the ISAI program (see item 6, section E), and the practice of assigning these counterparts to the ISAI at different intervals in the year, contrary to the agreement, have complicated the ESL program and the process of getting these counterparts admitted to U. S. universities. Difficulties in recruiting the required number of counterparts could be attributed to (i) the apparent continuing disregard for agricultural education in Yemen and the resultant disinterest of well qualified individuals in this field; (ii) the difficulty of attracting qualified Yemeni counterparts to secondary agricultural teaching positions despite the prospect of Master's degree training in the U. S.; (iii) the inability of ISAI management to influence YARG recruitment procedures and regulations; (iv) the generally inadequate level of education of the Yemeni participants assigned as counterparts. (In this regard, it must be noted that without the commitment of NMSU and AID, none of the participants sent to the United States could have gained admission to a U. S. university.) (b) The English language training program currently being provided to the counterparts at the

ISAI seems to be ineffective and time-consuming. Moreover, because of Ibb's remote location, the English language training program at the ISAI is isolated from other ESL programs in Sana'a and the benefits which these receive, such as films and contact with American communities. This isolation is compounded by the fact that all English training sessions at the ISAI are conducted after counterparts have completed a normal day of work. For all of the foregoing reasons it is recommended that YARG, AID and CID consider alternatives for upgrading the counterparts' English proficiency. One alternative would be to allow counterparts to travel to the U. S. for English "topping-off" at a score lower than the normal "call-forward" score. A period of six to nine months should be allowed to introduce individuals to an English-speaking environment. Failure to expedite language training will result in additional delays in the timing of the M. S. training program. (c) Goals originally set for the M. S. degree training program were based on the assumption that counterparts would hold academic credentials clearly allowing admission to graduate school. Experience with the first two groups of counterparts suggests that this assumption has so far been invalid. In all cases it has been necessary to obtain provisional status for the students and do extensive upgrading of the counterparts' educational background. Consequently other assumptions should be made, namely: (i) an attrition rate of 50% is to be expected; (ii) all individuals will require considerable undergraduate course work to build an academic foundation in their fields of specialization; (iii) all students will require considerable tutorial support while in graduate study; (iv) course loads will have to be kept at a minimum, and extra time will have to be allowed for obtaining the degree.

In view of all of the foregoing, it must be recognized that at present the M. S. training program is a luxurious accessory to the secondary educational system in Yemen. In terms of future actions, experience gained so far points to the necessity of reviewing the training program to ascertain its purpose and determine the means of achieving it. The time has come for all parties involved, i. e. AID, YARG, CID, NMSU and MOE to decide whether the M. S. degree program originally proposed continues to be in the YARG's best overall interest, and to discuss and agree upon alternatives.

**9) Instructional Materials and Teaching Aids**

Progress has been slow in the development of instructional materials, textbooks in Arabic, student handouts and audio-visual materials. The following comments should be noted.

The agricultural textbooks written by the teaching staff need to be revised to include more materials relating to Yemen.

Classroom handouts distributed to students so far have been satisfactory, but need further development and improvement.

The only audio-visual materials occasionally used in the classrooms are transparencies for overhead projectors.

Slide sets and transparencies recently received from NMSU have not yet been used.

In-service training for expatriate staff members and counterparts in the production of audio-visual material has been delayed pending the arrival of a TDY specialist.

NMSU needs to pay closer attention to this important aspect of its responsibilities, introducing a variety of audio-visual materials into the ISAI educational system, i.e., movie projectors, films, videotapes, etc.

**10) Administration Policies and Procedures for the ISAI**

In cooperation with the Yemeni management of the ISAI, expatriate staff members have formulated very comprehensive bylaws for the ISAI, but for unknown reasons the MOE disregarded this effort. In the absence of officially accepted and certified bylaws, the Institute has suffered from mismanagement in daily activities and its organizational structure remains unestablished. AID/Y and CID/Y should emphasize to the MOE that this situation is impeding progress.

**11) Administrative and Technical Supporting Staff**

As implied above, an administrative structure capable of handling all daily ISAI activities and providing supervision and support to the studentbody has not been established. The MOE has assigned to the institute on a short-term basis only a limited number of

administrative employees, generally from other Arab countries. In these circumstances, NMSU has been unable to establish a training program for its administrative staff. MOE and NMSU should therefore give high priority to hiring and training Yemeni administrative staff members.

Laboratory and field technicians to help the teaching staff to prepare teaching and field materials are not available. Obligated to prepare all educational activities without assistance, the instructors are limited in the amount of time which they can devote to their main responsibilities. To solve this problem, the MOE and NMSU should consider hiring and training ISAI graduates as assistants to the teaching staff.

#### 12) Student Output

The institutional enrollment goal originally stated in the logical framework was 270 students with 90 graduates a year. This goal was based on an assumption made before the school facilities were constructed and student customs were known. Reality and experience showed that the facilities were inadequate for the above-mentioned total enrollment and that students, because of local customs, were disinclined to travel far from their homes or villages to attend school. Yemeni society is characterized by strong family and village ties; thus the assumption that students from all over the country would attend the ISAI has proven false. A more realistic goal would be 50 students per class with an identical number of graduates each year. This figure does not reflect attrition rates nor the fact that students with certain training credentials are allowed to join the second-year class. It reflects minimal crowding and the provision of adequate classroom, dormitory and meal facilities for all students. For further information, see section D of this report.

#### 13) The ISAI Farm

The MOE has not achieved the land acquisition target of "seven hectares plus forty hectares." The seven hectares available at present have been developed to the extent of responding to minimal requirements concerning crop production for the institute's animals and practical training for students. Even so, this land needs more water resources as well as leveling and further efforts to improve its appropriateness for practical training activities. Persistent land and water limitations have been a major handicap, and will

cause inadequate forage production in future; this, in turn, results in insufficient livestock for training purposes.

The land available at present is all flat, whereas practical farm training to be relevant to Yemen's agriculture, must include experience with terraced and rain-fed agricultural land. Until this problem is solved, the practical training program will be inadequate, feed for ISAI livestock will be insufficient, and the use of the school farm as a demonstration area for the outreach/extension program and training courses for farmers will be limited. To avoid further delays in carrying out the ISAI subproject, the MOE should intensify its search for appropriate land for the school farm.

#### **14) Practical Training for Students**

The practical training activities established are as follows:

(a) Practical and production training on the school farm. Progress in this training area is very slow and results are limited. Delays can be traced mainly to (i) the students' reluctance to engage in manual farm work, which they regard as being beneath their status and dignity; (ii) shortages in farm machinery, equipment, supplies and tools; the insufficient amount of time allotted to practical training in the field; (iii) persistent limitations of land and water.

(b) Summer training program. Such a program has been established for first- and second-year students. The students spend from four to six weeks working throughout Yemen for the MAF and donor organization development projects and private agricultural projects. This activity is very popular with both students and project leaders.

(c) Student agricultural clubs. Student clubs for animal production, crop production and agricultural mechanics have been established and are very active. Real production activities are the rule in the clubs, and students share the profits from the products sold. The popularity of these clubs is growing, and demands for membership are high.

The above-mentioned training activities contribute to the improvement of ISAI educational programs by increasing the relevancy of classroom lectures to students' interests and enhancing the students' knowledge of agricultural practices. Nevertheless, further effort is needed in improving the content of the activities and the method of conducting them. To this end, NMSU should conduct an annual evaluation of students' practical training, and seek quality improvements in terms of evaluation results.

15) The ISAI Students' Library

The library is still in its first stages of development. Considerable quantities of Arabic textbooks and other reading materials have been purchased, and bookshelves, index card cabinets and reading-room furniture are in place; however, the installation of a complete library system and the training of Yemeni personnel to manage it remain to be done. Improvement in the quality and quantity of textbooks and reading-room furniture is needed, as are efforts to ensure that the library responds to the particular needs of the ISAI staff and students, the Ibb agricultural community, and the persons participating in farmer training programs and in-service educational programs for extension agents. In this regard, the short-term assistance of a library specialist would be useful.

G. PURPOSE

The purpose of this subproject is to establish a training center capable of serving Yemen governmental and rural sector needs for personnel with middle level agricultural skills.

The center is now operational, and consists of a campus with student and faculty housing, an administrative and teaching staff, and an academic program. The curriculum includes practical summer field assignments. The following outline indicates the degree of progress observed toward each of the end-of-project status (EOPS) objectives.

1) A three-year training program producing 90 graduates annually at the certificate level.

There is currently a program which has graduated 77 students and has a total enrollment of 105 in three

academic classes. The target of 90 graduates per year cannot be attained until dormitory accommodations are adequate for an enrollment of 270 students (90 in each of the three academic classes), and until recruitment procedures are fully developed. Full development of the institute will have been achieved only when the program is staffed by a majority of Yemeni nationals.

2) Returned participants will have assumed responsibility for some of the teaching and administrative staff positions. The first group of Yemeni participants is still studying in master's degree programs in the United States. Since these participants have not yet assumed teaching positions in Yemen, it is too early to assess the results.

3) Revised, upgraded curricula will have been developed for the major subject areas. This objective has been satisfactorily achieved and approved by the MOE.

4) A school farm will have been developed providing a suitable program of practical training for the student body for the major crops and livestock of the area. Practical training in this area has been very limited. The seven hectares of land which are used now as the school farm have been reasonably developed, but this falls well below the objective. It is expected that 40 additional hectares will be acquired by the MOE for this purpose. Full development will require at least three more years, if land becomes available.

5) A program of short courses and in-service training for farmers and extension workers will be in operation. Four activities have been undertaken since 1979: three short courses for extension agents and a course in beekeeping for farmers. This program could be improved by conducting a survey in order to identify additional training needs.

#### H. GOALS/SUBGOALS

The goal of this project is to increase income and improve the quality of life for rural inhabitants.

It is too early to assess any appreciable change in levels of income or quality of life as a result of the ISAI subproject activities. ISAI graduates of the first class are now seeking employment with the MAF. Only when they are assigned to extension positions will

we be able to begin to measure this objective. This will require a monitoring system to track employment patterns of ISAI graduates. Under the present conditions it may be concluded that the basic elements of the subgoal have been achieved. An agricultural education facility is operating. Despite imperfections, ISAI is doing well in the light of its measurable achievements.

It should be noted, however, that unless the following actions are taken, the ISAI subproject is unlikely to contribute to the Agricultural Development Support Project to the extent anticipated.

1) It is assumed that graduates will be employed in agriculturally related activities in the private and governmental sectors. Therefore, a monitoring system to ascertain the employment status of graduates is needed.

2) A well organized program of outreach demonstration and extension training for farmers must be established.

3) The program must develop a climate conducive to meeting the development needs of women.

#### I. BENEFICIARIES

It is still too early to identify benefits to the main target group of the subproject: the low-income rural farmers. The principal beneficiaries thus far have been the students, teachers and administrative staff of the ISAI. Students may be said to have benefited from working with the expatriates and from studying English. Their main benefits, however, will come from master's degree study in the United States. Ibb area residents who are employed at ISAI have enjoyed specific financial benefits. Rural farmers in the Ibb area, however, can only be said to have benefited to the extent that they or their children have found their way into the categories mentioned above. Very few of them have. Farmers will begin to benefit directly from the subproject, when the in-service training programs and outreach short courses are functional. Of course, there is a general benefit to the nation as students continue their agricultural training and move into careers in agriculture. Even then, the farmers who benefit directly will represent only a small percentage of the total.

## **J. UNPLANNED EFFECTS**

The most important unplanned effects related to the ISAI subproject may be summarized as follows:

1) The ISAI has gained a very good reputation among government officials. The high standards maintained by the institute are becoming a model to be followed by other agricultural institutions in the country. For example, the Surdud Agricultural School has revised its curriculum and teaching procedures according to those in use at ISAI. Key officials of the MOE indicate that the establishment of any agricultural school in the future should be patterned upon the ISAI.

2) The MOE female staff members have not favorably received the MCE role in preventing female students from enrolling at ISAI nor the forced withdrawal of the two female students admitted to the institute. They have questioned the validity of such policies. In fact, women within the MOE and women's organizations are willing to organize campaigns of protest.

3) The expatriate teaching staff, most of whom are from other Arab countries and share the same cultural background, have helped to establish a positive academic environment at ISAI. They have also worked towards a favorable relationship with the Ibb community. Mutual respect between teachers and students has helped to solve the social and educational problems of the students. The ISAI campus has been the locus of several social events that benefited the Ibb community. If the teaching staff were not Arabic-speaking, this might not have been achieved.

4) The ISAI has purchased the livestock needed for student training. Consequently most of the school farm land has been utilized for forage production. This has left little land available for use as a student teaching plot and for related activities.

5) ISAI graduates are considered well qualified for admission to the university. Of the total student body to be enrolled in the proposed college of agriculture in Sanaa, fully twenty percent are to be selected from among ISAI graduates.

## **K. LESSONS LEARNED**

- 1) The creation of a climate conducive to the development of women in Yemen requires a systematic analysis and full understanding of: a) the announced and unannounced rules and regulations that are adopted by the government regarding their education and development; b) the sociocultural factors within the various Yemeni communities that affect women; c) the approaches to the education of women that have already been applied and accepted.
- 2) The creation of cordial relationships between the personnel of ISAI and government agencies will enhance the development of the institute.
- 3) In addition to formal contractual relationships, the establishment of good working procedures for all parties concerned will facilitate the implementation process.
- 4) Yemeni society is not thoroughly adapted to bureaucratic structures known in the Western world. The decision-making process is not clearly defined. For example, decisions made by a minister or general director may be disregarded by the head of a department without fear of negative sanctions. It is therefore crucial to understand the social and cultural context in which administrative decisions are made. Analysis of the decision-making process within the political and administrative structure in Yemen is essential for the implementation of any project. Identification of the centers of authority and their relationship to the tasks to be performed can help comprehend the project environment and thus facilitate its implementation.

## **L. SPECIAL COMMENTS**

1) Previous evaluations. This project was evaluated on two occasions during the past four years. The first evaluation was performed by CID in collaboration with MOE, AID/Y, NMSU and the Yemeni ISAI management. It covered the period August 1979 - March 1981. A final report was presented in March 1981, and reviewed on April 30, 1981.

The second evaluation was performed by AID/Y in collaboration with YARG, and covered the period June 1979 - December 1981. The final report of this evaluation was submitted in February 1982. Both

reports emphasized similar issues, namely: a) the need to improve recruiting procedures in order to reach the enrollment goals of the ISAI; b) the need to appoint counterpart personnel according to agreed-upon plans; c) the acquisition of more agricultural land to establish an operating farm and provide the students with practical training relevant to Yemen; d) the lack of appropriate agricultural teaching material in Arabic relevant to Yemen; e) assignment of responsibilities between CID and YARG, especially on matters relating to budgets; f) the importance of a close working relationship based on a clear understanding of individual responsibilities.

Most of these issues still exist, since YARG has been very slow to adopt the proper remedies. Perhaps YARG would have reacted sooner, if an agreed-upon procedure had been included in the design of the ADSP. We are recommending that the project be evaluated internally on an annual basis. Such an evaluation can be used as a learning and monitoring tool to assist subproject directors and managers in their day-to-day activities. Such an evaluation will also facilitate the identification of potential problems and related options.

2) The need for an improved technical and vocational agricultural education system. There is a serious shortage of trained agricultural manpower in Yemen. This shortage is likely to persist for the foreseeable future and seriously limit the implementation of agricultural projects. The only three secondary agricultural schools are very new. Much of the training in agriculture is financed by international donor agencies. In order to meet the manpower needs of the future, the YARG must take immediate actions to establish an improved technical and vocational agricultural education system in the country. Further discussion of the suggested system is presented in Attachment A of Appendix D.

3) Suggested revisions to the logical framework of the ISAI subproject design. Since the ISAI's establishment in 1979 the macroenvironment in which this subproject operates has been changing and evolving in many of its aspects. These changes in environment necessitate the review and reassessment of the subproject's original objectives, assumptions, purposes and techniques for goal achievement. Since the ISAI subproject contract is coming to an end within the next six months, and there is an urgent need to extend the

subproject's life span by at least five years (see section M of this report), many basic revisions to the logical framework of the ISAI subproject design need to be made. These revisions are discussed in detail in Attachment B, Appendix D of this report.

#### **M. RECOMMENDATIONS**

Although the ISAI has progressed significantly towards achieving, within the time frame specified in its contract, many of its planned objectives, the content and/or quality of some of its activities and their subsequent impact need to be brought up to the desired standards stated in the subproject paper and related documents. Therefore, to make the most of the momentum of the progress achieved by this subproject and improve the process by which the ISAI can attain its stated goal, each of the concerned parties should follow the recommendations indicated below, all of which have been discussed in detail in this report.

##### **1) Specific recommendations for MOE**

a) Acquire the agricultural land needed for the ISAI farm, as agreed upon.

b) Recruit the required number of qualified counterparts and supporting staff employees.

c) Establish well defined working relationships and lines of authority between ISAI, MOE and NMSU and the different YARG components of the Ibb Governate.

e) Establish a coordination mechanism between ISAI management, MOE and MAF to improve student recruitment procedures and increase student enrollment.

##### **2) Specific recommendations for NMSU**

a) Train a Yemeni instructor, preferably a graduate of the ISAI, to maintain the ISAI apiary and teach practical aspects of apiculture.

b) Establish a student training program to coincide with the crop growing season.

c) Improve and expand the students' farm training plot.

d) Provide more audio-visual materials and

teaching aids relevant to Yemen.

e) Help the Yemeni ISAI management to improve the system for filing students' records.

g) Help the Yemeni ISAI management to establish a budgeting system appropriate to implementation of the annual work plan and ongoing activities.

3) Specific recommendations for MOE and NMSU

a) Add course work in forestry and fisheries to the ISAI curriculum.

b) Develop agricultural textbooks and teaching materials relevant to Yemeni needs and conditions.

c) Provide more field training time for practical sessions as compared to time for lectures.

d) Develop and implement nonacademic and nondegree training programs for the Yemeni and expatriate staff of the ISAI.

e) Develop, improve, institutionalize and continuously implement the in-service short-course program, farmer-training courses and the outreach/extension demonstration program.

f) Establish different approaches through which a climate conducive to women's development can be achieved.

g) Assign Yemeni supporting staff members to the ISAI, and train them to establish a well-defined organizational structure for the ISAI.

h) Put ISAI bylaws into final form and enforce them.

i) Establish long-term links and cooperation in educational programs between NMSU and the specialized offices of MOE.

j) Coordinate and integrate within ISAI management the administrative procedures of both the NMSU and the Yemeni components.

4) Specific recommendations for YARG and AID

a) Provide the quantity and quality of laboratory and farm equipment and tools needed for improved practical training.

b) Improve and expand dormitories, laboratories and classrooms, and establish facilities for students' social activities.

c) Provide the outreach/extension program with more appropriate transportation facilities.

5) Specific recommendations for MOE, AID, CID and NMSU

a) Expand and improve communications and relationships among all responsible parties to enable them to respond effectively to the needs of the ISAI subproject.

b) Establish an alternative for expediting the preparation of the required number of teachers of agriculture and extension work, and implementing the M. S. training program for 30 Yemeni participants in the U. S.

Considering obstacles mentioned in the foregoing parts of this report, the unavailability of qualified Yemenis to direct the ISAI, and the absence of technical and scientific know-how within the MOE to manage and administer an agricultural institute, it is immediately evident that the progress which the ISAI has achieved so far is mainly the result of NMSU's management ability and AID/Y financial assistance. Therefore, pending the elimination of all obstacles, the assignment of qualified and trained Yemenis to agricultural teaching positions, and the full development of the ISAI's academic and training components in accordance with desired standards, it is recommended that AID assistance to the ISAI be continued for at least five more years.

Thus the implementation of the second stage of the ISAI subproject requires revision of the subproject documentation to reflect the following actions during the next five years by the lead university.

6) Recommendations for the second phase of the

## subproject

The implementation of the second phase requires amendment of the subproject paper and the contract so that during the next five years the lead university will take the actions outlined below. Actions a) through f) are carry-overs from the first five-year phase; actions g) through n) are new.

- a) Continuation by the existing expatriate staff members of their duties as stated in their contracts.
- b) Establishment of a sound library system which will provide the ISAI student body, the in-service training program and the Ibb agricultural community with appropriate educational materials.
- c) Preparation of textbooks and other teaching materials relevant to Yemen's agricultural sector and educational system.
- d) Updating the quality and quantity of the farm and laboratory equipment and tools needed for the practical training of the students.
- e) Continuation of improvements on the school farm.
- f) Institutionalization of in-service training programs, farmer training courses and the outreach/extension program.
- g) Establishment of an appropriate preservice and in-service training program for Yemeni staff members following their M. S. training program in the United States.
- h) Technical assistance to the MOE for the development and expansion of the school farm following the provision of more agricultural land.
- i) Establishment of a well-equipped unit for producing audio-visual materials and other teaching aids for educational programs conducted at Ibb or other agricultural institutes in Yemen.
- j) Training of support staff for administration and management, of laboratory and farm technicians

and of skilled laborers to achieve a sound organizational and administrative structure within the ISAI.

k) Recruitment and training of Yemeni women in the U. S. and/or one of the Arab countries to be permanent members of the teaching staff and/or the outreach/extension program of the ISAI.

l) Assistance to agricultural institutes in Yemen, i. e. Surdud and the Veterinary School, to upgrade their academic and technical training ability and attain standards like those achieved by the ISAI.

m) Assistance to the MOE in carrying out the preliminary surveys required for establishing the efficient system of agricultural education urgently needed in Yemen, and for providing technical assistance during the implementation stage of such a system. A suggested technical and vocational agricultural education system is discussed in detail in Attachment A, Appendix D of this report.

n) Assistance to the MOE in other activities which it may suggest for responding to the needs of the ISAI or Yemen's technical-vocational education system in general.

## V. POULTRY EXTENSION AND TRAINING SUBPROJECT - PETS

### A. SUMMARY

Implementation of the Poultry Extension and Training Subproject has been slow. The team leader and the first poultry technician arrived in Yemen in April 1982. The second poultry technician arrived in March 1983.

For the purpose of beginning poultry demonstration and training activities under the interim work plan for the Core subproject, a budget of \$300,000 was allocated to be used for (1) the expansion of the Sana'a Poultry Training Center (SPTC); (2) the construction of several approved demonstration houses in outlying areas; and (3) the provision of technical assistance as necessary.

These preimplementation activities have been completed. Four poultry houses were erected as satellite demonstration units in Sadah, Sandhan and Jahlia. Four brooder houses were built at the SPTC and equipment was installed at the SPTC and in two barns at Sadah. Technical assistance was supplied as needed.

The first annual work plan covers the period September 1, 1982 to September 30, 1983. Although the contract authorizing implementation remains unsigned, several activities have been carried out. A site for pullet-rearing houses has been selected and plans for houses have been submitted. Land has been approved and fenced. A well has been dug. A dormitory at the training center has been approved and designed. The Yemeni Government has approved the budget allocation, which is now awaiting the Prime Minister's final approval.

In 1983 five poultry trainees graduated from the SPTC. Nine trainees have been designated for English courses preparatory to going to Oregon State University (OSU) to study for their B.S. degrees. Two are ready to leave for OSU at present. One is already there studying for his M.S. degree, but he is not sponsored by PETS. Dr. Francis' counterpart is in Prague working on his M.S./Ph.D. degree, not sponsored by PETS. One student is waiting to leave OSU to study for his M.S. degree.

The training of farmers by CID poultry specialists has been the most successful and important part of this subproject and has prepared people (about 700 in all including 191 women in the Dhumar area) to help with further implementation of pullet-raising and egg production in many parts of Yemen. The SPTC is raising about 6,000 pullets per cycle twice a year, but this number is insufficient. The purpose and goals indicated in the subproject paper (SPP) of the revised ADSP will not be reached. In spite of the good performance of the CID technical staff, the purpose and goals of the first annual work plan under the Core subproject were not reached either.

A major problem is delay in the construction of the much needed dormitory at Al Hasabah (SPTC). Dormitory plans were approved and funding for construction was allocated but could not be used pending the Prime Minister's authorization. This dormitory was to have been built by August 1983.

Since it is hard to find qualified people to participate in training and extension sessions, this subproject has few trainees. Sending people to OSU for studies for M.S. and Ph.D. degrees therefore remains a problem for which a solution is still being sought.

Training is being carried out at the SPTC. That given by the CID poultry technician is excellent, but "on-the-farm-training" is inadequate. In pullet distribution, the demand exceeds the supply. To complicate matters further, the SPTC manager wants to make the center an egg-production unit exclusively, which is contrary to the project's original design.

The pullet-raising units planned for Bir Al Qhusain will not be completed within the next six months, and even after construction, it will take at least eighteen weeks before any pullets can be raised and distributed from this farm.

The capacity of the projected Bir Al Qhusain farm will not meet the full requirement stated in the project goals. The room at the facility is sufficient provided pullets are started in cages, but the subproject paper does not include funding for cages. Pullets raised on the floor in a warm climate need more space. There is not enough room to accommodate both students and all

necessary equipment. The total space is 6,720 m<sup>2</sup> to be used twice yearly. The barns have been designed too close to each other.

The project's major drawback at present is the lack of pullets for the next two years.

## **B. EVALUATION METHODOLOGY**

The methodology used in the evaluation of this subproject was basically the same as that stated in the guidelines for the evaluation of the program (ADSP - Section II). See also Appendix.

## **C. BACKGROUND**

In 1974, California Polytechnic State University, San Luis Obispo, prepared a Poultry Planning Project Report which led to the development, in October 1974, of project paper number 279-0019.

In January-February 1979, a CSPUP report on the completion of this project stated: "The poultry project is generally regarded as the truly successful agricultural project of all those in Yemen." In mid-1979, technical assistance for project 279-0019 was completed, and all project responsibilities were turned over to the Yemeni Government.

In 1979, as part of AID's project number 279-0052, Agricultural Development Support Program (Yemen Title XII), the contractor, CID, proposed activities in poultry extension, and under the interim work plan for the Core subproject, dated December 6, 1980, provided a budget of \$300,000 for initiating a poultry outreach program. CID selected Oregon State University (OSU) to take the lead in the design and implementation of this Poultry Extension and Training Subproject (PETS).

The first annual work plan for the Core subproject provided technical assistance for designing the project paper and continuing construction of four village-level poultry demonstration egg-laying houses as a preimplementation activity relating to the Poultry Extension and Training Subproject. Four additional layer houses and four brooder houses were also constructed at the Sana'a Poultry Training Center (SPTC). As of October 31, 1981, preimplementation activities for the Poultry Subproject had involved the construction of 12 poultry houses at a total cost of US \$286,223.

PETS was approved in October 1982. Its purpose is the establishment and improvement of an extension and training program within the livestock division of the MAF so as to enhance the production of eggs and poultry meats in the traditional sector as well as by small- and medium-scale producers. Its five-year budget is \$11,410,000, US \$6,185,600 by USAID, and the equivalent of US \$5,227,440 in rials by the Yemeni Government.

Many of the difficulties encountered in this subproject stem from lengthy delays in the issuance of decisions from higher authorities. The consequence has been as follows:

- The Rawdah Poultry Farm, although originally envisaged as a crucial element of this subproject, never became a part of it. It has a capacity for 22,000 pullets, and the pullets for this subproject were to be raised there. It had been planned that other houses would be built so that by 1985 annual production would amount to 77,000 pullets. As of now, Rawdah is a boiler production unit operated and owned by the MAF, and not available to PETS, although it was the original basis of the subproject. No substitute has been offered.
- Poultry houses on satellite farms, built under the Interim Work Plan, were not transferred to the subproject as planned. The Sadah Unit comprising two houses, is still with MAF, but two sheiks control the houses at Jahlia and Sandhan and refuse to give them back.
- A major earthquake devastated the Dhamar area in late 1982. In view of the extensive damage, FAO and the Yemeni Government asked USAID to distribute pullets as relief assistance to people stricken by the disaster. The pullets delivered to the Dhamar area under contract with FAO had not been intended for PETS.

#### D. EXTERNAL FACTORS

MAF's decision to withdraw the Rawdah Poultry Farm forced CID to look for a replacement site and farm. CID thus was confronted with a budgetary problem, as all existing funding had been used for preimplementation activities, and the contract for PETS was not signed.

Another important change may occur because the SPTC manager decided to transform the SPTC to commercial production of eggs. If the SPTC houses are thus withdrawn from the project, there will be no further production of pullets until the completion of Bir Al Qhusain. The only remaining barns available to PETS are those at Sadah, and they need cleaning and repairing. Although MAF has funds for this, it refuses to accept such responsibility on the grounds that CID or AID should do so.

The basic orientation of this subproject is towards extension and training, yet circumstances attending the development of the poultry industry in Yemen have forced the MAF to favor production rather than extension.

- Unprecedented growth in the poultry industry occurred when the very progressive private sector started producing broilers. Within the existing marketing system, the market is already near the saturation point.
- Two of the major entrepreneurs have therefore shown interest in investing in a broiler slaughtering plant. In one instance planning for this purpose has been completed and construction possibly could start soon.
- Since broilers now bring in less money, a strong comeback in commercial egg production is occurring. Marib Poultry Farm recently switched from broilers to layers, and Bilquis Poultry Farm in Taiz is developing a commercial egg laying section to complement its broiler activity. It is also, like Omeri, becoming active in breeder layer activities.
- Because of this growth, poultry meat prices have remained relatively stable, despite high inflation overall.

## E. INPUTS

### 1. Advisory Assistance:

Before implementation of this subproject began, team directors and technical advisors for activities on and off campus had been designated. The subproject team leader in Yemen, Dr. Francis, is assisted by two poultry specialists, Carlson Coleman and Paul Heidloff. At OSU Dr. Helfer has been designated on-campus team leader, and Dr. Ascott works closely with him there. Dr. Helfer visits Yemen regularly, and Dr. Ascott has been there several times on temporary duty, once for FAO. Dr. Hollemman, a former USDA poultry specialist, also went to Yemen on assignment. The necessary people are in place and already performing their jobs properly, although the evolution of the project must still be viewed as preimplementation activity.

### 2. Infrastructure:

The major infrastructure in this subproject consists of poultry-raising housing.

- (a) The Rawdah Poultry Farm, originally envisaged as a poultry-raising demonstration and supply facility, was, as already mentioned, withdrawn from the subproject at the Yemeni Government's request. Bir Al Qhusain was selected to replace it. The delineation of this farm took four months; thereafter a fence was built around the site, the acreage of the farm having been reduced by half. A well was dug. The printing of the plans took so long that the bids could not be sent out on time, and on March 12, 1983, had to be cancelled in the interest of conforming to a new USAID policy; thus there was a further delay of three months in implementation. No barns, no layers!

Four satellite demonstration houses on these farms were built during the preimplementation stage of the subproject, located at Jahlia, Sandhan and Sada:

The Sadah demonstration site was first visited on February 7, 1982, operations

were in progress. A report written about Sada in March 1983 indicated that this farm had been empty for eight months and was in poor condition. The same was true on the occasion of a subsequent visit on November 8, 1983.

The Sandhan unit was to be used as a satellite farm, but broilers are being raised there at present, since pullets were not available on time. The Jahlia Farm is being transformed to broilers, and the houses are not ready to receive pullets.

On instruction from the MAF, all these units could be reutilized. Being under the control of influential sheiks, the farms at Sandhan and Jahlia, however, are technically nonreturnable.

At the SPTC, four brooder houses have been built and have a capacity for producing 6,000 layers in a 20-week cycle. Because of the necessity of sending 3,000 to the Dhamar earthquake victims, only 3,000 could be used for the subproject. Since most of these 3,000 will be used to replace old pullets, it will not be possible to supply enough pullets to allow the subproject to reach its objective for the next year.

b. On-farm Demonstration Sites:

The SPTC is the only place where some form of demonstration is possible. For the proper training of farmers, demonstration sites are indispensable. The satellite farms are needed, and every effort should be made to ensure that they are used as formerly planned.

The SPTC is used to train resident students, and a dormitory is badly needed to facilitate training. On February 8, 1983, a sketch of the dormitory was presented to the Director

of Animal Resources in the MAF. At the end of September, the bids were sent to the High Committee for approval. A report prepared in October indicated that the Yemeni Government had not yet approved the dormitory. In December 1983, an agreement for construction of the dormitory was in the Prime Minister's office awaiting signature.

The excess number of pullets from Al Hassabah (SPTC) is supposed to be made available to the program as needed. The manager of Al Hassabah, however, is interested in keeping the excess pullets to replace his layers, as contrary to what had been decided at the meeting with the Director of Animal Resources, he culled two houses, and sold both layers and nonlayers. Actually, there has been no excess number thus far, nor is any expected until Bir Al Qhusain is completed. The manager at Al Hassabah recently requested that the farm be used exclusively for egg production and that pullet raising be made the responsibility of Bir Al Qhusain. The whole year of 1984 will be characterized by underproductivity rather than excess numbers.

Three demonstration egg-laying units were supposed to be put into operation in villages. Such units are, as mentioned previously, the satellite farms; they have been built but cannot be used.

c. Bir Al Qhusain

The subproject calls for the establishment of a self-sustaining unit within the MAF capable of giving support to the inputs from the ADSP and expanding the program after 1986. Evidence that expansion to the overall capacity planned for this subproject cannot be met is summarized below:

It was originally planned that the Bir Al Qhusain unit would consist of six pullet-raising houses having a capacity of 77,000. Then, for space reasons, the total number of houses was reduced to four, with the overall capacity remaining unchanged.

The present plan is that Bir Al Qhusain unit will produce 22,900 pullets in the first year, which should be easily attainable. This plan does not meet the requirements set out in the ADSP. In the first year of implementation, according to the ADSP, there should be 270 small flocks (25 to 50), 78 medium-sized flocks (500), and 34 large-sized flocks (2,000), the arithmetic being as follows:

270	x	25	=	6,750
78	x	500	=	39,000
34	x	2,000	=	<u>68,000</u>

Hence, a total of 113,750 pullets expected in the first year.

In addition to the above-mentioned annual numbers of flocks, the ADSP calls for the establishment of four women-managed cooperatives, each with a flock of 50 layers for a total of 2,000.

Obviously this annual figure of 113,750, augmented by the anticipated figures from cooperatives to be managed by women, greatly exceeds the 77,000, the annual capacity of the Bir Al Qhusain unit.

Furthermore, if in the full five-year program, the total number of flocks gradually rises as planned to 1,192, the annual number of chickens expected would be even greater than Bir Al Qhusain's projected annual capacity.

Actually the unit at Bir Al Qhusain does not lend itself to future expansion, since half of the land was lost before the fence went up. CID and USAID officials think that its capacity will be sufficient for the next two years, with no prospect of future expansion.

### 3. Training

CID is training all participants in this subproject, but the MAF recruits and is having difficulty finding qualified students.

a. Long-term U.S. training

In 1982, Abdul Nasser, at that time counterpart to Dr. Francis, was sent to OSU for studies leading to an M.S. degree, and possible Ph.D., but the FAO, not PETS, is financing his training. In September, 1983, two students were sent to OSU to study for B.S. degrees.

b. In-country training

At the SPTC, nine students are learning English so that they may attend OSU to study for B.S. degrees. One has been selected to leave in December 1983 for work towards his M.S. degree. Another selected for a DVM or a Ph.D. in poultry pathology, faces objections from her husband.

In Tihama, Taiz, Sana'a and Al Bivan, nine students have been trained and another five are in training. Since the team arrived in Sana'a on April 21, 1982, over 700 people have been trained at the farm level, including 191 women and 429 men in the Dhamar area and 40 at Ibb School. However, the Dhamar earthquake area is not considered a part of the subproject. At a meeting held in November 1983, the CID subproject director and the MAF's Animal Resources Director decided that every effort should be made to incorporate producers from that area into the subproject, but this inclusion must await the signing of the contract. To be in the subproject, a farmer must have 25 pullets: In Dhamar, no farmer received more than 20 pullets.

Generally speaking, farm-level training has proven quite feasible and is the most successful aspect of the subproject.

4. Support from the Yemeni Government

Support from the Yemeni Government seems to be very slow in coming. There seems to be a lack of collaboration between specific parties within the government with some of them being very reluctant to authorize help for the subproject.

a. Counterparts

Counterparts are not definitely known and agreed upon by all parties. The counterpart to the CID team leader has no poultry experience of the kind needed in the subproject, and the team leader refuses to consider him a counterpart. A counterpart has been selected to the two CID technicians. But even the MAF's Director of Animal Resources is uncertain as to who is counterpart to whom, and as a result there is much confusion.

b. Funding

Funding is supposed to be available for buying feed and equipment. At best it arrives late; sometimes there is none. Feed bills are not being paid, and deliveries are unreliable. Approval of funding for the dormitory is still pending signature at high levels of government ten months after submission. No funds have been found for pullet distribution in the Dhamar area.

The money generated from eggs at SPTC is not put back into the project. Money derived from the Sadah operation appears to have vanished. In the absence of a signed contract, the clarification of such questions with the Yemeni Government is not possible. Lack of funds is definitely a major problem for the MAF.

## 5. Commodities

Pullets: Had the Rawdah Farm and the SPTC been available to the subproject as originally proposed, there would have been an adequate capacity to supply all the needed pullets for the subproject's duration. The subproject has lost 77,000 pullets per cycle without Rawdah. SPTC produces 6,000 pullets per cycle, but 3,000 are committed to replace the culls from its commercial layer operation, and the other 3,000 are for the Dhamar region; so technically there are no pullets available for PETS.

In the Dhamar region members of the PETS staff have delivered 2,741 pullets to 809 farmers. Most received five pullets each, although many obtained only one or two, and 17 received 10-20 birds each. No one received more than 20 .

At Bir Al Qhusain the amount of space is sufficient to start 35-40,000 layers per cycle or 70-80,000 layers per year under very good management. This figure would be sufficient for the first two years, but thereafter the subproject needs to deliver 115,000 layers per year.

Feed, drugs and vaccines: Initially feed was obtained from the Rawdah Poultry Farm, but it was of a very poor quality and moldy. There was no quality control on the imported feeds, and Rawdah's practice of buying weekly on the cheapest bid resulted in the poorest quality of supply. PETS now buys from the Marib Poultry Farm which, unlike Rawdah, has its own mill capable of producing high quality feed. The Omeri Poultry Company also has a plant, and sells feed. All feed is made from imported grains and meal and sold without subsidy.

Drugs and vaccines are obtained from Rawdah; the Marib Poultry Farm is also a potential supplier. Market prices are reasonable.

## 6. Women's Involvement

The current work plan aims to establish four women's cooperatives, each with 500 layers. This is not feasible, since there are no pullets. Moreover there is an ambivalent attitude within

the MAF and the Yemeni Government in general regarding foreign involvement, no matter how small or indirect, in programs or projects concerned with involving women. There is, however, some precedent to go by: SURDP has women home economists who have been able to organize some poultry training for women in the Taiz area.

**F. OUTPUTS**

The outputs, as listed in the scope of work, and their status are discussed below:

"Constructing and equipping six pullet-rearing houses with an annual capacity of 77,000 chickens."

At Bir Al Qhusain, assuming progress is maintained, four houses will be built instead of six, but with the same total capacity. The problems with this part of the project are discussed more fully under INPUTS.

"Establishment of 1,192 new private sector egg-laying flocks, mostly in units of 25 birds."

Not enough birds are being supplied. The 1,192 flocks are for the full five-year program. For the first year of implementation the ADS program calls for 270 small flocks (25 to 50), 78 medium-sized flocks (500), and 34 large-sized flocks (2,000). To date only 2,741 pullets have been made available to PETS, and all these were distributed to the Dhamar area.

"At least three demonstration egg-laying units operating in villages."

These units have been built, but are not in operation for demonstration purposes. As mentioned earlier, it will be "technically" possible to use only one unit (the two barns in Sadah).

"A Sana'a Poultry Training Center with dormitory conducting poultry training courses for both men and women."

The Sana'a Poultry Training Center is built, but dormitory construction is awaiting the release of

funds, pending the Prime Minister's signature. The manager of the SPTC, however, intends to use the center exclusively as a public sector commercial egg-producing farm, contrary to the intent of PETS. The manager has already appropriated half of the last cycle of 6,000 layers to replace his layers, and the other 3,000 layers are for Dhamar.

"Training of up to 69 Yemeni extension workers in an 18-week poultry training course."

Some have been trained. It can be expected that at the end of the subproject the number of trained extension workers will be on target.

"Training of up to 10 MAF persons in poultry science in the U. S. at the B. S., M. S. and Ph. D. level."

Even though at present there are problems in recruiting students, the total indicated will be reached by the end of the subproject.

"Assist the MAF to establish a system for collection and analysis of financial data relating to poultry production costs and benefits."

The Core Agricultural Planner has already completed work on towards this end, and the data are already being used.

"Conduct a detailed financial and economic study, including poultry and egg marketing which provides recommendations for adjustments in the program. This will include an analysis of the chick import costs, pullet production costs and sale price to farmer at 16 weeks, layer feed import costs and quantities, sale price of layer feed to farmers, egg production and sale price data by farmer type and farmer production costs."

This part of the project has been completed, and a written document was supplied to the team leader, CID, YARG/MAF and AID.

"MAF sale of pullets and feed at cost (without subsidy) to farmers."

Work towards this end is going on at present.

"A program of short-course training being conducted at provincial and village centers."

This part of the subproject is under way; numbers of people trained have been mentioned earlier in this report.

"An extension follow-up system in place supporting the private sector egg-laying units established."

Although the system is now in place, it is not working for lack of trained personnel.

"Assisting women poultry producers and women's cooperative."

This aspect of the subproject has yet to be addressed. MAF has to develop policies, procedures and women cadres, before PETS can organize women's cooperatives effectively.

"Private sector importation of layer chicks and layer feed."

This activity is extremely dynamic, and has not received or needed any input from CID.

"Advisability of using locally-produced feed grain."

The cost of land and local grain in Yemen is much too high for feed produced locally to compete with imports. Some of the major companies (Marib, Omeri, Rawdah, SPTC, Bilquis) already have mills capable of producing feed from imported raw materials.

"An institutional training plan established for the development of a poultry unit within the Animal Resources Directorate of the MAF capable of supporting Yemen's private sector poultry producers."

Work towards this end is going on at present, but will take a considerable amount of time.

"Long-term links established between the YAR Government and Oregon State University, the PETS lead university."

This is being done slowly and properly.

The key problem issues are (a) lack of pullets and (b) lack of extension cadre. Within the MAF the shortage of pullets is the result of the desire to use for private sector commercial egg production all facilities originally intended for PETS. The shortage of extension cadre can be remedied, once the MAF gets around to implementing a policy and program for recruiting, staffing and funding the necessary extension agents.

G. PURPOSE/GOALS

In the project paper, the purpose was:

"To establish and implement an improved extension and training program within the livestock division of the MAF that will enhance egg and poultry meat production for private producers in the traditional sector and for small- and medium-scale producers."

In the PETS annual work plan the purpose was changed to read as follows:

"The purpose of the Poultry Extension and Training Subproject (PETS) is to establish and implement an improved poultry extension and training program within the Directorate General of Animal Resources of the Ministry of Agriculture and Fisheries (MAF). PETS is designed to assist the MAF with improvement of egg production by subsistence farmers and small producers in the YAR. This five-year subproject is part of the USAID project 279-0052."

The focus now is only on egg production by subsistence farmers and small producers. As matters stand, despite the delays caused by failure to provide crucial components, the purpose will be achieved over the project's duration.

The goals of the subproject are:

- Reduce Yemen's dependence on imported eggs.
- Increased production of eggs and poultry meat in Yemen.
- Establishment and implementation of an improved

extension and training program within the Ministry of Agriculture and Fisheries that will increase egg and poultry meat production for private producers in the traditional sector and for small- and medium-scale producers.

- Development of MAF institutional capability to support Yemen's poultry producers.

All these goals are directly addressed in the subproject. The key problems that are foreseeable at this stage relate to the proposed extension and training program within MAF. Currently MAF resources for poultry are deployed for commercial production by the MAF at the expense of subsistence and small-scale producers.

#### **H. BENEFICIARIES**

So far the beneficiaries have been the 1,000 or so families, in the Dhamar area principally, who have received some 3,000 pullets under the subproject. The MAF has been the other beneficiary (together with the two sheiks in Sandhan and Jahlia) which has received resources under the subproject.

#### **I. UNPLANNED EFFECTS**

The major unplanned effect of the subproject to date has been the technical assistance provided to the two public sector farms (Rawdah and Marib) by the PETS advisors. Most of this assistance involved training of the staffs of these farms.

#### **J. LESSONS LEARNED**

If there is to be any collaborative mode of approach, all parties should be made aware of their responsibilities. Excellent teamwork is a must, and any divergence of opinion should be recorded properly.

The taking out of the Rawdah Poultry Farm is an example of changes that were made without proper consideration being given to all side effects. The result was a drawback to the whole program, and occurred because of the time taken to sign the contract. Another example is the lack of definite policies to select trainees and counterparts and of a proper definition of terms.

#### **K. SPECIAL COMMENTS**

None.

L. RECOMMENDATIONS

To get the program back on track the purpose has to be redefined, properly explained and agreed upon once and for all by all parties.

1) The priority should remain the training of extension agents and people. The need for trained people is high, and within the government, the traditional sector and the industry it will continue to grow. If proper training is to be provided, the much needed dormitory at Al Hassabah (SPTC) must be completed immediately. The training at the SPTC will have to be improved by making sure that the farms are properly taken care of, that records of performance are kept, and that documents are on hand to show that the farms can produce better layers. It is imperative that the SPTC farm not become a layer farm exclusively, although layers have to be kept there at all times for training purposes. The selection of students should follow a definite written pattern agreed upon by all parties.

2) The production of layers is second in priority. PETS cannot wait for Bir Al Qhusain to be built. For the present pullets could be raised on a contract basis with local entrepreneurs. The Omeri Poultry Company has shown an interest in supplying pullets under a contract with USAID/Y or CID (not with YAR). This is a fast, efficient and cheap way to get pullets. Mortality, diseases and risks are the contractor's responsibility, and no money is needed for pullets, feed and drugs before reception of the pullets. With proper follow-up and the help of the CID technical staff, the quality of the pullets can be depended upon.

In the SPP, distribution is to be done at sixteen weeks of age. Experience has proven that the Yemeni farmer will not wait four to six weeks before the first egg can be collected. He will wait two weeks; so distribution at 18 weeks would be more practical, since stress could be minimized, the danger of molt could be lessened, and mortality would be at its lowest. Deliveries should be done at night, never in daylight, and never after twenty weeks of age.

While waiting for completion of the houses at Bir Al

Qhusain, every effort should be made to build a stronger infrastructure for the proper distribution of pullets, feed and drugs and for fast and efficient follow-up in the most profitable manner to all parties involved.

Points of distribution for pullets should be organized so that a) travel expenses, distribution costs, and expenses for technical assistance and the distribution of feed and drugs can be kept at a minimum; b) the number of sites can be minimized to permit development in a more realistic approach in areas where interest is evident, viz: (i) the German Project near Alwan, (ii) the Taiz area, utilizing the expertise of women home economists already trained in poultry production by SURDUP, (iii) the Dhamar area.

3) Decide if Sandhan, Jahlia and Sadah can still be used as satellite farms for the demonstration of egg production. If so, who will be responsible for their rehabilitation? If not, the Al Abwan German Project has one farm that could be used, but other sites must be found right away.

4) Seriously study the potential of medium- to large-scale units of pullets, controlled and serviced by women organized into cooperatives.

5) Layers produced as goals and subgoals cannot be considered on a "dollar-per-bird basis" because if this were done, it would be deemed ridiculous, even if the project had evolved in accordance with the program.

6) Continue laboratory services. Even though those supplied are inadequate, they are much needed for autopsy work, disease monitoring and quality control on chicks, feed and eggs.

7) Recruit personnel qualified to run the existing laboratory and provide effective assistance for the nutritional program.

8) Establish definite farm-production goals for egg and pullet production. These goals should include guidelines for a productivity study regarding expected morality by week, egg production per day, week and month, light programs, feed intake, pullet weight per week, etc.

9) As an alternative to pullet production, use the Ibb

agricultural school to replace the SPTC on a long-term basis for pullet production, but, depending on MOA's attitude and MOE's approval, continue its use as a training institute. Inasmuch as the SPTC is under OSU and the ISAI is under NMSU, this alternative would necessitate certain adjustments. It would permit the gradual phasing out of the SPTC, with the possibility of retaining Bir Al Qhusain for poultry production.

In this regard it should be noted that the most important problem relates to the priority of getting proper trainees. SPTC, which is used for practical aspects of activities, leaves much to be desired, and the Director of Animal Resources has shown interest in converting it exclusively to egg production, even though in the preimplementation stage the new buildings were funded to belong to the subproject.

CID poultry specialists teach technical information concerning poultry at the Veterinary Center. Better control of the SPTC by CID's technical staff is imperative, if proper training is to be provided. Moreover, the SPTC cannot rely upon Bir Al Qhusain to supply it with pullets, as YARG/MAF would like it to do from now on.

While the practice of providing training at the SPTC and the Veterinary Center can be continued, the foregoing alternative is recommended as a means of building a stronger, more durable infrastructure.

10) Relate changes in the subproject to the work plan, since changes in the goal and purposes are unnecessary. Changes in the work plan should cover the following points.

- If the SPTC dormitory cannot be built at Sanad, training in poultry activities should be transferred to Ibb.
- This transfer of the locale for training in poultry activities would necessitate a major adjustment within the YARG, since, as pointed out under recommendation 9) above, the SPTC comes under MAF/OSU and ISAI comes under MOE/NMSU.
- Changes should not include the phasing out of Bir Al Qhusain. Poultry trainees from the ISAI should spend a few weeks at Bir Al Qhusain for additional practical training.

- If the SPTC becomes oriented exclusively towards production, Bir Al Qhusain should not supply it with pullets. Nevertheless the SPTC should still be used for providing brief periods of training in egg production.
- As a result of these changes responsibilities within poultry activities would be distributed as follows:
  - Basic training - Ibb (ISAI);
  - Practical training - Bir Al Qhusain for pullets and SPTC for layers;
  - Troubleshooting - laboratory and field.

The fact that the ISAI is controlled by the Ministry of Education, whereas poultry training comes under the Ministry of Agriculture and Fisheries could be regarded as sufficient reason for avoiding changes in this subproject. However the matter may ultimately be handled, the important thing is to keep the poultry subproject alive and healthy as originally envisaged. It is important to bear in mind that the basic purpose of this subproject continues to be extension and training. It is but one component among many in an overall drive towards agricultural development in Yemen, and should not be regarded as being out of context. Its success will depend to a great extent on the strengthening of infrastructure in the agricultural sector. Since the poultry subproject is relatively small, it is difficult for its Yemeni beneficiaries to envision the reality of its ultimate significance as a means of strengthening their country's economy.

**VI. HORTICULTURE IMPROVEMENT AND TRAINING (HITS)**  
**SUBPROJECT**

**A. SUMMARY**

The Core subproject is to be commended for its effectiveness in bridging the gap between the Tropical and Subtropical Fruit Improvement Project (No. 279-0024) and the implementation of the HITS. Without those activities, under adverse conditions, valuable time and plant materials would have been lost.

Under Core and HITS, the Al Irra site is being developed. Low-chilling requirement deciduous fruit trees were distributed in various climatic zones for observations of response. Peach and apple seedlings were imported and planted at the Al Irra station for budding in February-March 1984. Improved varieties of deciduous trees were imported and sold to Yemeni farmers. The fences are in place, the irrigation system is functioning well and the building of permanent structures was about 25% completed in September 1983; the projected completion date is June 1984. At Jarouba fences are in place, the irrigation system is functioning, but the supply of water is restricted at times. A permanent building was renovated for living quarters for budders, short-course trainees, etc. Improved certified disease-free varieties of citrus are in place in a budwood mother-tree block. A seed source block of a number of rootstock selections is in place. Seedling and budded trees are being sold to Yemeni farmers, but not at the projected quantities.

During the past two years, at both stations 64 Yemeni were trained in budding, nursery and other procedures.

Plant materials are on hand to increase the production and sale of disease-free improved varieties of fruit trees. With additional inputs, Jarouba has the potential of producing 100,000 trees for sale annually. The potential is present at both stations for an improved program in training and extension, as well as an effective support program in plant protection and quarantine in the YARG.

A factor which is likely to have adverse effects upon the HITS is the strong pressure from YARG on HITS to produce more nursery fruit trees, budded and

seedlings, for sale. Yet, in the SPP and work plans, there is no such emphasis on production. Unless there are a number of additional inputs, this pressure is likely to restrict the educational training and extension activities which are so important to HITS.

Even though YARG is exerting pressure to change production of trees to the highest HITS priority, it appears that the MAF's interest in HITS is increasing and they will continue to support it.

The accrued expenditure for development of two research training stations to date has produced benefits to fruit tree horticulture in Yemen.

Progress in achieving the outputs put forth in the design has been, for the most part, behind schedule in both quantity and quality. However, as indicated above, some outputs have been achieved and others only partially achieved. The project is too young to evaluate some of the planned outputs.

If certain problems are corrected, prospects are good for achieving the purpose and goal.

The conclusion, after digesting results of many interviews, reading many documents, and reviewing correspondence, is that by far the greatest restriction to progress with HITS is vacancy positions of qualified personnel. This problem overshadows and minimizes all other aspects of evaluation of the HITS subproject. Recruitment and placement of qualified expatriates has been adversely affected by the delay in signing the contract with the contractor. Another contributing factor to this problem at the Jarouba station is that there are no adequate living quarters and other infrastructure for permanent professional employees. This is a minimum requirement in that harsh environment. Signing a contract for construction of such infrastructure is imminent, completion is projected for 1984. This should make recruiting and placement less difficult for Jarouba.

## B. BACKGROUND

At the time of writing this report, Amendment No. IX to the AID contract funding the HITS had not been signed. However, most of this report is written as though HITS is being implemented according to the SPP and the annual work plans.

The HITS/SPP, which was approved in December 1982, is the most recent subproject added to the Agricultural Development Support Program. Preimplementation activities began in October 1981, when CORE, through its preimplementation authority, took over operation of the Tropical Horticulture Station at Jarouba. In spite of delays in design, SPP approval, recruitment, and contract amendment signing, the subproject has made continuous progress. During the preimplementation period, development of a deciduous horticulture station at Al Irra was also initiated. This evaluation includes all horticulturally-related activities and strategy undertaken as part of the ADS Program and relevant strategy since October 1981.

The strategy of the ADSP is:

1. "...To provide the MAF, MOE, and Sanaá University advisory services and staff training to improve their capabilities to plan, evaluate, and manage agricultural development programs (education, infrastructure, and production), and
2. to develop and initiate specific subprojects at the production level to take advantage of agricultural growth opportunities and to ease critical constraints to development."<sup>13</sup>

The HITS "will institutionalize within the MAF a capacity for expanded and improved fruit production through extension, plant protection and delivery of disease-free plant stock for improved fruit varieties."<sup>12</sup>

At the time of termination of the previous horticultural project (No. 279-0024), the Jarouba station had very limited physical facilities. There was no access road to the station. Twenty-three imported, disease-free citrus varieties in various combinations of six different rootstocks were in place. Records of the origin and plantings of materials were very inadequate.<sup>11</sup>

Also under the previous project at Bir Al Sharif deciduous fruit station was in the process of being abandoned because a major road was constructed through the station, which destroyed the effectiveness of the station. A replacement station at Al Irra was under consideration. Under these conditions, the ADSP Core subproject assumed the responsibility of implementation of HITS.

## C. EXTERNAL FACTORS

1. Until recently YAR was importing large quantities of fresh fruits. Estimates for 1979/80 were U.S.\$100 million. This had an adverse effect on YAR's balance of payments. Very recently YARG stopped import of all fresh fruit during Yemeni production season<sup>13</sup> to encourage Yemeni farmers to produce more fruit. Prior to the ban on fresh fruit imports, internal rates of return on investment for representative tree crops were from 33% to 45%. For all crops except bananas, the gross revenue was between YR 60,000 and YR 109,000 per hectare, which is higher than any other crop except qat. The ban on imports should increase profitability for Yemeni fresh fruit production. This situation increases the importance of the HITS project to the Yemeni farmer and to the economy in YAR through an increase in demand for rootstocks and extension services. Undoubtedly it will have an adverse short-run effect on dietary and health problems in Yemen, where fresh fruit serves as an essential source of vitamins and plays an important role in the diet of Yemenis.
2. An assumption under Outputs in SPP was "... (1) Appropriate persons will be available for training and in a timely manner." <sup>6</sup> This assumption is only partially correct, the counterpart positions are still unfilled. In some cases counterparts are not functioning well. Because so many positions in the HITS remain unfilled, training has not received the attention it should. As a result, the situation discouraged active MAF participation in the project.
3. The evaluation team observed strong pressure from the YARG to change priorities of the HITS from training and extension to emphasis upon production of saleable trees. Yet, in the subproject paper<sup>6</sup> and work plans<sup>9</sup>, there is no such emphasis on production.

If MAF desires only trees for sale, this could perhaps be accomplished more effectively through direct contracting with the private sector,

probably outside of YAR. Such a decision would not contribute to training and extension activities. To alleviate this issue, one suggestion was that O-I Farming at Surdub, with its access to land and water, and with additional staff provided by MAF, could produce as many trees as MAF desires. If these decisions are made, trained budders and nurserymen would be needed.

For an annual production of 100,000 saleable trees at Jarouba, these additional inputs are needed.

- a. Fill all vacant positions in HITS with qualified personnel.
- b. Construct additional shade house at the Jarouba station.
- c. Provide for an adequate supply of irrigation water for the Jarouba station.
- d. Provide for a well-trained individual in nursery management stationed at Jarouba. This could be the station manager or a technician.
- e. Provide for the training of the MAF personnel in budding to be available when required.
- f. Provide for additional labor at Jarouba station, possibly two or three times what is presently available.
- g. Trees intended for sale should be budded by trained personnel, not trainees. A separate block of trees should be devoted to training, since the percentage of bud-take with trainees is normally low.
- h. Budgetary modifications are also required to accommodate additional production.

After these inputs are in place, it is likely that 100,000 trees per year could be produced. However, it must be understood that after all the above assumptions are fulfilled, it will be at least two years before the production goal can be attained.

With present CID and MAF facilities and personnel, an additional shade house and irrigation water, annual saleable tree production of about 50,000 trees per year appears to be a realistic target.

3. A potentially serious problem is evident. YARG desires HITS to produce more trees for sale, beyond their potential capability, which contradicts the emphasis and priorities of the

plans of the present subproject paper. Possibly, this emphasis on production resulted from the HITS producing a reasonable number of trees for sale in one year. Regardless of reasons for changes in priorities, the problem needs attention.

4. A conclusion in the subproject paper<sup>6</sup> was that MAF-linked nurseries will develop a capability to produce adequate numbers of trees for sale to Yemeni farmers, and the HITS need not emphasize production of trees for sale. There are indications that MAF-linked nurseries may not presently have that potential. In 1982-83 the HITS team leader distributed 130,000 citrus seeds to MAF-linked nurseries. Because of the outbreak of citrus canker, 80,000 seedlings were not budded and from the remaining 50,000, not one tree was produced.

#### D. INPUTS

1. A long delay in response to a request by AID/W contracts office for a preimplementation audit of CSPUP and OSU and time spent in responding to the audit have delayed signing of Amendment No. 9 to the contract. CID/T, CSPUP and OSU's own auditors cautioned each of them of the financial liabilities resulting from the delay. This situation had adverse effects upon recruiting and placement in HITS/Y. A limited amount of money was made available under Core for preimplementation activities associated with the HITS. This amount was not sufficient to provide for an adequate number of long-term appointments in Yemen.
2. The HITS team leader indicated that for factors other than recruitment and placement lack of money was not having an adverse effect upon HITS activities in Yemen.
3. Rigidities in the process of recruiting and placement on campus and in the field have been a serious problem with HITS. However, after discussions with personnel at CSPUP and Core/OSU, the future situation looks encouraging.
4. Several positions are still vacant. Appendix Table 2 from the HITS Work plan shows the following expatriate positions are not filled:

- a. Jarouba  
Tropical-subtropical horticulture specialist  
Tropical-subtropical extension specialist
- b. Al Irra  
Deciduous extension specialist
- c. General Operations  
Plant pathologist  
Entomologist  
Laboratory technician

A tropical extension specialist candidate (for Jarouba) and a laboratory technician as mentioned above (General Operations) are awaiting confirmation by YARG.

There are seven MAF counterpart positions that are not filled due to unavailability of trained personnel within the MAF.

- 5. The evaluation team observed no evidence of Integrated Pest Management (IPM) procedures for tree crop production in YAR. Pest control procedures were practically all chemical. There are some notable examples in the tree crop world where chemical pest control procedures have resulted in serious pest problems. There are also examples of successful biological control of pests. Given the seriousness of this issue, IPM should be studied in YAR for possible implementation in the future program. Presently, the HITS has no one studying this problem. The Yemen German Plant Protection Project is addressing their efforts only at the level of chemical control procedures.
- 6. Dimitman<sup>10</sup> reports eight serious transmissible citrus diseases that may exist in YAR as a result of importation of diseased trees or budwood. The most serious are virus diseases which can be transmitted through budding, pruning and other tools, by insect vectors, by propagation with infected grafting or budwood, and other means. Citrus trees at the Jarouba and Al Irra stations should be indexed periodically to assure that they are free of disease. Any known disease carrier should be destroyed. The hazard is much greater at the Jarouba station due to its isolation from other citrus plantings.

## E. OUTPUTS

HITS suffered in producing outputs because of so many position vacancies in the field. In spite of this, many positive accomplishments occurred.

### 1. HITS accomplishments before approval of SPP

#### a. Al Irra

- (1) Surveyed and leveled land
- (2) Developed plans and began installation of irrigation system
- (3) Constructed fence and planted wind break
- (4) Constructed temporary guardhouse
- (5) Completed well-drilling approved by AID engineer
- (6) Developed construction plans and submitted them to architect

#### b. Jarouba

- (1) Completed shade house and the fence and wind break around the station
- (2) Planted citrus seeds and budded 40,000 citrus seedlings
- (3) Moved weather station
- (4) Improved living quarters
- (5) Completed plan for expansion of tropical fruit program

#### c. General

- (1) Drafted fruit tree distribution plan to farmers for 1982-83 and developed plans for Fruit Tree Improvement Fund.

2. HITS accomplishments after approval of SPP

a. Al Irra

- (1) Supervised planning and construction of housing in training facilities, selected contractor, building started July 1983; projected completion July 1984.
- (2) Plowed, disked and removed rocks from entire station.
- (3) Main line for irrigation system was installed and the sprinkler block was completed.
- (4) Planted citrus mother block (300 trees, 18 varieties, 6 rootstocks).
- (5) Planted 900 low chilling requirement deciduous trees.
- (6) Lined out 4,300 apple and 3,000 peach seedlings.

b. Jarouba

- (1) Over 34,000 trees produced and sold by MAF
- (2) Two new planting blocks were developed by adding six-inch underground irrigation lines
- (3) Ten thousand citrus seedlings were lined out for fall budding, and an additional 45,000 citrus seeds were planted to produce rootstocks for budding in February 1984
- (4) In February 1983, 30,000 citrus trees were ordered for delivery in January 1984.

c. General

- (1) A good relationship developed between the HITS staff and MAF personnel
- (2) Fruit Tree Improvement Fund established
- (3) Fifteen hundred deciduous fruit trees, with chilling requirements from 50-800 hours, were imported. 1,200 were distributed to five MAF nurseries and 300 to several farmers. Performance of these trees is being evaluated.

- (4) In addition to the above, 10,000 deciduous trees were imported (jointly by MAF and HITS) and sold to Yemeni farmers.

### 3. Training and Extension

In the past two years 64 Yemeni were trained in budding nursery practice, etc. An illustrated "How to Plant Trees" brochure was prepared to distribute with trees sold. For improvement of future extension and operation activities, a form was prepared for the farmer to fill out in relation to trees purchased.

In January 1983 Yemeni television announcers advertised the sale of trees available from the YARG-HITS program. The horticultural technician at Al Irra was used in the half hour television program to demonstrate planting techniques for a variety of fruit trees.

Two Yemeni students are pursuing their graduate degrees at Oregon State University for formal training in horticulture. Both departed from YAR in 1983. One is pursuing a M.S., and the other a Ph.D. degree.

Twenty Yemeni have been identified for training abroad in various areas of horticulture and plant protection. One of the major obstacles for the recruitment of candidates is passing English language requirements.

### 4. YARG Plant Protection and Quarantine Program

A plant pathologist, entomologist and laboratory technician have not been recruited and placed as yet. Through placement of these specialists, complimentary additions to the present Yemeni-German Plant Protection project will be provided.

### F. PURPOSE

The purpose of the HITS project is: "To institutionalize within the MAF an increased fruit production through extension, plant protection,

and the delivery of disease-free planting stock of improved fruit varieties to the fruit subsector."<sup>6</sup>

Progress toward the purpose is slow because of so many unfilled positions. Training and extension accomplishments have been minimal. Support for the MAF's Plant Protection and Quarantine Program has been inadequate. The production of trees for sale in 1983 was about one third of the quantities projected in the work plan. However, with planned recruitment and placement, progress toward achieving the purpose should be substantial in two years. At both horticultural stations adequate infrastructure is in sight to support proposed activities. Plant material is on hand to support expanded production, training and extension.

#### **G. GOAL/SUBGOAL**

The goal is "...To increase rural income in the YAR through agriculture development." The subgoal is "...To increase the quantity, quality and diversity of fruits produced in the YAR.:"

This project is too young for measurable progress toward goals. However, with proper recruitment and placement, substantial progress toward EOP goals should be achieved. Progress toward achieving goals should continue after EOP.

#### **H. BENEFICIARIES**

Beneficiaries of HITS are essentially participants in the entire fruit subsector in Yemen. They can be more specifically identified as follows:

1. Small subsistence farmers (increasingly women) who cultivate a few trees to benefit from a small saleable surplus and an additional source of food and nutrition.
2. Small-to-medium-scale orchard growers with 10 to 100 trees who produce for the commercial market and who have access to water and capital to support their operations.
3. Rural seasonal laborers who will have an additional source of wage labor from orchard growers.

4. Nurserymen, particularly those linked to MAF who will have access to cleaner and improved varieties of budwood seedlings for commercial trees and seedlings to produce rootstocks for production of better tree stock to sell to farmers.
5. Merchants who sell inputs or market the increased fruit and tree production.
6. Consumers who will have access to an increased supply of better-quality fruits.

Although a small number of trees have been sold to Yemeni farmers and a limited amount of training and extension have occurred, the project is too young to have a measurable effect on projected beneficiaries. Budded imported trees sold to Yemeni farmers have not yet come into bearing. It takes eighteen months to produce trees for sale at Jarouba and four or five years for trees to come into bearing. However, the potential is good to have some measurable effects by the end of the project. Most production benefits will occur after the end of the project, five to six years from now.

I. UNPLANNED EFFECTS  
See EXTERNAL FACTORS

K. LESSONS LEARNED

1. It appears that in the development of this project and particularly the Jarouba Tropical and Subtropical Horticultural Station, the implementation emphasis initially was on the wrong factors. The Jarouba station is located in a harsh climate that is isolated, is far from hospitals and medical help, and has no schools for children of expatriates. Yet, partially unsatisfactory attempts were made to develop this station without adequate living quarters and other infrastructure for permanent professional employees. Those who were employed spent more than half of their time commuting to the station and complaining about living conditions. This does not encourage a productive attitude.

Adequate living conditions should have been provided before attempting to place professionals at this site.

2. The evaluators have asked many questions related to recruitment and placement to many involved in the horticultural program. What is the authority to spend money for recruitment and placement? Who has authority to release funds for recruitment and placement? What is the definition of recruitment, nomination, placement, activity, etc.? What happens when a contractee expends funds and incurs costs "acting on faith", and the key individual of the contractor dies? Answers to the above questions varied considerably. It is obvious that all levels involved in recruiting and placement are not following common guides, (if they exist), and do not understand the bureaucratic procedures that are involved. In the various levels involved, turnover in positions appears to be the rule. A set of realistic guidelines is urgently needed; such guidelines must be in simple terms so that new personnel can readily understand them. The above problem has had a major adverse effect on the progress of the horticultural program; this problem has also created dissension among various levels involved in the overall project.

3. The Jarouba Station is isolated. There is no telephone at or near the station. It is about a half hour drive to the nearest telephone. Thus communication between Sanaá and Jarouba is impaired. The HITS Team Leader mentioned an expensive solar telephone possibility, but has not looked into details. Emphasis should be placed upon improving this channel of communication. Better communication should enhance progress.

4. Isolation at Jarouba also causes problems in obtaining small parts for equipment. It is about a two hour drive to the nearest point to obtain small parts. Consideration should be given to increasing the stock of spare parts at this station.

#### K. SPECIAL COMMENTS OR REMARKS

1. In discussions with MAF personnel there was no complaint about activities and development at the Al Irra Deciduous Fruit Station. They look upon this station as a model; complaints were all directed to activities and development at the Jarouba Tropical and Subtropical Fruit Station.

2. In discussions with Werner L. Gassert of the Yemeni-German Plant Protection Project, it became evident that with an excellent quarantine law and adequately trained personnel to implement the law, diseased plant material would still get into YAR. A suggestion to consider is that MAF nurseries produce an adequate number of disease-free trees and sell them at a price that will discourage one from going elsewhere for trees.

3. Possibly some details on training and production of nursery trees for sale can bring some of the problems in production of trees into sharper focus.

At the Jarouba Station the shortest time to produce a budded citrus tree for sale is 18 months from time of planting seeds, assuming no problems develop in the process. Many problems can develop in production of seedlings for budding: if the imported seeds are not handled properly at all points, germination will be low. Insects, diseases, irrigation, water supply, weather, etc., can also influence the number of seedlings produced.

4. The budding process is critical. This process can be described in scientific terms, but there is also an art to successful budding. One does not need an academic degree to become a successful professional budder, but one does need good training and a lot of practice to obtain an acceptable bud take. If trees intended for sale are used to train budders, the percent take will be low. The trees intended for sale should be budded by experienced personnel, not trainees. Training and production should be more or less independent.

5. Although all potential donors that are or might be in some way interested or related to the HITS were not interviewed, it appeared that good cooperation occurred between HITS and the Yemeni-German Plant Protection Project and the British Project in Dhamar. It appeared that there was little cooperation amongst most donors. Some complained they lacked time to do all that was to be done in their individual projects, so this detracted from cooperation.

6. Since there is so much pressure to produce trees for sale at the Jarouba station, efforts should be made to remove all possible constraints to production. The present shade house is utilized to its maximum capacity. Seeds are planted in the soil, not in containers on benches. At present, soil-borne diseases do not appear to be a problem. Such a problem is likely to appear, particularly when citrus seedlings are grown in the soil throughout the year. Also, under such conditions, a "replant problem" is likely to occur. Growth of subsequent crops of citrus in same location are likely to diminish with time. Permitting the soil to be fallow for a while or planting another species of crop in the soil (crop rotation) tends to minimize both problems.

Because of pressure on shade house facilities, plans are to attempt to grow seedlings for budding in the open during times of the year when the weather is not adverse to growth of seedlings. Construction of another shade house at Jarouba is highly recommended.

7. The supply of irrigation water at Jarouba is marginal at times. At certain times of the year, villagers compete for water from both wells and, this can be critical for the growth of the crop, particularly seedlings. Therefore, development of an additional source of irrigation water is recommended, even if a target of 50,000 saleable trees remains.
8. Appendix include tables 1-6 which give details concerning current status of the project.

#### L. RECOMMENDATIONS

1. Continue the HITS subproject.
2. Expedite an effective recruitment and placement program. Clarify among all concerned as to what document finally gives authority to spend money legally and to contract for long term personnel. The initiative in this should probably be undertaken by the AID/W Yemen Project Director; however, all levels need to be involved.

Presently, there is no uniformity of understanding on this matter.

Improve communication and define terms in the recruitment and placement process; clarify procedures at all levels. Probably Core presently at OSU should take the lead in this matter, but all levels need to cooperate.

Consider a broader base for recruitment. Recruitment for the Ibb Secondary School cadre could be used as a model, if recruitment and placement continue to be a major problem. This should be coordinated among CID/T, Core and lead universities. Initiative should be taken by CID/T, with cooperation from all levels.

3. If an entomologist is not recruited and placed immediately, obtain an expert (TDY) in citrus Integrated Pest Management (IPM) to study the problem and make recommendations for supporting the YARG Plant Protection Program. The program should utilize IPM control procedures, with particular emphasis on biological control.
4. Expedite having citrus trees at the Jarouba and Al Irra stations indexed to assure that they are kept free of diseases. CSPUP should vigorously pursue this.
5. At Jarouba, construct another shade house, increase the supply of irrigation water and provide more MAF personnel to train to be available for budding. When CID positions are filled, expedite filling of MAF counterpart positions.

**APPENDIX A**

**List of Evaluation, Key Contacts and Resource Persons**

APPENDIX A

I. LIST OF EVALUATORS, KEY CONTACTS AND RESOURCE PERSONS

A. PRAGMA EVALUATION TEAM

1. Paul R. Grimshaw, Agricultural Economist,  
Team Leader
2. Tom William Embleton, Horticulture Specialist
3. Mohamed Cassam, Planner  
Economist/Institutional Specialist
4. Louis Marcel Rolland, Poultry Specialist
5. Wael Selman Fahad Al-Tikrity, Agricultural  
Education Specialist
6. Judith Wills, Evaluation Specialist and  
Resource Backstop, USAID/Washington NE/DP

E. U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT,  
WASHINGTON, D.C.

1. Bradshaw Langmaid, Deputy Asst, NE/Technical  
Administrator, Bureau for Near East (NE)
2. Archie Hogan, Yemen Agriculture Project  
Officer, NE/Technical Administrator
3. Richard Cobb, Chief Agricultural Development  
Division
4. James Habron, Chief Engineering Division,  
NE/DP/Engineer
5. Robert Zimmerman, Chief, Project Analysis and  
Evaluation Staff NE/DP
6. Kenneth Sherper, Office of Technical Support,  
NE Bureau
7. Judith Wills, Evaluation, NE/DP
8. Maurice E. Fleming, NE/TECH/AD
9. Anthony Vollbrecht, NE/TECH/AD
10. Kathryn Y. Cunningham, SER/QM Contracts

C. U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT,  
USAID/YEMEN

1. Charles F. Weden, Director, AID/Y
2. Thomas L. Rose, Deputy Director
3. H. Patrick Peterson, Agriculture Development  
Officer (ADO), USAID/Y.
4. Tracy Atwood, Asst. ADO, USAID/Y.
5. David Fredrick, Program Officer, AID/Y,  
Evaluation Officer for Evaluating Team

6. Dwane E. Hammer, Project Manager, Agriculture
7. Bobby W. Allen, Controller
8. Patrick Hase, Budget and Accounts Officer.
9. Donald W. Muncy, Assistant Program Officer

D. CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

1. John L. Fischer, Executive Director CID/T.
2. Royal H. Brooks, Director Yemen Program, CID/OSU.
3. Robert Witters, Chief of Party, CID/Y  
Co-Manager.
4. Susan Hase, Assistant to COP, CID/Y
5. Richard Maddy, Administrative Officer, CID/Y.
6. J. David Price, HITS Team Leader,  
Horticulture Advisor.
7. David Francis, PETS Team Leader, Poultry  
Advisor, CID/Y
8. Robert Martin, ISAI Team Leader, Ibb School,  
CID/Y
9. Jamie Issa, Former Horticulture Specialist,  
Jarouba, CID/Jarouba.
10. Abdulaziz Mutwali, Horticulture Technologist,  
CID/Jarouba.
11. Entire Ibb School Faculty and  
Counterparts, CID/Y
12. Milton Snodgrass, Agriculture Planning  
Advisor, CID/Core.
13. G.R. Jack Law, Training Advisor, CID/Core.
14. Amir Badiel, Agricultural Advisor, CID/Y.
15. Musa Ahmed Allagabo, Horticulturist, Ibb  
School, CID/Y
16. John D. Wooten, Jr., Deputy Executive  
Director, CID/T.
17. James F. Hedrick, Secretary/Treasurer, CID/T.
18. Edward Barnes, III, HITS Project Director,  
CSPUP.
19. Melvin P. Belcher, Director of International  
Programs, CSPUP.
20. John R. Kropf, Director of Foundation  
Services, CSPUP.
21. J.E. Dimitman, Plant Pathologist, CSPUP.
22. Dillard H. Gates, former Director Yemen  
Program, OSU.
23. Robert Martin, NMSU Team Leader, ISAI, CID/Y.
24. Nabil A. Al-Ansi, Yemeni ISAI Director,  
CID/Y.
25. Amin Abuysha'er, ISAI Agronomy Staff, CID/Y.
26. Gasim Hassan, ISAI Agricultural Engineering,  
CID/Y

27. Khairy H. Aboul-Seoud, ISAI Ext. Ed. and Rural Sociology, CID/Y.
28. Awadall Hamid, ISAI Animal Production, CID/Y.
29. Donald E. Swanjord, ISAI English Instructor, CID/Y.
30. Craig Runyan, ISAI Farm Manager, CID/Y.
31. Jamal Aldien M. Al-Soumieri, ISAI Counterpart
32. Cassem, S. H. Al-Mathehaji, ISAI Counterpart
33. Ismail A. Al-Hedad, ISAI Counterpart
34. Taha Y. Saeed, ISAI Counterpart
35. Abulrab A. Ahmed, ISAI Counterpart
36. Abdul-Aziz M. Saif, ISAI Counterpart
37. Ahmed A. Al-Asbahi, ISAI Ag. Mechanic Technician, CID/Y.
38. Don Raush, Executive Vice President, NMSU
39. Harold Daw, Vice President of Research, NMSU
40. Gerald Burke, Assoc. Academic Vice President, NMSU
41. Leon Pope, Dean college of Agriculture and Home Economics, NMSU
42. Lewis Holland, Assoc. Dean, College of Agriculture and Home Economics, NMSU
43. Dr. Leon Wagley, Head, Department of Agriculture and Extension Education, NMSU
44. Eugene Ross, Professor, Agricultural and Extension Education Department, NMSU
45. Earold R. Matteson, Director, Center for International Programs, NMSU
46. Sunny Langham, Director, ISAI Subproject, NMSU
47. Mary Reynolds, Office Operation Supervisor, NMSU
48. Sandra Basgall, Foreign Student Advisor, NMSU
49. Bob Weissberg, English Instructor, NMSU
50. June Baca, English Instructor, NMSU
51. Moann Adams, Admission Office, Graduate School, NMSU
52. Seven Yemeni M.S. Program Students at NMSU.
53. Deidre Campbell, CID/U of A.
54. Elaine Cooke, CID/U of A
55. Charles Hutchinson, CID/U of A
56. Jack Johnson, CID/U of A
57. Fred Matter, CID/U of A
58. Mike Norvelle, CID/U of A
59. Robert Varady, CID/U of A
60. Mike Wilson, CID/U of A

**E. MINISTRY OF AGRICULTURE AND FISHERIES (MAF)**

1. His Excellency, Ahmed A. Hamdani, Minister of Agriculture.
2. Mokbil Ahmed Mokbil, Deputy Minister of Agriculture.
3. Abdul Hafiz Karhas, CID/Co-Manager, MOA.
4. Ali Noaman, Director of General Services, Agricultural Affairs.
5. Luft Al-Ansi, Director General for Planning
6. Ali Al-Barati, Director General for Horticulture, MAF.
7. Abdullah Zabara, Director General for Livestock
8. Mohamed Al-Gashm, Director General, Plant Protection Division, MAF.
9. Hussein Al-Faqi, Director General, Irrigation Division, MAF.
10. Abdual-Jabarel Sadik, Director, MAF Nursery, Ibb.

**F. MINISTRY OF EDUCATION (MOE)**

1. Abdulwahed Al-Zendani, Ministry Education
2. Abdurabo-Jaradah, Deputy, MOE
3. Mohamed Al-Harazi, Director Agriculture Education MOE
4. Abdulmalik Moalimi, Director Voc. Ed. MOE
5. Mohamed A. Al-Naami, Director General of Training and Scholarship, MOE
6. Mohamed S. H. Al-Nemir, Director of Education, Industrial Education, MOE
7. Selman M. Dalool, Officer, Agricultural Education Department
8. Fateema Fadel, Director of Women Education
9. Fowziya Nuaman, Supervisor of Women Secondary School Education
10. Najat Al-Yareemi, Supervisor of Women Skills Training.

**G. CENTRAL PLANNING OFFICE (CPO)**

1. Mohammed Ahmed Al-Junaid, Minister of Development, Chairman, CPO
2. Abdulkarem A. Al-Kustaban, Director General, Deputy CPO

**H. SANAA PROVINCIAL AGRICULTURE OFFICE**

1. Yahya Shuga, Director General for Sanaa Agriculture Office.

- I. AGRICULTURE RESEARCH AND DEVELOPMENT AUTHORITY STATION, TAIZ (MAP)
  - 1. Abdurahman Sallam, Director, Taiz Research Station.
  
- J. SURDP EXTENSION CENTER
  - 1. Ghaleb A. Aussainy, Plant Protection Expert, SURDP Taiz.
  - 2. Kazi, NASR Director SURDP, Taiz.
  
- K. YEMENI-AMERICAN LANGUAGE INSTITUTE (YALI), SANAA
  - 1. F. Ward, YALI Director and Public Affairs Officer of USIS.
  - 2. D. Lubovich, YALI Assistant Director
  - 3. YALI Teaching Staff
  
- L. AMERICAN LANGUAGE INSTITUTE, (ALIGU)
  - 1. Suzanne M. Peppin, Director, ALIGU
  - 2. Three Yemeni Students, English Proficiency Program
  
- M. YEMENI-GERMAN PLANT PROTECTION PROJECT
  - 1. Werner L. Gassert, Plant Pathologist.

## APPENDIX B

### OVERALL DETAILED SCOPE OF WORK FOR EVALUATING THE ADS PROGRAM

I. OBJECTIVES: To complete an external evaluation of the Agriculture Development Support "Program" (ADSP) and each of its component "Subprojects" by the end of December 1983, which will provide guidance for adjustments in the existing program, recommendations concerning possible extension of two of the present subprojects, and future program direction. The first objective is to evaluate the results and effectiveness to date of the Agriculture Development Support Program and its four on-going subprojects to increase income and improve the quality of life for rural inhabitants in the context of broad-based and equitable social and economic development. The evaluation will provide qualitative and quantitative measurement of inputs, outputs and progress in achieving ADSP and subproject EOPS to date. Another objective is to evaluate the Title XII collaborative assistance approach being used to implement the ADSP and make recommendations for its continuation and/or modification. The scope of work is divided into three categories--overall program individual subproject and AID/CID organization, management and implementation. The third element will include an evaluation of the CID organizational structure with the view of recommending appropriate alternatives if deemed necessary. The evaluation should specify how the activities of the CID Board of Trustees, other CID organizational components, and the individual lead universities have impacted on overall program performance.

#### II. SCOPE OF WORK

1. Background: The Agriculture Development Support Program (ADSP) Project 279-0052 is a long-term (at least 10-15 years) program to develop Yemen's agricultural potential. The program strategy is (a) to provide the Ministry of Agriculture, the Ministry of Education, and the University of Sanaa advisory services and staff training to improve their capacities to plan, evaluate, and manage agricultural development programs (education, infrastructure, and production) and (b) to develop and initiate specific subprojects at the production level to take advantage of agricultural growth opportunities and to ease critical constraints to development. Besides contributing toward the achievement of the ADSP goal and purpose, each subproject has its own specific development objectives. The ADSP purpose is the same as the sub-goal of each of its component subprojects. Each subproject purpose relates to one or more of the ADSP end-of-project status objectives.

The ADSP is therefore a total "Program" for U.S. agriculture assistance in Yemen over 10-15 years. The ADS Program does not have its own budget and personnel. The individual projects within the ADS Program are called subprojects. The subprojects are not subordinate to any project, only to the ADS Program. The Core Subproject, whose primary purpose is institution-building, will exist for the life of the ADS Program and will design, administer, and coordinate a series of other subprojects. Each of the other subprojects is supposed to address a particular set of on-farm problems and also specific objectives related to the ADS Program EOPS.

The ADSP is being implemented as a Title XII program by one contractor, the Consortium for International Development (CID). CID identifies/selects lead universities among its eleven members to implement each individual subproject. The ADSP is being implemented in the collaborative assistance mode with the contractor, AID, and the Yemen Government equal partners in the design, implementation, and evaluation of the activities. The project paper establishes the goal and purpose of each subproject, but there is considerable flexibility left to the contractor to determine or adjust the implementation schedule and level of effort required to accomplish the goal and purpose. The annual work plan (and not the project paper) establishes the annual budget, inputs and outputs for each subproject. Expenditures are authorized through the annual work plans which are approved by the three collaborating partners. The work plans are outside the CID contract.

2. Agriculture Development Support Program - Evaluation  
Scope of Work

Evaluate the effectiveness of the Agriculture Development Support Program through the management and implementation of its four component subprojects to function as a "program" that:

- A. Improves the capacity of the YAR Government and Yemeni agricultural producers to develop and sustain an agricultural sector which effectively and efficiently uses Yemeni natural resources, is integrated into the economy, and is supportive of a broad-based and equitable social and economic development.
- B. Increases the Ministry of Agriculture and Fisheries (MAF) capability to provide technical advice and services to Yemen's farmers.
- C. Reaches the farmers directly through production programs.
- D. Addresses the growth opportunities identified in the Agriculture Sector Assessment:

1. Increase exports.
2. Import substitution.
3. Increase yields and lower the costs of production.
4. Improve the agricultural managerial ability and the level of agricultural education.
5. Improve rural infrastructure.
6. Improve market structure.

E. Establishes and utilizes a consistent implementation strategy based on an institution development/training program.

F. Implements the strategy recommended by the Agriculture Sector Assessment.

1. Increases the agricultural education emphasizing B.S. level and secondary level.
2. Expands the institutional capability of the MAF to provide services to private farmers.
3. Increases the capability of the MAF to undertake improvements which would increase the effective utilization of water supplies for irrigation.
4. Promotes private sector development, particularly in marketing agricultural projects, supplies and equipment.

G. Contributes toward achievement of the following objectives:

1. A functioning Ministry of Agriculture with appropriate structure and qualified staff for planning, policy analyses, evaluation, design and implementation of an effective agriculture development program.
2. A functioning agricultural education system.
3. Increased participation of women in agricultural development through suitable agricultural education, training and extension programs.

4. A National Agricultural Extension System identifying small farmer production problems and designing and implementing responsive central or local extension and research activities.
5. Efficient management of Yemen's soil and water resources.
6. Marketing infrastructure for efficient internal distribution and export of agricultural products.

H. Increases English language ability of YARG officials.

I. Develops and utilizes systems to follow-up (track) the subproject outputs, such as fruit trees, pullets, bees, students, trainees, participants, etc.

J. In addition, the team should:

1. Identify and evaluate problem areas or constraints which may inhibit attainment of the ADSP goal or purpose.
2. Evaluate the effectiveness and ability of the ADSP to be a sector-wide program of assistance to the development of Yemen's agriculture and comment on the validity of this approach.
3. Evaluate the appropriateness of the training and institutional development plans of each subproject toward attainment of both the subproject and the ADSP goal and purpose.
4. Review the subproject areas of emphasis and other studies initiated to determine if they contribute toward achievement of the Program goal and purpose and if the most appropriate mix of activities was chosen. Assess the degree to which each subproject and/or study
  - : responds directly to target group problems/needs.
  - : supports the conservation, preservation, or restoration of natural resources.
  - : is a priority with the YAR Government as demonstrated by concrete actions.
  - : is an activity in which the U.S. (CID) has a comparative advantage over other donors in providing required resources.

5. Assess overall development impact of the ADSP.
6. Assess YARG impressions of validity and effectiveness of the ADSP, YARG budget contribution toward each subproject, and YARG provision of personnel and other resources.
7. Review the planning process, required documents, and schedule to determine if they are appropriate for management and implementation of the ADSP, and if not, recommend appropriate modifications.

### 3. Core subproject - Evaluation Scope of Work

The Core Subproject will exist for the life of the ADSP (10-15 years). Its functions are: a) support the YAR Government in expanding the capacities of its agriculture and agriculture-related institutions, b) design, administer and coordinate all the subprojects, including the Core, so they operate as one program, c) develop CID's linkages to Yemen and institutional capacity to support a long-term project there. The Core Subproject Paper and the evaluation objectives below cover only the first five-year phase of the Core Subproject.

Evaluate the contribution of the Core Subproject toward achievement of the following objectives (include a discussion of any significant implementation problems and recommend changes as appropriate):

#### A. Advisor-Related Objectives

1. Improved YAR Government capacity for agricultural planning, sector analysis and project design, evaluation and implementation.
2. An Agriculture Sector Assessment, updated periodically, used as a basis for determining development objectives and identifying technical assistance needs.
3. Documentation and Learning Resource Center established and making materials available.
4. Design of projects for implementation by other donors or the YARG.
5. Coordination of the ADSP activities with the Ministries and donors participating in agricultural development in Yemen.

6. Training

- (a) B.S., M.S. and Ph.D degrees for 24 staff members of the central MOA and MOE.
- (b) Specialized academic and non-academic training for 40 staff members.
- (c) English language training for 200 MAF staff members.

7. Institutional development/training plan completed for each directorate of the Ministry of Agriculture where long-term advisors exist or where positions have been approved.

B. Management-Related Objectives

- 1. Design of other subproject for implementation by Project 279-0052.
- 2. Mobilization assistance to subprojects before they are added to the CID contract.
- 3. Technical, logistical and administrative support being provided to other subprojects.
- 4. Long-term links established between the YAR Government and Oregon State University, the Core Subproject lead university.
- 5. Leadership provided to coordinate the efforts of all subprojects into a single program.
- 6. Establishment and application of criteria for determining priorities among subproject activities.
- 7. Establishment of common standard systems, procedures and policies for all subprojects covering personnel, recruiting, accounting, procurement, reporting, etc.

4. Ibb Secondary Agricultural Institute Subprojects (ISAI) - Evaluation Scope of Work

The ISAI, the first subproject of the ADSP, began implementation in 1979. This subproject is assisting the YAR Government's Ministry of Education to staff and operate the country's first secondary agricultural school. The purpose of the ISAI is to graduate trained Yemenis who will become extension agents and fill other middle-level agriculture technical positions. The

systems developed for the ISAI and the 30 Yemeni agriculture teachers trained to the M.S. level by this subproject should benefit the country's other two agriculture secondary schools (Surdud and Livestock). The ISAI was authorized as a five-year project; however, it was anticipated that it would take five to ten years before the ISAI would be fully staffed and administered by trained Yemenis.

Evaluate the contribution of the ISAI toward achievement of the following objectives (include a discussion of any significant implementation problems and recommend changes as appropriate):

- A. Establishment of a training center capable of serving Yemen governmental and rural sector needs for personnel with middle-level agricultural skills.
- B. Recruitment of an adequate supply of qualified students, particularly from the rural areas, at least 50 per year.
- C. Retention of the recruited students.
- D. Development of curricula and teaching materials in Arabic for a full range of courses relevant to Yemen's agriculture.
- E. An operational school farm integrated into the curriculum and providing practical training experiences relevant to Yemen's agriculture.
- F. A program of short courses, in-service training, and outreach demonstration/extension activities for farmers and extension workers appropriate for the Ibb region.
- G. A practical summer work/experience program for the students.
- H. Training 30 Yemeni participants to the M.S. level in the United States. Assess the appropriateness of the M.S. training program for Yemen's agriculture education needs and staffing of the agriculture high schools. Assess the appropriateness of the ESL training and the one-year internship of the participants as counterparts at ISAI before they begin their M.S. program.
- I. A Yemeni teaching staff at the school who have been trained to the M.S. level in the United States.
- J. Retention of Ibb graduates in middle-level public and private agricultural positions.
- K. Create a climate conducive to women's development.

L. Non-academic and non-degree training (up to 100-200 months) for Yemeni staff of the ISAI.

M. Twelve students total from the first two graduating ISAI classes enrolled in four-year B.S. agriculture programs in the Middle East.

N. Ministry of Education and Ministry of Agriculture coordination and cooperation in establishing and staffing a Secondary Agriculture High School, recruiting students, and utilizing graduates.

O. Establish a system for secondary agriculture education in the YARG.

P. Long-term links established between the YARG and the New Mexico State University, the ISAI lead university.

P. Provision of expatriate agriculture teachers until trained Yemenis are available.

5. Poultry Extension and Training Subproject (PETS) -  
Evaluation Scope of Work

The Poultry Extension and Training Subproject (PETS) was authorized in August 1982; however, pre-subproject implementation activities began in April 1981. This subproject is a follow-on of a previous AID Project 279-0019 Poultry Production. This evaluation should include all poultry-related activities undertaken as part of the ADS Program since March 1981.

Evaluate the contributions of the Poultry Extension and Training Subproject toward achievement of the following objectives (include a discussion of any significant implementation problems and recommend changes as appropriate):

A. Increase egg production in the traditional sector to increase farm income and improve nutrition.

B. Reduce Yemen's dependence on imported eggs.

C. Increase production of eggs and poultry meat in Yemen.

D. Establishment and implementation of an improved extension and training program within the Ministry of Agriculture and Fisheries that will increase egg and poultry meat production for private producers in the traditional sector and for small - and medium - scale producers.

- F. Construction and equipping six pullet-rearing houses with an annual capacity of 77,000 sixteen-week-old pullets.
- G. Establishment of 1192 new private sector egg-laying flocks, mostly in units of 25 birds. Number of farmers who continue to raise layers after completing one cycle and growth in flock size of farmers services.
- H. At least three demonstration egg-laying units operating in villages.
- I. A Sanaa Poultry Training Center with dormitory conducting poultry training courses for both men and women.
- J. Training of up to 69 Yemeni extension workers in an 18-week poultry training course.
- K. Training of up to 10 MAF persons in poultry science in the U.S. at the B.S., M.S. and Ph.D. level.
- L. Assist the MAF to establish a system for collection and analysis of financial data relating to poultry production costs and benefits.
- M. Conduct a detailed financial and economic study, including poultry and egg marketing which provides recommendations for adjustments in the program. This will include an analysis of the chick import costs, pullet production costs and sale price to farmers at 16 weeks, layer feed import costs and quantities, sale price of layer feed to farmers, egg production and sale price data by farmer type, and farmer production costs.
- N. MAF sale of pullets and feed at cost (without subsidy) to farmers.
- O. A program of short course training being conducted at provincial and village centers.
- P. An extension follow-up system in place supporting the private sector egg-laying units established.
- Q. Assisting women poultry producers and women's cooperatives.
- R. Private sector importation of layer chicks and layer feed.
- S. Advisability of using locally-produced feed grain.
- T. An institutional/training plan established for the development of a poultry unit within the Animal Resources Directorate of the MAF capable of supporting Yemen's private sector poultry producers.

U. Long-term links established between the YAR Government and Oregon State University, the PETS lead university.

6. Horticulture Improvement and Training Subproject  
(HITS) - Evaluation Scope of Work

The Horticulture Improvement and Training Subproject (HITS), which was authorized in December 1982 is the most recent subproject added to the Agriculture Development Support Program. Pre-subproject activities began in October 1981. Operation of the Tropical Horticulture Station at Jarouba, begun under a previous AID horticulture project 279-0042 Tropical and Sub-tropical Fruit Improvement, was continued by the ADSP as a horticulture pre-subproject activity. During the pre-subproject period, development of a deciduous horticulture station at al-Irra was also begun. This evaluation should include all horticulture-related activities undertaken as part of the ADS Program since October 1981.

Following are some key criteria which may be useful to determine the progress to date:

- The number and effectiveness of demonstration programs/workshops/media conducted for small-scale farmers through the media outreach program, at HITS stations, and in villages by extension agents.
- Sales of improved, disease-free nursery stock to farmers by farm size;
- Number of extension agents, agricultural technicians, nurserymen trained at existing facilities of HITS stations;
- Quantitative and qualitative progress in implementing the Plant Protection Program, including MAF effectiveness in implementing plant protection legislation;
- Programmed efforts to improve coordination among the various agencies and other donors involved in the fruit sector.
- Experience in identifying improved varieties in pest-disease-free condition.

Evaluate the contributions of the Horticulture Improvement and Training Subproject toward achievement of the following objectives (including a discussion of any significant implementation problems and recommend changes as appropriate):

- A. Increase quantity, quality and diversity of fruits produced in the YAR (by farmer type and fruit variety).
- B. Institutionalize within the MAF an expanded and improved capacity to support increased fruit production through extension, plant protection, and delivery of disease-free plant stock of improved varieties to the fruit subsector.
- C. Establishment of two horticulture training and improvement stations -- one tropical-subtropical and one deciduous.
- D. A Plant Protection Department in the MAF which insures development, importation and distribution of insect and disease-free plant stock and is undertaking a program to identify and control/eradicate existing fruit tree insects and diseases.
- E. An institutional/training plan established for the development of the MAF capacity to support increased fruit production.
- F. Training of Yemeni professionals in plant protection to staff the Plant Protection Department and implement the Plant Quarantine Law and Bio-Regulants Act. At least five degree participants and five short course trainees.
- G. Training of Yemeni fruit culture professionals, technicians and specialists in basic fruit culture skills, nursery management, and extension techniques. Up to:
1. 200 extension agents and 200 agriculture technicians in one or two short courses.
  2. 10 nurserymen from YARG nurseries in practical on-the-job training.
  3. 20 extension agents in six to nine-month internships.
  4. 2 persons in six-month specialized short course training in the U.S.
  5. Farmers exposed to a mass media campaign.
  6. Seven degree participants.
- H. An effective operational extension, demonstration and media campaign to provide basic information on follow-up tree sales.
- I. Increase sale of quality nursery stock to farmers from government and private nurseries.

J. Conduct detailed financial and economic studies, including horticulture production and marketing.

K. MAF establishment of a system to collect and analyze financial and economic data relating to horticulture production, costs and benefits.

L. Long-term links established between the YAR Government and the California State Polytechnic University at Pomona, the HITS lead university.

7. AID/CID/YARG Organization for Implementation of a Collaborative Assistance Program - Evaluation Scope of Work

The Agriculture Development Support Program being conducted in Yemen has many distinct features. It is assumed that U.S. assistance will be most effective toward development of Yemen's agriculture sector if provided through a program with the following features.

A. A long sector-wide agriculture program which is being implemented by a single contractor.

B. Implementation contract with a consortium which utilizes individual member universities to lead component subprojects and specific activities.

C. Collaborative assistance mode of implementation whereby the contractor, AID, and the YARG jointly determine priorities and then plan, implement, and evaluate the programs (subprojects).

D. Long-term relations established between the contractor U.S. agriculture universities and the YAR Government agriculture institutions (Ministry of Agriculture and Fisheries, Ministry of Education, University of Sanaa, etc.) which should continue long after the completion of the ADS Program and the end of AID funding.

E. The evaluation team should evaluate the assumptions upon which the program was developed, the organizational structures devised to implement the program and the progress to date in implementing the program. This should include a discussion of any significant implementation delays which are due to the four basic program features listed above (Items A through D) or to the organizational structure/arrangements of any of the three collaborating partners (AID, CID, YARG).

F. Based on experience gained through implementation, determine if the four program features (items A-d) represent valid assumptions about the most effective and efficient manner to

provide U.S. assistance to develop Yemen's agriculture potential.

G. If items A-D above are still valid features for an agriculture program in Yemen, then determine if the three collaborating entities AID, CID, and YARG have organized themselves in an optimal manner to implement the program.

H. Evaluate the following organization/implementation issues:

1. The extent to which the subprojects cooperate and interact with each other as part of a single program.
  2. The long-term institutional links being developed between the YARG agricultural institutions and the individual universities in CID.
  3. The effectiveness of CID to:
    - a) serve as an information link between Program field activities and the YAR Government and the collaborating universities.
    - b) serve as a link between the collaborating universities and their respective state Legislatures.
    - c) serve as a link between the collaborating universities and high-ranking YAR ministry officials.
  4. Any institutional and/or procedural changes/modifications made by CID, AID and the YARG to accommodate the collaborative assistance approach.
  5. Increases in speed and scope of implementation due to flexibility of the collaborative style and the increased contractor/YARG participation in design of the activities.
  6. Adequacy of the AID, CID, and YARG procedures now in effect to carry out the collaborative assistance program and sustain it over the next fifteen years in Yemen.
8. Evaluate CID's Organizational System and Procedures, the Performance of that System, and the Results in terms of:
1. Recruiting personnel.
  2. Organizing effective campus and corporate backstopping for the field program.

3. Procuring commodities.
4. Handling participants.
5. Providing logistic support.
6. Accounting for dollar and local currency expenditures.
7. Reporting.
8. Conducting internal evaluations.

## APPENDIX C

### BIBLIOGRAPHY

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13. Interview with Dr. Hassan Makki, Deputy Minister of Economics, YEMENIA, Flying Ambassador of Arabia Felix. Issue No. 15, October 1983, pp. 6-7.

**APPENDIX D**

**Ibb Secondary Agricultural Institute (ISAI) Subproject**

C-3

TABLE 1 - PATTERN OF STUDENT ENROLLMENT IN THE 1841 PROGRAM DURING THE PAST FIVE YEARS. (DATA OBTAINED FROM 188 SECONDARY AGRICULTURAL INSTITUTE, QUARTERLY PROGRESS REPORT, 1979 - 1981, AND STUDENT RECORDS)

SCHOOL YEAR	APPLICATION FOR		STUDENT ENROLLMENT STATUS BY YEAR OF STUDY (A)												TOTAL NUMBER OF STUDENTS GRADUATED	MAXIMUM STUDENT CAPACITY OF SCHOOL							
	NUMBER RECEIVED	NUMBER ADMITTED	FIRST YEAR						SECOND YEAR							THIRD YEAR						TOTAL	RESIDENTIAL
			ENROLLED (B)	DROPPED OUT	FAILED	PASSED	ENROLLED (C)	DROPPED OUT	FAILED	PASSED	ENROLLED (D)	DROPPED OUT	FAILED	PASSED									
1979-80	31	33	33	3	1	47	..	..	..	..	..	..	..	..	..	..	..	..	..	188	47		
1980-81	28	29	29	9	1	21	37	2	2	33	..	..	..	..	..	..	..	..	..	188	27		
1981-82	31	31	32	3	2	27	33	2	3	28	33	1	4	48	..	..	..	..	..	188	112		
1982-83	48	48	47	14	1	32	36	9	1	38	32	9	3	20	..	..	..	..	..	188	181		
1983-84	24	24	25	4	4	4	24	4	4	4	20	4	4	4	..	..	..	..	..	188	197		

A. EMPLOYEES OF THE MAY WHO HAVE JUNIOR SECONDARY SCHOOL CERTIFICATE AND MORE THAN 2 YEARS OF WORKING EXPERIENCE ARE ADMITTED AS SECOND YEAR STUDENTS AND CONSIDERED AS SPECIAL STUDENTS (10 IN 1980-81, 10 IN 1981-82, 9 IN 1982-83, AND 1 IN 1983-84).

B. TOTAL NUMBER OF STUDENTS ENROLLED IN FIRST YEAR = NUMBER OF STUDENTS ADMITTED + REPEAT STUDENTS FROM PREVIOUS YEAR.

C. TOTAL NUMBER OF STUDENTS ENROLLED IN SECOND YEAR = NUMBER OF STUDENTS PASSED FROM FIRST YEAR + REPEAT STUDENTS FROM PREVIOUS YEAR + SPECIAL STUDENTS.

D. TOTAL NUMBER OF STUDENTS ENROLLED IN THIRD YEAR = NUMBER OF STUDENTS PASSED FROM SECOND YEAR + REPEAT STUDENTS FROM PREVIOUS YEAR.

E. SCHOOL YEAR JUST BEGINNING, NO DATA AVAILABLE.

TABLE 2 - PATTERN OF STUDENT ENROLLMENT AND DROP-OUTS AT THE ISAI (DATA OBTAINED FROM TABLE 1, APPENDIX D).

CLASS YEAR	STUDENT ENROLLMENT			NUMBER OF DROP-OUT STUDENTS				% OF TOTAL STUDENT DROP-OUTS
	INITIAL ENROLLMENT (A)	SPECIAL STUDENT ENROLLMENT (B)	TOTAL	FIRST YEAR	SECOND YEAR	THIRD YEAR	TOTAL	
1979-80	53	10	63	5	2	1	8	12.7
1980-81	29	10	39	8	2	1	11	28.2
1981-82	31	6	37	3	0	0	3	8.1
1982-83	45	1	46	14	*	*	14	30.4
TOTAL	158	27	185	30	4	2	36	

A - INITIAL ENROLLMENT - INDICATES THE TOTAL NUMBER OF STUDENTS WHO WERE OFFICIALLY ADMITTED AS FIRST YEAR STUDENTS.

B - SPECIAL STUDENTS - EMPLOYEES OF THE MAF WHO HAVE A JUNIOR SECONDARY SCHOOL CERTIFICATE AND MORE THAN 3 YEARS OF WORK EXPERIENCE ARE ADMITTED AS SECOND YEAR STUDENTS.

\* - DATA ARE NOT AVAILABLE.

**TABLE 3 - STUDENT ENROLLMENT AT THE ISAI PROGRAM BY GOVERNORATES  
(DATA OBTAINED FROM IBB SECONDARY AGRICULTURAL INSTITUTE, SUMMARY PROGRESS  
REPORT OF 1979-1983, AND STUDENT RECORDS)\***

GOVERNORATES	NUMBER OF STUDENTS IN THE SECOND YEAR OF CLASS				TOTAL	% FROM GRAND TOTAL
	1979-80	1980-81	1981-82	1982-83		
IBB	21	16	11	14	62	38.8
TAIZ	27	9	15	16	67	41.9
HODEIDAH	4	3	3	1	11	6.9
EL-BAIDA	2	2	3	3	10	6.2
DHAMAR	2	2	4	0	8	5.0
SANAA	1	0	0	0	1	0.6
OTHERS	0	1	0	0	1	0.6
TOTAL	57	33	36	34	160	

\*SURVEY WAS BASED ON STUDENT ENROLLMENT IN THE SECOND YEAR OF THE ISAI PROGRAM

TABLE 4 - GENERAL INFORMATION REGARDING THE EXPATRIATE STAFF EMPLOYED AT THE ISAI

STAFF NAME AND NATIONALITY	POSITION	DATES OF ASSIGNMENT		QUALIFICATION AND EXPERIENCE	DUTIES AND RESPONSIBILITIES
		FROM	TO		
1. DR. ROBERT MARTIN (USA)	TEAM LEADER	1/1/82	12/31/83	- PH.D. IN AGRICULTURAL EXTENSION AND EDUCATION	ADVISOR TO THE NMSU TEAM AND TO THE YEMENI/ISAI MANAGEMENT
2. MR. MUSA ALLAGABO (SUDANESE)	TEACHING STAFF	1/1/80	12/31/83	- M.S.C. HORTICULTURE, U. OF ARIZONA, TUCSON, ARIZONA - DIRECTOR OF HORTICULTURE FOR 15 YEARS IN SUDAN	A- TEACHING HORTICULTURE TO FIRST, SECOND, AND THIRD YEAR STUDENTS B- TEACHING PLANT PROTECTION TO SECOND AND THIRD YEAR STUDENTS
3. MR. AMIN ABUSHA'ER (JORDANIAN)	TEACHING STAFF	4/1/80	4/1/84	- M.S.C. SOIL AND AGRONOMY, NMSU, LAS CRUCES, NM. - 15 YEARS IN PRIVATE INDUSTRY AND FORMER STAFF MEMBER OF JORDAN UNIVERSITY SYSTEM	A- TEACHING AGRONOMY TO FIRST, SECOND AND THIRD YEAR STUDENTS B- TEACHING SOIL SCIENCE TO SECOND AND THIRD YEAR STUDENTS
4. MR. GASSIM HASSAN (SUDANESE)	TEACHING STAFF	6/1/80	6/1/84	- M.S.C. MECHANICAL ENGINEERING (1978), AND M.S.C. AGRICULTURAL ENGINEERING (1977), U. OF ARIZONA, TUCSON, ARIZONA - DIRECTOR OF AGRICULTURAL ENGINEERING IN SUDAN FOR 18 YEARS	A- TEACHING MACHINERY WORKSHOP TO FIRST YEAR STUDENTS B- TEACHING AGRICULTURAL MECHANIZATION TO SECOND AND THIRD YEAR STUDENTS C- TEACHING SURVEYING TO FIRST YEAR STUDENTS
5. DR. KHAIRY ABUL-SEJJAD (EGYPTIAN)	TEACHING STAFF	6/1/80	6/1/84	- PH.D. AGRICULTURAL EXTENSION, UNIVERSITY OF WISCONSIN - PROFESSOR OF EXTENSION, CAIRO UNIVERSITY, EGYPT, FOR 20 YEARS	A- TEACHING AGRICULTURAL EXTENSION TO FIRST SECOND AND THIRD YEAR STUDENTS B- TEACHING AGRICULTURAL ECONOMICS TO THIRD YEAR STUDENTS C- SUPERVISOR OF THE OUTREACH/EXTENSION PROGRAM
6. MR. ABADALLA HAMID (SUDANESE)	TEACHING STAFF	11/1/80	11/1/83	- B.S.C. AG/VETERINARY SCIENCE, UNIVERSITY OF KHARTOUM, SUDAN, AND M.S.C. ANIMAL SCI. AT OHIO STATE UNIV., OHIO - EMPLOYED FOR 12 YEARS AS A VETERINARIAN IN SUDAN	A- TEACHING ANIMAL PRODUCTION TO FIRST, SECOND AND THIRD YEAR STUDENTS
7. DR. MOHAMED EL-GHANBAWI (EGYPTIAN)	TEACHING STAFF	12/1/81	12/1/83	- PH.D. IN FOOD TECHNOLOGY - PROFESSOR OF FOOD TECHNOLOGY, UNIVERSITY OF AIAN-SHAMES, EGYPT FOR 35 YEARS	A- TEACHING DAIRY AND FOOD TECHNOLOGY TO SECOND AND THIRD YEAR STUDENTS
8. MR. DONALD SWANJORD (USA)	TEACHING STAFF	8/1/81	7/1/83	- M.S.C. IN LANGUAGE EDUCATION, SOUTHERN CONNECTICUT STATE COLLEGE - ESL IN IRAN FOR 2 YEARS, AND ESL INSTRUCTOR FOR 10 YEARS AT VARIOUS US LOCATIONS	A- TEACHING ENGLISH LANGUAGE TO YEMENI COUNTERPARTS WHO ARE NOMINATED FOR THE U.S. TRAINING PROGRAMS (3-4 HOURS/DAY)
9. MR. CRAIG RUNYUN (USA)	FARM MANAGER	8/1/81	12/1/83	- B.S.C. AG EDUCATION, AUSTIN, STATE UNIVERSITY - TEN YEARS OF EXPERIENCE AS VOCATIONAL AG TEACHER, FEED MILL SUPERVISOR, BROILER FARM MANAGER	A- IN CHARGE OF SUPERVISION AND DEVELOPMENT OF THE ISAI FARM

TABLE 1 - LIST OF NAMES, SPECIALITY, DURATION OF ASSIGNMENT, AND PURPOSE OF VISIT OF ALL THE TDY'S THAT HAVE BEEN CONNECTED WITH THE ISAI SUBPROJECT

NAME	SPECIALITY	DATE OF ASSIGNMENT		PURPOSE/RESPONSIBILITIES
		FROM	TO	
1. ANDREW BRISTOL	SOIL SCIENCE	4/17/61	5/21/61	ISAI FARM ORGANIZATION AND DEVELOPMENT
2. JIM MACGLEROY	AGRICULTURAL MECHANIC	5/11/61	7/19/61	MECHANICAL MAINTENANCE AND SUPERVISION
3. SUNNY LANGHAM	ISAI SUBPROJECT COORDINATOR	5/11/61	7/19/61	ADMINISTRATIVE SUPERVISION AND FOLLOW-UP
4. HAROLD MATTESON	ISAI SUBPROJECT COORDINATOR	10/26/61	7/19/61	ADMINISTRATIVE SUPERVISION AND FOLLOW-UP
5. SUNNY LANGHAM	ISAI SUBPROJECT COORDINATOR	10/26/61	11/13/61	ADMINISTRATIVE SUPERVISION AND FOLLOW-UP
6. HAROLD MATTESON	ISAI SUBPROJECT DIRECTOR	12/3/61	12/19/61	ADMINISTRATIVE SUPERVISION AND FOLLOW-UP
7. SUNNY LANGHAM	ISAI SUBPROJECT COORDINATOR	1/29/62	3/3/62	ADMINISTRATIVE SUPERVISION AND FOLLOW-UP
8. HAROLD MATTESON	ISAI SUBPROJECT DIRECTOR	2/19/62	2/19/62	ADMINISTRATIVE SUPERVISION AND FOLLOW-UP
9. ELBERT JAYCOX	BEE KEEPING	3/20/62	4/30/62	ESTABLISHMENT OF APIARY AT ISAI
10. JIM MACGLEROY	AGRICULTURAL MECHANIC	4/21/62	5/11/62	MECHANICAL MAINTENANCE AND SUPERVISION
11. JAMES DEAN	AGRICULTURAL MECHANIC	5/10/62	6/10/62	ISAI MECHANICAL WORKSHOP DEVELOPMENT
12. HAROLD MATTESON	ISAI SUBPROJECT DIRECTOR	6/22/62	7/16/62	ADMINISTRATIVE SUPERVISION AND FOLLOW-UP
13. ELBERT JAYCOX	BEE KEEPING	8/30/62	10/10/62	TRAINING BEE KEEPERS AND DEVELOPMENT OF THE ISAI APIARY
14. MARY REYNOLDS	ACCOUNTING/INVENTORY	10/11/62	11/1/62	FINANCIAL AND BOOKKEEPING FOLLOW-UP
15. JOSEPH HAMILTON	MAINTENANCE MECHANIC	10/10/62	12/9/62	MECHANICAL MAINTENANCE AND SUPERVISION
16. EUGENE ROSS	AG - EXTENSION AND EDUCATION	1/3/63	1/20/63	DEVELOPMENT OF THE OUTREACH/EXTENSION PROGRAM AT THE ISAI
17. SUNNY LANGHAM	ISAI SUBPROJECT COORDINATOR	4/4/63	5/3/63	ADMINISTRATIVE SUPERVISION AND FOLLOW-UP
18. HAROLD MATTESON	ISAI SUBPROJECT DIRECTOR	4/11/63	4/23/63	ADMINISTRATIVE SUPERVISION AND FOLLOW-UP
19. ELBERT JAYCOX	BEE KEEPING	5/9/63	6/22/63	TRAINING BEE KEEPERS AND ISAI APIARY DEVELOPMENT
20. GEORGE ABERNATHY	AGRICULTURAL ENGINEER	5/9/63	6/3/63	EVALUATION AND DEVELOPMENT OF THE AGRICULTURAL MECHANIZATION COURSEWORK
21. R. SPELLENBERG	PLANT SCIENCE (BOTANY)	7/6/63	8/5/63	IDENTIFYING AND SURVEYING OF PLANTS IN AND AROUND THE ISAI
22. MARY REYNOLDS	ACCOUNTING/INVENTORY	10/26/63	11/19/63	FINANCIAL AND BOOKKEEPING FOLLOW-UP

TABLE 6 - OUTLINE OF THE CURRICULUM PROVIDED DURING THE THREE YEARS OF STUDY AT THE ISAI

SUBJECT CATEGORY	SUBJECT TITLES	SUBJECT OFFERING (HR/WEEK)					
		FIRST YEAR		SECOND YEAR		THIRD YEAR	
		THEORY	PRACTICAL	THEORY	PRACTICAL	THEORY	PRACTICAL
A- GENERAL EDUCATION	1- ISLAMIC EDUCATION	3	--	3	--	3	--
	2- ARABIC LANGUAGE	3	--	3	--	3	--
	3- NATIONAL EDUCATION	2	--	--	--	--	--
	4- ENGLISH LANGUAGE	2	--	2	--	2	--
	5- PHYSICAL EDUCATION	2	--	2	--	--	--
	6- VOCATIONAL HEALTH	1	--	--	--	--	--
B- BASIC SCIENCE	1- GENERAL MATHEMATICS	2	--	2	--	--	--
	2- ZOOLOGY	1	1	--	--	--	--
	3- BOTANY	1	1	1	1	1	1
	4- AGRICULTURAL CHEMISTRY	2	2	2	2	1	1
C- TECHNICAL SUBJECTS	1- AGRONOMY	2	2	1	2	1	2
	2- SOIL SCIENCE	--	--	1	1	1	1
	3- HORTICULTURE	2	2	1	1	1	1
	4- PLANT PROTECTION	--	--	2	1	1	1
	5- ANIMAL PRODUCTION	2	2	2	2	2	2
	6- AGRICULTURAL EXTENSION	2	--	2	2	1	1
	7- AGRICULTURAL ECONOMICS	--	--	--	--	2	2
	8- AGRICULTURAL MECHANIZATION	--	--	1	2	1	2
	9- SURVEYING	1	2	--	--	--	--
	10- MECHANICAL WORKSHOP*	1	--	--	--	--	--
	11- DAIRY AND FOOD TECHNOLOGY	--	--	2	2	2	2
	12- APICULTURE	--	--	--	--	1	2
TOTALS		29	12	27	16	23	18
TOTALS		41		43		41	

## APPENDIX D

### Attachment A

(ISAI Subproject Evaluation)

#### The Need for an Improved Technical and Vocational Education System

Approximately 85 percent of the Yemeni population is engaged in traditional agriculture. The people are overwhelmingly dependent upon agriculture for their livelihood, deriving their income from some form of agricultural activity. Moreover, the agricultural sector is the foundation for the future development of the economy, the basis upon which other sectors must be built.

With such emphasis on the importance of this sector, the MAF is considered to be the key to the achievement of the nation's economic goals. This is to be accomplished through increased and improved agricultural production and the development of rural and agricultural communities. There are many aspects to the role of the MAF in economic development. Tasks involved in increasing agricultural production may be summarized as follows:

A) Providing the necessary financial, technological and agricultural inputs to achieve self-sufficiency in basic food production; increased farm family income; improved rural quality of life; increased revenues for the national government; and increased foreign currency by expanding production of both imported substitution crops and export crops.

B) Transmission of new agricultural technologies to the farmers by effective means. This should be done in such a way that farmers can judge clearly the choices appropriate to their own resources.

C) Ensuring that all inputs required to enable farmers to adopt new technologies will be made available to them. These inputs include: water, improved seed varieties, fertilizer, pesticides, breeding stock, and farm equipment. Other services such as credit, marketing, and storage facilities must be provided.

D) Providing adequate administrative and supervisory services required for agricultural management. These include control of natural resources; provision and use of irrigated water; land use and preservation strategies; preservation of grazing ranges; and maintenance of animal health control, fisheries and both food and cash crop production.

The successful functioning of the MAF depends upon three basic factors: 1) the ability to secure the support, cooperation and participation of the various agencies of the government for agricultural programs; 2) the availability and proper utilization of suitably trained agricultural manpower; and 3) the establishment of a mechanism for coordinating manpower needs with the production of qualified personnel in the educational system.

The inability of the MAF to secure many of these inputs has hindered the achievement of desired objectives. Too often development plans have been prepared without consideration for requirements in trained personnel. Projects have been launched only to fall behind schedule due to lack of qualified technicians, which is frequently the primary deterrent to project success. The training of Yemeni professionals in agriculture must be the first step. They must have management capabilities as well as technical knowledge in crop production, research, farmer training and extension services. They should also be competent in project design, implementation and evaluation.

This will entail a well organized and responsible agricultural education system, which is just now in its incipient stage of development. The Ibb Secondary Agricultural Institute (ISAI), Surdud Secondary School and the Veterinary Secondary School are the only existing institutions. (See Figure 1 of this Attachment.) They have the basic capacity of turning out trained cadres of agricultural technicians for employment in the government. Higher level personnel must still be trained abroad.

In relating the agricultural education program to manpower planning, it is apparent that what is needed is a system capable of producing the following categories of trained manpower. (See Figure 1.)

a) Vocational. This includes personnel who receive four to five years of formal vocational agricultural education after the primary level. Their duties are mainly concerned with the direction of manual labor and field work supervision. This category of trained manpower should provide the agricultural sector with personnel of the field management level.

b) Technical. This category includes two types of personnel: 1) diploma holders - personnel having completed a two-to-three-year program of training in a recognized technical training institution below the university level; and 2) secondary school certificate holders - those who have completed three years above junior secondary school (e. g. ISAI).

Technicians should be capable of organizing and supervising agricultural work in the field as well as carrying out the instructions of professional, administrative and research officers. Despite the differences in the extent and depth of training, the usual practice in manpower planning is to treat technicians as a single category: middle level management.

c) Professional. This category includes university graduates from the B. A. to the Ph. D. level. At a minimum they have completed three years of study in agricultural science or related disciplines. They should be capable of planning, designing and supervising agricultural programs on a national or regional level. This category of personnel will provide the sector with upper level management.

The availability of these categories of trained manpower to the MAF will facilitate the division of labor by assigning roles and responsibilities for various tasks. Without such cadres, the MAF will not be able to carry out its responsibilities effectively.

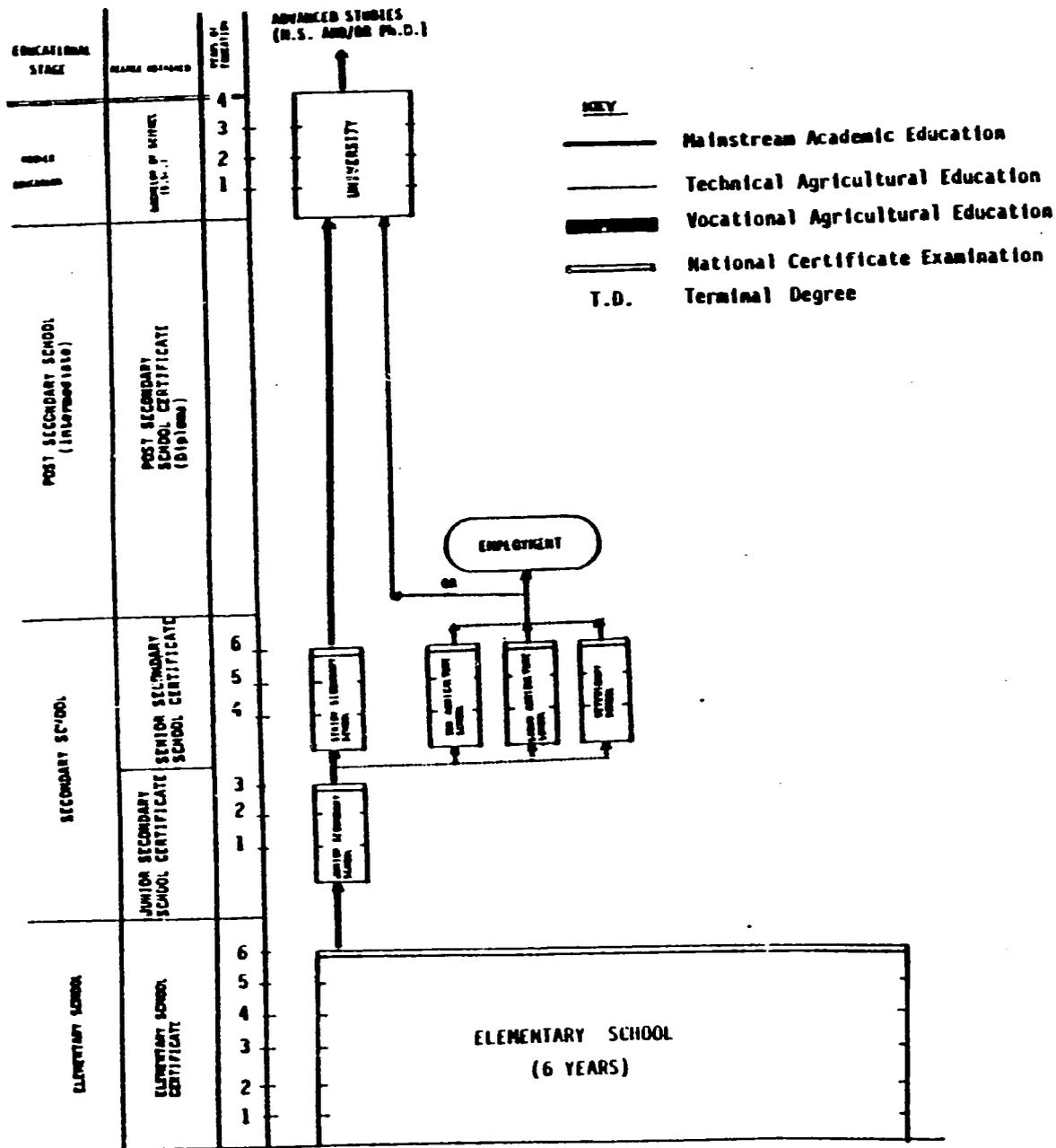
The proposed system of vocational and technical education in agriculture will provide the following advantages to the government of Yemen.

a) The majority of primary school leavers are the

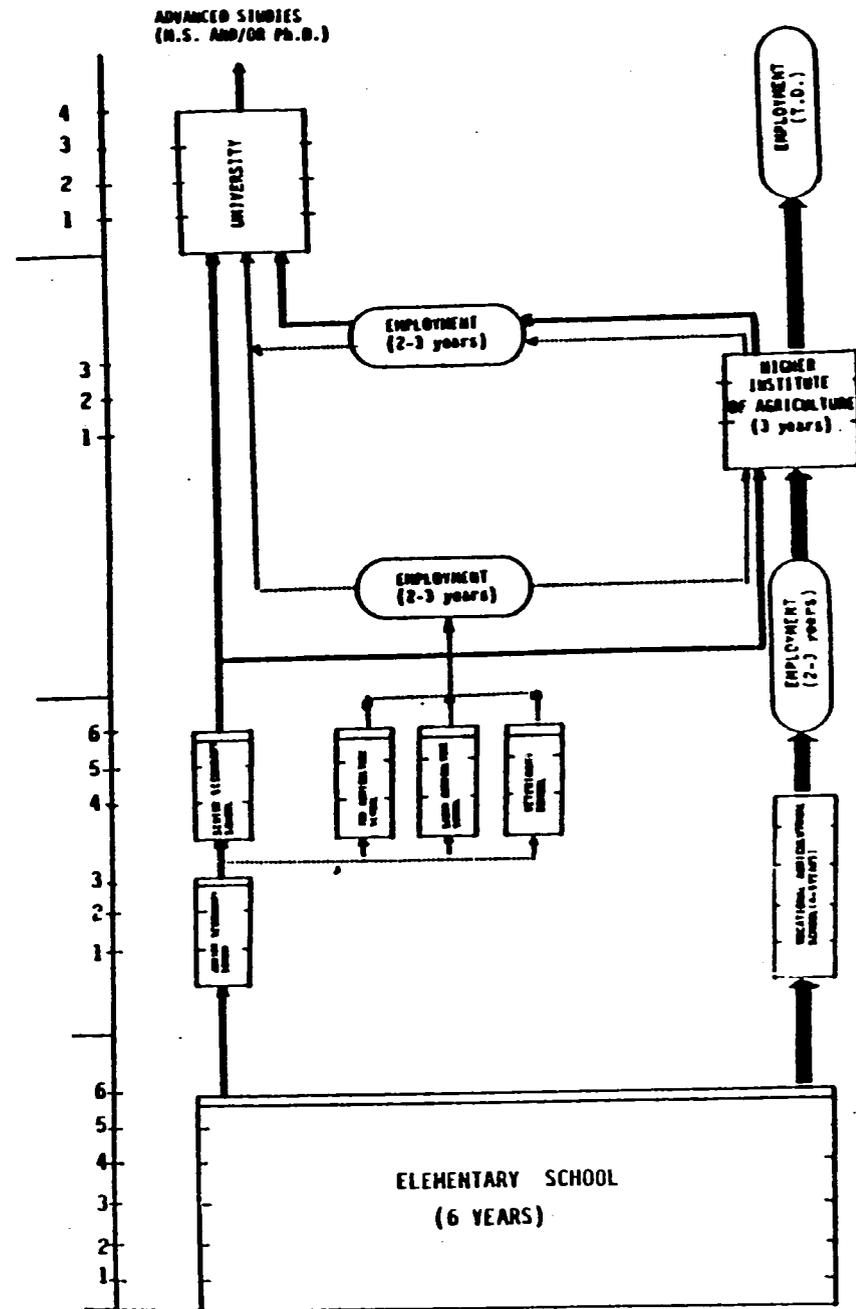
children of farm families. The absence of secondary schools in their respective areas and the cost incurred in sending children to other areas inhibits consideration of further education. Therefore, the creation of vocational agricultural secondary boarding schools in various locations around the country will attract many of those from farm families. At the same time, a process will have been initiated to encourage educated youths to remain in their agricultural communities rather than go abroad to seek employment.

b) Ideally, as has been discussed above and is shown in Figure 1, a complete program of planned agricultural education should have a series of graduated stages corresponding to the jobs in the sector. There should be a period of field service after each stage. If a student is considered fit to continue to the next level, he/she will be encouraged to build upon field experience acquired by entering the next level of training. Only by adopting this system will government employees be assured that they are not being penalized, if they do not receive a secondary school certificate. It will also provide the government with a mechanism for upgrading its personnel while creating upward mobility within the civil service. This in turn will coordinate the manpower needs of the MAF with the production of cadres from the agricultural system.

FIGURE (1) SUGGESTED TECHNICAL AND VOCATIONAL AGRICULTURAL EDUCATION SYSTEM



A- EXISTING ACADEMIC AND TECHNICAL AGRICULTURAL EDUCATIONAL SYSTEM



B- SUGGESTED TECHNICAL AND VOCATIONAL AGRICULTURAL EDUCATIONAL SYSTEM.

## APPENDIX D

### Attachment B

(ISAI Subproject Evaluation)

#### Suggested Revisions to the Logical Framework of the ISAI Subproject Design

As projects progress towards expected goals, reassessments of the most effective way of achieving these goals are often necessary, and adjustments must be made in objectives and techniques in terms of experience acquired by the managing organization within the country or of changes in conditions in the country. The new information base formed by these factors should serve to facilitate continuing development and management of the project.

Experience acquired so far with the ISAI subproject in application of the foregoing logic has resulted in insights concerning the following matters: a) YARG's real needs for trained manpower in agriculture; b) YARG's policies and planning processes for rural development; c) the need for technical and vocational agricultural education components in Yemen's educational system; d) actions required for achieving the goal and purposes of the ADSP. Furthermore this experience indicates that the multifaceted educational base established at the Ibb school and the planning and implementation abilities of the ISAI subproject staff should be expanded beyond the limits of the Ibb institute in the interest of improving Yemen's overall technical and vocational agricultural education system.

In the light of the foregoing statements, the following changes in the logical framework of the subproject design appear to be necessary.

A) The subproject title should be changed to "Technical and Vocational Agricultural Education

Development (TVAED) Subproject."

B) Because of certain constraints explained in various sections of the foregoing report it is clear that the overall project objectives cannot be achieved within the original time frame. This subproject and others have shown that in Yemen it is particularly difficult to set and achieve goals within a specific time frame, the basic problem being the one which this subproject was designed to solve: the lack of skilled Yemeni personnel to implement subprojects. Therefore the life of this subproject should be extended from five to at least ten years.

C) While the subproject goal, "to increase income and improve the quality of life for rural inhabitants," should remain unchanged, the following points need to be considered.

Achievement of this goal will be measured in terms of:

- Acceptance, adaptation and practice by farming communities of improved and advanced agricultural technologies and production methodologies.
- Availability to farmers at affordable prices and use by them of such essential agricultural inputs as fertilizers, pesticides, improved seeds, tools, equipment, etc.
- Increase in the quantity and improvement of the quality of land for agricultural production.
- Improvement in the quantity and quality of agricultural production so that food becomes more abundant locally and imports are reduced.
- Establishment and implementation of an agricultural marketing system and price control policies.
- Availability of an adequate number of qualified and trained workers with middle- and field-level management skills in agriculture for employment in rural areas to guide farming communities in the acquisition and use of modern agricultural technologies and production methodologies.

Means of verifying the achievement of the goal are the records of the Ministry of Agriculture and Fisheries,

the Ministry of Commerce and Trade, and the YARG development plan, as well as assessments of the agricultural sector.

Important assumptions for the achievement of goal targets are as follows:

- Assessments of needs and surveys of rural communities are carried out, and findings are analyzed, categorized and incorporated into the establishment of extension, research and educational programs.
- Extension service offices and research stations are established within farming areas and staffed with capable, trained workers.
- Graduates of the technical and vocational agricultural schools are employed in the agricultural sector as extension agents or in related activities, and are working in farming areas.
- Advanced and modern agricultural technologies, inputs and knowledge are made available to extension agents for dissemination in rural communities.

D) The purpose of the subproject is to establish the basic foundations needed for the formulation of an operational, relevant, well structured, self-contained technical and vocational agricultural education system capable of serving the needs of YARG and its rural sector through qualified manpower with middle- and field-level skills.

Conditions which will indicate achievement of this purpose (end-of-project status) are as follows:

1. Technical agricultural secondary schools, i. e. Ibb, Surdud and the veterinary school, are fully developed and upgraded with student enrollment and output capacity in line with those indicated in the original design. This means that the schools are (a) fully staffed with well-qualified Yemeni teachers; (b) fully staffed with well-qualified Yemeni administrative support employees; (c) supplied with curricula, Arabic textbooks, student handouts, training techniques and facilities designed to provide students with educational

programs relevant to Yemeni agricultural conditions and responsive to the needs of the YARG.

2. Field surveys needed for establishing a vocational agricultural secondary school and a higher institute of agriculture (2-3 years after senior secondary school; see Figure 1, Appendix D) are completed, and design and preimplementation documents are in final form.

Means of verifying end-of-project status are school records, Ministry of Education records, and contractors' records.

Assumptions relating to the achievement of the purpose are as follows:

- YARG will continue to view agricultural education as an important part of the educational system in Yemen and highly beneficial to the population.
- It will be possible to recruit an adequate number of students motivated to enter a vocation in the field of agriculture.
- An adequate number of counterparts possessing academic credentials for graduate study in agriculture will be identified and assigned to each of the three schools, will be interested in furthering their knowledge, and will be trained in designated agricultural specialties.
- An adequate number of MOE employees with academic credentials for graduate study in agricultural education management and administration will be identified and sent abroad for training.
- Support for improving educational methods, subject matter, student attendance and staff development will be available to the three schools.
- The amount of agricultural land assigned to the three schools will be sufficient to enable them to provide each student with practical experience and produce a significant portion of required animal feed.
- YARG will support Yemeni subproject staff members as stated in the contract.

- YARG will support expatriate staff involved in various subproject activities as stated in the contract.

C. The principal outputs of this subproject will be as follows:

1. Outputs regarding the three technical secondary schools:
  - a. Staff trained.
  - b. Educational facilities completed and fully equipped.
  - c. Teaching materials developed.
  - d. Curricula created for certificate level.
  - e. Administrative procedures developed.
2. Outputs regarding the vocational schools and the higher institute of agriculture:
  - a. Locations identified.
  - b. Student capacity and enrollment determined.
  - c. Funding source(s) for constructing these schools identified.
  - d. List of required educational equipment and supplies established.
  - e. Curricula established.
  - f. Quality and quantity of teaching staff determined; training procedures for staff developed.

The magnitude of outputs will be measured in terms of the following points:

- Teaching and administrative staff members are trained and assigned to their respective positions.
- Teaching, laboratory and farm equipment and supplies of appropriate quality and in sufficient quantities are delivered and in use.
- Each school has an organizational structure and management procedures responsive to its student body's needs.
- Short courses and in-service training programs for farmers and extension workers are fully developed and in operation.

- Programs for creating a climate conducive to women's development are in operation.
- Long term links are established between YARG and CID universities.
- Each school has an operational school farm integrated into its curriculum and providing practical training relevant to YEMEN's experience.
- Design and preimplementation documents for the vocational school and the higher institute of agriculture are approved and a contract for carrying them out is signed.

Means of verifying the achievement of outputs are school records; records of AID and contractors; MOE records; internal evaluation reports; external evaluation reports.

Important assumptions concerning the achievement of outputs are as follows:

- The MOE is able to develop and commit a budget for operating each of the three schools and insuring program support at the level required by new and growing educational institutions.
- AID funds remain available.
- The community will accept and support all nonacademic and informal educational programs.
- Programs for women's development will be socially and officially accepted and implemented.
- Yemeni staff members will be recruited and prepared for training abroad.

F. The inputs required for the proper development of the subproject remain the same as those stated in the original logical framework. Means of implementation and assumptions regarding these inputs, however, cannot be formulated in this report without the completion of a detailed field study and extensive negotiations with YARG officials.

**APPENDIX E**

**Horticulture Improvement and Training (HITS) Subproject**

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Table 1

**CURRENT APPROVED ACTIVITIES, HITS SUBPROJECT**

<b>FUNCTIONAL AREA</b>	<b>ACTIVITY</b>	<b>APPROVAL DATE</b>	<b>SOURCE</b>	<b>PLANNED PHASE OUT DATE</b>	<b>PURPOSE STATEMENT</b>	<b>STATUS STATEMENT</b>
arouba	a. Construction of facilities	5/81	Core PP	12/89	Planned for living quarters, office and classroom.	Plans drawn, bids received, contractor selected.
	b. Horticulture and training activities	5/81	Core PP	12/89	Citrus nursery and training station for farmers and extension agents.	Nursery lining out citrus seedlings, budding, and training activities are taking place. (Nov. training course is scheduled.)
	c. Equipment procurement.	5/81	Core PP	12/89	Purchase of farm machinery, pest control equipment and station facilities.	Orchard tractor arriving in September. Most other equipment has been ordered.

1-19

Table 1

CURRENT APPROVED ACTIVITIES, HITS SUBPROJECT

FUNCTIONAL AREA ACTIVITY		APPROVAL DATE	SOURCE	PLANNED PHASE OUT DATE	PURPOSE STATEMENT	STATUS STATEMENT
Al Irra	a. Construction of facilities	5/81	Core PP	12/89	Planning for living quarters, training facilities, shop, and nursery facilities.	Plans developed, tender documents drawn up, bids received and opened, contractor selected. Construction underway
	b. Horticulture activities	5/81	Core PP	12/89	Deciduous fruit tree nursery and training station for Yemeni farmers and extension agents.	Citrus motherblock planted (300 trees). 7,500 will be budded in Jan-Feb. 84. 90 deciduous trees to be transplanted in Dec. 83. 50,000 deciduous seeds to be planted
	c. Equipment procurement.	5/81	Core PP	12/89	Purchase of farm machinery, irrigation equipment, pest control equipment and station facilities.	80% of machinery is either ordered or shipped.

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Table 1

CURRENT APPROVED ACTIVITIES, HITS SUBPROJECT

FUNCTIONAL AREA	ACTIVITY	APPROVAL DATE	SOURCE	PLANNED PHASE OUT DATE	PURPOSE STATEMENT	STATUS STATEMENT
General operations	a. Project Management	12/82	HITS PP	12/89	Provide HITS Subproject management and university liaison	CSPUP, Pomona has subproject director in place.
	b. Recruiting	12/82	HITS PP	12/89	Fill approved project personnel positions.	Team leader in field Recruiting all other positions.
	c. Clerical	12/82	HITS PP	12/89	Provide on campus secretarial and record keeping function.	Secretary/bookkeeper is hired and functioning.
	d. Technical back-stopping	12/82	HITS PP	12/89	Provide technical backup for field team.	Technical consultant identified, in place and functioning.
	a. Field Coordination	5/81	Core PP	12/89	Provide coordination of all HITS field activities with CID/Y and MAF.	Team leader in place.
	b. Horticulture Improvement	10/81	Core AWP	12/89	Assign personnel with expertise needed to increase fruit production.	Jarouba specialist and technician in place and functioning. Al Irra technician in place and functioning.
	c. Training and Extension	5/81	Core AWP	12/89	Provide short course training on horticulture practices to Yemeni farmers.	Short course in budding designed and implemented
	d. Institution-	5/81	Core AWP	12/89	Assist the MAF to become self-sufficient in horti-	Counterparts have and ar being assigned to HITS

10-11



Table 1

## CURRENT APPROVED ACTIVITIES, HITS SUBPROJECT

FUNCTIONAL AREA ACTIVITY		APPROVAL DATE	SOURCE	PLANNED PHASE OUT DATE	PURPOSE STATEMENT	STATUS STATEMENT
General operations (continued)	e. Plant Protection	12/82	HITS PP	12/89	Provide Plant protection measures (disease and pest control and/or eradication.	Plant pathologist and entom gist will be in place.
	f. Extension	5/82	Core AWP	12/89	Develop extension materials.	Tree planting guide designe and printed.
	g. Linkages	5/81	Core AWP	12/89	Coordinating linkages with other CID projects (Ibb graduates, PETS extension, DLRC and Faculty of Ag.	One Ibb technician receivin six months training at Cal Poly, Pomona.
CP-1	a. Field Trans- portation	5/81	Core PP	12/89	Transportation of field team to horticultural sites using vehicles and drivers.	Three vehicles have been purchased and shipped. Four more are on order from States.
	b. Field Clerical	5/81	Core PP	12/89	Provide secretarial support for field team members.	One half-time clerical position assigned to HITS.
	c. Shipping of household items	5/81	Core PP	12/89	Shipment of field team's household items from U.S. to Yemen.	Items for recruited team members shipped.
	d. Dependent children (students)	5/81	Core PP	12/89	Providing education oppor- tunities for dependent children (travel, tuition, etc.)	All students at elementary, high school and college level supported.
	e. Housing	5/81	Core PP	12/89	Housing for each team member.	Housing is being provided for each team member and family.

Table 2

Current Program/Subproject Staffing Status:  
FY 1983-84  
 Horticulture Subproject

Functional Area	Position Title	APPROVAL Date	Source	Incumbent Name	CID Approval Date	AID Approval Date	YARG Approval Date	Scheduled End of Tour	Position Phase Out Date	Status Report
Jarouba	a. Tropical Subtropical Hort. Spec.	5/81	Core PP	J. Issa				10/13/83	1/90 (7)	Located at the Jarouba Station
	b. MAF Counterpart Tropical Subtropical Hort. Spec.		MAF	Unnamed						MAF will name counterpart when CID specialist arrives in Yemen.
	c. Tropical-Subtropical Hort. Tech.	5/81	Core PP	A. Aziz Mutwali				7/13/84	1/86 (3)	T.C.P. located at Jarouba Station on local currency.
	d. MAF Counterpart Tropical-Subtropical Hort. Tech.		MAF	Unnamed						MAF will name counterpart when CID technician arrives in Yemen.
	e. Tropical-Subtropical Extension Specialist	12/82	HITS PP	Unnamed					1/85 (2)	Recruiting. Based Hodeidah Reg. Ag. Office and Jarouba
	f. MAF Counterpart Tropical-Subtropical Extension Spec.		MAF	Unnamed						MAF will name counterpart when CID Extension Spec. arrives in Yemen.

Table 2

Current Program/Subproject Staffing Status:  
 FY 1983-84  
 Horticulture Subproject

Functional Area	Position Title	POSITION APPROVAL		Incumbent Name	INCUMBENT APPROVAL DATES			End of Tour	Position Phase Out Date	Status Report
		Date	Source		CID	AID	YARG			
AL IRRA	a. Deciduous Hort.Tech.	5/81	Core PP	Maysar Z. Mahmud				1/87	1/87 (4)	T.C.P. located at Al Irra (T.C.P.) on local currency.
	b. MAF counterpart deciduous hort. tech.	4/83	MAF	Mohammed Al Owa						Located at Al Irra.
	c. Deciduous extension spec.	12/82	HITS PP						1/85 (2)	Recruiting. Based at Al Irra and MAF.
	d. MAF counterpart deciduous extension spec.			Unnamed						MAF will name counterpart when specialist arrives in Yemen.
	e. Extension Specialist-Tihama	4/83	HITS PP	Thomas Branson (awaiting confirmation)						

Table 2

Current Program/Subproject Staffing Status:  
 FY 1983-84  
 Horticulture Subproject

Functional Area	Position Title	POSITION APPROVAL		Incumbent Name	INCUMBENT APPROVAL DATES			End of Tour	Position Phase Out Date	Status Report
		Date	Source		CID	AID	YARG			
GENERAL OPERATIONS	a. Project Director (0.75 FTE)	12/82	HITS PP	M. B. Belcher				1/90	1/90 (7)	Located at Cal Poly Pomona
	b. Clerical (0.5 FTE)	12/82	HITS PP	D. Nolte				1/90	1/90 (7)	Located at Cal Poly Pomona
	c. Technical Backstopping (0.25 FTE)	12/82	HITS PP	E. Barnes				1/90	1/90 (7)	Located in Fruit Industries CSPUP Pomona
	d. Horticulture Spec.	5/81	Core PP	D. Price				3/84	1/90 (7)	Team Leader in YAR
	e. Team Leader	3/82	MAF	Ali Barati						Hort. Office MAF, Sanaá
	f. MAF Counterpart	3/83	MAF	Jamil Moh'd Ahmed						Hort. Office MAF, Sanaá

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Table 2

Current Program/Subproject Staffing Status:  
 FY 1983-84  
 Horticulture Subproject

Functional Area	Position Title	POSITION APPROVAL		Incumbent Name	INCUMBENT APPROVAL DATES			End of Tour	Position Phase Out Date	Status Report
		Date	Source		CID	AID	YARG			
GENERAL OPERATIONS	f. Plant Pathologist	12/82	HITS PP					1/90 (7)	Recruiting. Will be based at MAF and Al Irra.	
	g. MAF Counterpart Plant Pathol.			Unnamed					Will be named wh Plant Pathologis arrives in Yemen	
	h. Entomologist	12/82	HITS PP					1/87 (4)	Recruiting. Will be based at Al Irra MAF.	
	i. MAF Counterpart Entomol.			Unnamed					Will be named wh entomologist arr	
	j. Laboratory technician	12/82	HITS PP	K. Holman (pending YARG approval)				1/87 (2)	Recruiting. Will work at MAF plan protection department.	
	k. MAF Counterpart Lab. Tech.			Unnamed					MAF will name wh technician arriv Yemen.	
	l. Farm Mechanic	12/82	HITS PP	Ahmed K. Haider				1/87 (4)	Hired for Jaroub station and in g	

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Table 3  
Implementation Schedule  
 FY-1983-84  
 Subproject HITS

Functional Area	Activity	CID	Responsibility		Approval Date	Approval Source	Completion Date Quarter	Measurement of Accomplishment or Output
			AID	YARG				
Jarouba	Budding project	X		X	5/83	Horticulture Staff Jarouba	1	10,000 citrus seedlings budded by November 15, 1983.
	Budding project	X		X	5/83	Horticulture Staff Jarouba	2	30,000 citrus seedlings budded by April 30, 1984.
	Construction of facilities	X	X	X	12/82	HITS PP	2	Office, classroom, residences completed by March 1984.
	Planting citrus seeds	X		X	5/83	Horticulture Staff Jarouba	3	170,000 citrus seeds planted by June 1984.
	Lining out of citrus seedlings	X		X	5/83	Horticulture Staff Jarouba	3	73,000 citrus seedlings. Lining out started Oct. 83. Completed April 84.
	Irrigation planning	X		X	5/83	Horticulture Staff	4	Irrigation methods and scheduling will be investigated and upgraded.

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Table 3

Implementation Schedule  
FY-1983-84  
Subproject HITS

Functional Area	Activity	CID	Responsibility		Approval Date	Approval Source	Completion Date Quarter	Measurement of Accomplishment or Output	
			AID	YARG					
Al Irra	Planting seeds for budding	X		X	5/83	Horticulture Staff Al Irra	1	20,000 apple seeds and 30,000 peach seeds planted by December 30.	
	Transplant deciduous trees	X		X	5/83	Horticulture Staff Al Irra	1	900 deciduous trees moved by December 15.	
	Training program for deciduous fruit production	X		X	12/82	HITS PP	2	Short course at Al Irra station completed by February 28, 1984.	
	Budding program of imported seedlings	X		X	12/82	HITS PP	2	3,000 peach seedlings and 3,200 apple seedlings budded completed by March 30, 1984.	
	Budding program seedlings planted Dec. 83	X		X	5/83	Horticulture Staff Al Irra	3	Approx. 12,000 peach and 12,000 apple seedlings budded by September 1984.	
	Construction of station facilities	X		X	X	12/82	HITS PP	4	Office, classroom, residence maintenance shop and storage completed by July 30, 1984.
	Purchase new land				X	1/83	MAF	4	Three hectares of adjacent land is to be purchased by MAF to expand Al Irra Station.

E-11

Table 3  
Implementation Schedule  
 FY-1984  
 Subproject HITS

Functional Area	Activity	Responsibility			Approval		Completion Date Quarter	Measurement of Accomplishment or Output
		CID	AID	YARG	Date	Source		
GENERAL OPERATIONS	Develop an institutional plan for HITS	X		X	6/83	JAFR	1	Plan developed, implementation begun.
	Plant Protection Program developed for fruit production	X		X	12/82	HITS PP	1	MAF Plant Protection Department will have outline of program by November 1983.
	Short Course Deciduous Horticulture Training	X		X	12/82	HITS PP	2	First course completed at Al Irra Plans for second course also completed.
	Training MAF personnel for tree importing and sales.	X		X	12/82	CID Hort. Project	1	MAF personnel available for deciduous and citrus tree sale to farmers.
	Short course Tropical/Sub-tropical Hort. Training	X		X	12/82	HITS PP	1	Jarouba Station Short Course completed.

E-12

Table 3  
Implementation Schedule  
 FY-1984  
 Subproject HITS

Functional Area	Activity	Responsibility			Approval		Completion Date Quarter	Measurement of Accomplishment or Output
		CID	AID	YARG	Date	Source		
GENERAL OPERATIONS (con't)	Short Course Training in Plant Protection.	X		X	12/82	HITS PP	2	Short course at Al Irra for agriculture inspection will be completed.
	Short Course Training in Nursery Mgmt.	X		X	11/2/82	HITS PP	2	Nursery management course will be completed at Al Irra.
	Approx. 30,000 deciduous trees imported and sold.	X		X	4/83	MAF letter	2	Deciduous trees sold and money will be placed in Fruit Tree Improvement Fund.
	Approx. 30,000 citrus trees imported and distributed.	X		X	4/83	Action memo	2	Citrus trees will be imported and distributed.
	Data Collection	X		X	6/83	JAFR	2	Forms will be developed and data on prices and distribution will be collected.
	Short Course Tropical/Sub-tropical Hort. Training.	X		X	12/82	HITS PP	2	Jarouba Station short course will be completed.

E-13

Table 3

Implementation Schedule  
 FY-1984  
 Subproject HITS

Functional Area	Activity	Responsibility			Approval		Completion Date Quarter	Measurement of Accomplishment or Output
		CID	AID	YARG	Date	Source		
GENERAL OPERATIONS	Formal U.S. training for B.S./Hortic.	X	X	X	12/82	HITS PP	3	Five trainees identified and English language training started.*
	Formal U.S. train. B.S./Ag. Inspection	X	X	X	12/82	HITS PP	3	Three trainees identified and English language training started.*
	Formal U.S. train. as Ag Inspectors for 6 months.	X	X	X	12/82	HITS PP	3	Five trainees identified and English language training started.
	Formal U.S. training for Extension Spec. in Hort. for 3-6 weeks.	X	X	X	12/82	HITS PP	3	Three trainees identified and English language training started.
	Formal U.S. training for MS & PhD in Horticulture	X	X	X	12/82	HITS PP	3	One trainee identified for M.S. program and one for PhD program in Horticulture. English language training started*
	Formal U.S. training for MS & PhD in Ag. Inspection.	X	X	X	12/82	HITS PP	3	One trainee identified for M.S. program and one for PhD program in Agriculture Inspection

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\*Because of the English language requirements, most of the trainees identified during the first and second quarters of the 1983/84 work plan will not commence formal training in the U.S. until the 1984 or 1985 school year.

Table 3

Implementation Schedule  
 FY-1983-84  
 Subproject HITS

Functional Area	Activity	Responsibility			Approval		Completion Date Quarter	Measurement of Accomplishment or Output
		CID	AID	YARG	Date	Source		
GENERAL OPERATIONS	Short Course Training in Horticulture	X	X	X	12/82	HITS PP	3	Short course training in deciduous horticulture completed at Al Irra.
	Develop a plan to extend the HITS work plan to coincide with YARG fiscal year (Jan-Dec) and explore the possibility of integrating one project work plan format with MAF work plan format.	X	X	X/	6/83	JAFR	4	Plan developed and possibility of format integration explored.

EIS

Table 4

Horticulture Improvement and Training Subproject

First Work Plan  
January 1, 1983-September 30, 1983

Budget Summary  
Dollar Budget

I.	Salaries and Wages	\$ 220,314
II.	Indirect Costs	223,723
III.	Consultants	4,500
IV.	Allowances	145,530
V.	Travel and Transportation	453,385
VI.	Expendable Equipment and Supplies	38,750
VII.	Non-Expendable Equipment and Materials	584,650
VIII.	Participant Training	22,200
IX.	Other Direct Costs	<u>22,250</u>
	Subtotal, Dollar Budget	1,715,302
	Contingency, 5%	<u>85,765</u>
	TOTAL DOLLAR BUDGET	\$1,801,067

LOCAL CURRENCY BUDGET

I.	Salaries and Wages	67,201
II.	Operations	190,875
III.	Travel and Per Diem	33,357
IV.	Training	3,500
V.	Expendable Equipment and Materials	59,975
VI.	Non-Expendable Equipment, Materials and Buildings	988,824
VII.	Other Direct Costs	<u>15,000</u>
	Subtotal, Local Currency Budget	1,358,732
	Contingency, 5%	<u>67,937</u>
	TOTAL LOCAL CURRENCY BUDGET	1,426,669
	GRAND TOTAL	\$3,227,736

Table 4 (continued)

Dollar Budget for First Work Plan  
January 1, 1983 - September 30, 1983

U S  
Dollars

I. Salaries and Wages

A. On Campus

1. Home Office	
Subproject Director, .5 FTE	16,500
Secretary, .5 FTE	5,250
Technical Backstop, .25 FTE	7,500
2. Three TDY Specialists (36 days each at \$175/day)	<u>18,900</u>
Subtotal	\$48,150

B. Off Campus

1. Extension Specialist and Team Leader, 1.0 FTE (9 months)	33,000
2. Extension Specialist, 1.0 FTE (3 months)	11,000
3. Deciduous Horticulturist, 1.0 FTE (3 months)	11,000
4. Tropical-subtropical Horticulturist, 1.0 FTE (9 months)	24,000
5. Plant Pathologist, 1.0 FTE (3 months)	11,000
6. Entomologist, 1.0 FTE (3 months)	11,000
7. Lab Technician, 1.0 FTE (3 months)	5,500
8. Mechanic, 1.0 FTE (9 months)	<u>16,500</u>
Subtotal	\$123,000

C. Fringe Benefits

1. On campus, Academic (28.2% x 42,900)	12,098
2. On campus, Classified (31.5% x 5,250)	1,654
3. Off Campus, Academic (28.2% x 101,000)	28,482
4. Off Campus, Classified (31.5% x 22,000)	<u>6,930</u>
Subtotal	49,164

TOTAL SALARIES AND WAGES

\$220,314

Table 5  
Horticulture Improvement and Training Subproject  
 Dollar Budget  
 October 1, 1983-September 30, 1984

J - Al Jarouba  
 I - Al Irra  
 G - General

\$                    \$

I. Salaries and Wages

A. On Campus

1. Home Office

a. Subproject Director (.5 Pos) G-1	23,166
b. Secretary (.5 Pos.) G-1	7,920
c. Technical Backstop (.25 Pos)	8,800
2. TDY Support (168 days at \$175/day)	<u>29,400</u>

Subtotal On Campus Salaries and Wages

69,286

B. Off Campus

1. Horticulture Specialist J-1 (Tropical-Subtropical)	26,000
2. Horticulture Specialist I-.5, G-.5 (deciduous)	46,200
3. Horticulture Technician J-1 (Tropical-Subtropical)	24,000
4. Plant Pathologist J-.5, I-.5	46,200
5. Entomologist J-.5, I-.5	46,200
6. Lab Technician J-.5, I-.5	24,000
7. Agri. Extension (Deciduous) I-1	44,000
8. Agri. Extension (Trop-Subtrop)	44,000
9. Mechanic J-.5, I-.5	<u>28,000</u>

Subtotal Off Campus Salaries

328,600

C. Fringe Benefits

1. On Campus (28.2-0/0 x \$69,286) G-1	19,535
2. Off Campus (28.2-0/0 x \$328,600)	92,665

Subtotal Fringe Benefits

112,200

Total Salaries and Wages

510,086

Table 5 continued

	\$	\$
II. <u>Salaries and Wages</u>		
A. On Campus (43-0/0 x \$69,286) G-1	29,793	
B. Off Campus (24-0/0 x \$328,600 J-.6, I-.4	78,864	
C. CID G + A (10-0/0 x \$397,886 G-1	39,788	
Total Indirect Costs		148,445
III. <u>Consultant Fees - Training Instructor</u>		
A. 40 days at \$225.00 G-1	9,000	
IV. <u>Allowances</u>		
A. Post Differential (25-0/0 x \$328,600) J-.5, I-.5	82,150	
B. Cost of Living (6-0/0 x \$328,600) J-.5, I-.5	19,716	
C. Sunday Pay Diff. (6-0/0 x \$328,600) J-.5, I-.5	16,430	
D. Education Allowance (12 Fulltime x \$5,250) J-.3, I-.7	63,000	
E. Move-In, Move-Out (3 x \$11,500) J-.5, I-.5	32,500	
F. Household Storage (9 x \$1,500/Yr.) J-.4, I-.6	13,500	
G. Temporary Living Allowance (3 x 12 Days x \$127) J-.5, I-.5	2,667	
Total Allowance		231,868
V. <u>Travel and Transportation</u>		
A. Per Diem		
1. Domestic - \$75/day		
a. 40 days x \$75 G-1	3,000	
b. Arabic Language Training (3 x 21 DAYS X \$75) J-.5, I-.5	4,725	
c. OSU Orientation (18 days x \$75) J-.5, I-.5	1,350	
d. Proj. Director Workshop (8 x \$75) G-1	600	
e. Training Instructor for Yemeni visitors (40 days) J-.5, (I-.5	3,000	

2. International - \$105/day	\$	\$
a. TDY-Technical (168 x \$105) J-.33, II-.33, G-.33	17,640	
Subtotal Per Diem		30,315
B. Travel		
1. Domestic, \$400/Trip		
a. 22 trips at \$400 J-.5, I-.5	8,800	
b. Arabic Language Training (3 x \$400) J-.5, I-.5	1,200	
c. Project Director Recruiting (6 x \$400) G-1	2,400	
d. Project Director Workshop G-1	800	
2. International, \$2,500/Rd trip		
a. 6 one-way, 8 rd. trip J-.33, I-.33, G-.33	27,500	
Subtotal Travel		40,700
C. Transportation		
1. Commodities	272,884	
2. Household Goods	6,600	
Subtotal Transportation		279,484
Total Per Diem, Travel and Transportation		350,499
VI. <u>Expendable Equipment and Supplies</u>		
A. On Campus		
1. Office Equipment and Supplies G-1	3,000	
Subtotal on Campus Equipment/ Supplies		3,000
B. Off Campus		
1. Office Supplies J-.5, I-.5		
2. Farm Supplies, J-.5, I-.5	25,000	
3. Teaching Materials J-.5, I-.5	6,000	
4. Printing J-.5, I-.5	1,000	
5. Miscellaneous Supplies, J-.5, I-.5	800	
Subtotal Off Campus Expendable Equipment and Supplies		37,800
Total Expendable Equipment and Supplies		40,800

VII. <u>Non-Expendable Equipment and Materials</u>	\$	\$
A. On Campus		
1. Equipment and Materials G-1	2,000	
Subtotal on Campus Non-expendable Equipment and Materials		2,000
B. Off Campus		
1. Vehicles, 1 Pickup I-1	10,000	
2. Household Furnishings, 8 families at \$6,000 J-.5, I-.5	48,000	
3. Equipment and Materials		
a. Al Irra (see Annex I)	145,075	
b. Jarcuba (see Annex II)	77,425	
c. Office G-1	5,000	
d. Plant Protection Equip- ment J-.5, I-.5	25,000	
4. Housing Maintenance and Equip- ment Maintenance J-.5, I-.5	20,000	
5. Training Equipment-Audio Vis. and Audio J-.5, I-.5	65,000	
Subtotal Non-Expendable Equipment and Materials		395,500
 Total Non-expendable Equipment and Materials		 397,500

VII. Participant Training

A. Degree		
1. Horticulture		
a. B.S. (5) -.5 Year, J-.5, I-.5	55,500	
b. M.S. (1) -.5 Year, J-.5, I-.5	11,100	
c. Ph.D. (1) -.5 Year, J-.5, I-.5	11,100	
2. Plant Protection		
a. B.S. (3) -.5 Year, J-.5, I-.5	33,300	
b. M.S. (1) -.5 Year, J-.5, I-.5	11,100	
c. Ph.D. (1) -.5 Year, J-.5, I-.5	11,100	
Subtotal Degree		133,200

B. Short Course, U.S.	\$	\$
1. Horticulture (1 for 6 mos.) J-.5, I-.5	18,000	
2. Plant Protection (1 for 6 mos.) J-.5, I-.5	18,000	
3. Travel, 2 at \$2,000 J-.5, I-.5	4,000	
Subtotal Short Course		40,000
Total Participant Training		173,200

IX. Other Direct Costs

A. Communications		
1. Mail Pouch G-1	2,000	
2. Telex G-1	2,000	
e. Telephone G-1	2,400	
Subtotal Communication		6,400
B. Arabic Language Study		
1. Tuition J-.5, I-.5	9,000	
Subtotal Arabic Language Study		9,000
Total Other Direct Costs		<u>15,400</u>
Total Dollar Budget		<u>\$1,876,798</u>

Table 5 Continued  
Horticulture Improvement and Training Subproject  
 Local Currency Budget  
 October 1, 1983-September 30, 1984

	\$	\$
<b>I. <u>Salaries and Wages</u></b>		
<b>A. Office</b>		
1. Secretary (0.5 pos.)	7,000	
2. Translator (0.5 pos.)	7,855	
Subtotal		14,855
<b>B. Motor Pool and Warehouse</b>		
1. Drivers (2 @ \$12,000)	24,000	
Subtotal		24,000
<b>C. Technicians</b>		
1. One Jarouba	22,000	
2. One Al Irra	22,000	
Subtotal		44,000
<b>D. Total A+B+C = 82,855</b>		
1. General Increase 10%	8,286	
2. Ramadan Bonus (8.5%)	7,050	
3. Severance Pay (8.5%)	7,049	
Subtotal		22,395
<b>Total Salaries and Wages</b>		<b>105,240</b>
<b>II. <u>Operations</u></b>		
<b>A. Office</b>		
1. Utilities	1,000	
2. Communications	3,000	
3. Rent	4,000	
4. Maintenance	2,000	
5. Printing	12,000	
Subtotal		22,000

	\$	\$
B. Vehicles		
1. Gasoline and oil	40,000	
2. Insurance and Licenses	12,000	
3. Spare Parts and Tires	12,000	
4. Outside Service	3,000	
5. Transporting of Trees	12,000	
Subtotal		79,000
C. Housing		
1. Rent, 8 families @ 22,500/year	180,000	
2. Utilities	16,000	
3. Maintenance	3,000	
Subtotal		204,000
D. Warehouse		
1. Maintenance	2,000	
2. Road and Yard	1,000	
3. Lighting	500	
Subtotal		3,500
Total Operations		308,500

### III. Travel and Per Diem

A. Travel		
1. Domestic Travel (150x\$100)	15,000	
2. International (1 trip)	2,475	
Subtotal		17,475
B. Per Diem		
1. Domestic (167 days x \$105)	17,535	
2. International (10 days x \$96)	960	
Subtotal		18,495
C. Rest and Recuperation		
1. 20 people /2 \$1,670	33,400	
Subtotal		33,400
D. Evacuation (medical) 2 @ \$3,000	6,000	
Subtotal		6,000
Total Travel and Per Diem		75,370

	\$	\$
IV. <u>Training</u>		
A. English Language- Participants	20,000	
B. Arabic Language - Tech Staff	4,000	
Total Training		24,000
V. <u>Expendable Equipment and Materials</u>		
A. Office		
1. Supplies	2,000	
2. Equipment	1,000	
Subtotal		3,000
B. Warehouse	1,000	
C. Training	12,000	
D. Irrigation	10,000	
E. Farm Supplies	10,000	
F. Lab Supplies	5,000	
G. Jarouba Architect Fees	5,000	
Subtotal		43,000
Total Expendable Equipment and Materials		46,000
VI. <u>Non-Expendable Equipment Materials-Building</u>		
A. Al Irra Station (Annex I-b)	661,281	
B. Jarouba Station (Annex II-b)	321,100	
C. Office Equipment	5,000	
Total Non-expendable Equip. Material - Bldg.		987,381
VII. <u>Other Direct Costs</u>		
A. Pouch	2,000	
B. Communication	1,000	
C. Printing	1,000	
D. Data Collection & Analysis	3,000	
E. Generator Fuel	22,000	
Total Other Direct Costs		29,000
Total Local Currency		1,575,491
GRAND TOTAL - DOLLAR AND LOCAL CURRENCY BUDGETS		3,452,289

Table 6

Expenditure Report

January 1983 - September 1983

Dollars

	Jarcuba	Al Irra
I. Salaries and Wages	15,388.00	18,036.44
II. Operations	32,879.12	12,990.11
III. Travel and Per Diem	1,986.67	-0-
IV. Training	-0-	-0-
V. Expendable Equipment and Supplies	-0-	-0-
VI. Non-expendable Equipment	5,937.11	296,479.33
VII. Other Direct Costs	-0-	-0-
VIII. Contingency	-0-	-0-
IX. Other	-0-	-0-
X. Total	56,190.89	327,505.88

## APPENDIX F

### FINANCIAL SUMMARY

#### 1. ADSP Financial Input

##### Dollar Account

Up to the end of FY 1983 (September 30, 1983), total expenditures through CID on the ADSP dollar account were as follows:

Table 1. Dollar Expenditures - (8/80-9/83)

<u>Subproject</u>	<u>\$000</u>	<u>% *</u>
ISAI	4,642.9	42.1
Core	5,479.1	49.7
HITS	544.7	4.9
PETE	367.1	3.3
TOTAL	11,033.9	100.0

Core accounted for 49.7% of the total dollar expenditures, and the ISAI for 42.1%. The HITS and PETS together accounted for just 8.2%.

The breakdown of direct and indirect costs is given in Table 2. Personnel costs accounted for 51.8% of total direct costs, travel for 11.5%, equipment and supplies 29.3%, participant training 4.8% and other costs 3.8%. Indirect costs as computed by CID totalled \$2,597,967, accounted for 3.12% of direct costs and 24% of total costs, the CID G & A accounting for \$690,653, or 26.6% of the direct costs with the rest accruing to the universities.

However, under the usual AID procedures, most on-campus salaries, fringe benefits, expendable and non-expendable materials, supplies and equipment would be allocated to the indirect cost heading. Allocating on-campus salaries and corresponding fringe benefits thus would reduce total direct costs by about \$1,228,250 (fringe benefits = 35% of salaries), to \$7,207,668 instead of \$8,435,918. This would then raise total indirect costs to \$3,826,217, which would be 53.1% of direct costs or 34.7% of total costs. On-campus expendable and non-expendable materials, supplies and equipment should also be transferred from the direct to the indirect heading, but the exact breakdown is not available from CID to do the calculation.

Table 2. Dollar Account Cost Breakdown

<u>Direct Costs</u>	\$000	%
Salaries On-campus	909.8	10.9
Salaries, Off-campus	2,348.6	28.2
Fringe Benefits	700.7	8.4
Allowances	260.3	3.1
Travel, Domestic	121.8	1.5
Travel, International	831.9	10.1
Transportation, Freight	626.9	7.5
Materials & Supplies	302.4	3.6
Nonexpendable Equipment	1,517.3	18.2
Participant Training	395.9	4.8
Other Direct Costs	319.9	3.8
Consultants	100.0	1.2
<b>Total Direct Costs</b>	<b>8,435.9</b>	<b>100.0</b>
<u>Indirect Costs</u>		
On-Campus	903.7	34.8
Off-Campus	1,003.6	38.6
CID G&A	690.7	26.6
<b>Total Indirect Costs</b>	<b>2,598.0</b>	<b>100.0</b>
<b>TOTAL DOLLAR COST</b>	<b>11,033.9</b>	<b>100.00</b>

Source: CID Quarterly Financial Report for period ending 30 September 1983.

Table 3. Local Currency Expenditure \$000

	CORE	ISAI	HITS	PETS	TOTAL	%
Salaries & Wages	906.2	223.6	50.6	0	1,180.4	29.8
Operations	255.7	164.6	60.6	38.5	1,119.4	28.2
Travel & Per Diem	126.3	53.1	31.1	2.1	213.0	5.4
Training	41.8	0	3.1	5.4	50.3	1.3
Exp. Equipment	84.8	66.3	18.8	2.1	172.0	4.3
Non-Exp. Equipment	60.3	34.2	291.1	33.8	419.4	10.6
Other Direct Costs	26.3	1.7	10.0	.2	38.2	1.1
Contingencies	6.4	0	2.9	0	9.3	0.2
Other	45.6	1.2	351.9	353.5	752.2	19.0
TOTAL	2,163.2	544.8	820.0	435.7	3,963.7	100.0

Source: AID/W

Table 4 gives the total dollar and local currency expenditures.

Table 4. Total Expenditures \$000

	<u>Dollar Account</u>	<u>Local Currency Ac</u>	<u>Total</u>
Core	5,479.1	2,163.2	7,642.3
ISAI	4,642.9	544.8	6,187.7
HITS	544.7	820.0	1,364.7
PETS	367.1	435.7	802.8
TOTAL	11,033.8	3,963.7	14,997.5

The ADSP total commitment is \$33.0 million, and expenditures to the end of FY 1983 of about \$15.0 million, represented 45.0% of the planned target. All the subprojects are behind schedule, due to delays in initiation and implementation, especially with the Core, HITS and PETS subprojects.

## 2. Problems

A major problem was the Core's lack of adequate management of its local currency budget in the first two years of the subproject. As discussed in the main report, USAID called for an audit, and this was carried out in mid-1982. As a result of this audit, and the appointment of a competent administrative officer in late 1982, it seems that this issue is under control.

The preproject audits at OSU and CSPUP in 1983 were not carried out in the usual AID manner. Instead of auditing all the contractors' involvement, the auditors examined only one year's accounts. USAID is not satisfied with the dollar accounting to date, and would like a complete audit of the whole ADSP dollar account. However, the universities are subject to state auditors and so any audit should have clear instructions from USAID. The evaluation team supports such an audit, as would the universities, to clear the apprehensions that seem to exist.

## Unit Costs

An analysis of the budget for the ISAI from May 1, 1982 to April 30, 1983 shows the total expenditure of \$1,682,765 on the dollar account and \$386,826 on the local currency account, for a total of \$2,069,591. In this period, the Ibb school had nine long-term experts; three U.S. hire and six TCPs. By subtracting all costs pertaining to TDYs, shipping, participant training, expendable and nonexpendable equipment, the cost

related to these nine experts comes out at \$1,417,000 for one year, or an average of \$157,000 per person year. Similarly, in 1983-84, the work plan budget estimate is for \$1,813,000 for ten experts, for an average cost per person year of \$181,300. A similar analysis of the Core 1983-84 budget, but including shipping of household effects, comes up with an annual unit cost of \$274,704 per long term U.S. person in Sanaa i.e. 15.5 person year for a total cost of \$4,257,919.<sup>1</sup>

These are very high unit costs, but apparently the YAR is for AID the most expensive plan for stationing long term AID financed experts. By contrast, current costs for the World Bank are \$120,000 per person year, but this does not involve the burden of a local office that Core/Sanaa maintains.

An obvious economy can be made in the Core/Sanaa establishment; the need for 58 full-time persons at the office and warehouse is highly questionable. Such a size rivals the complement at USAID, yet for a far limited purpose and usefulness.

Another economy can be made at OSU; 5.5 full-time positions are maintained on the Core administrative and logistic budgets, to back-up 5 full-time positions in Sanaa. Compared to other non-university contractors, it seems that OSU has twice the necessary staff for this purpose. It should not require 10.5 full-time people to administer 15.5 people in the field, plus a handful of Yemeni graduate students, and 3-4 TDY team.

Finally, there is the question of what does AID get for the \$690,653 it has paid to CID for G&A up to September 30, 1983. Other than paying the grant-obtaining and coordinating office for the member universities, it is difficult to see what unique work CID is doing that the universities are not already doing as far as interacting with AID is concerned. Certainly, CID's role, aside from the legal context, is almost invisible on the day-to-day working in Sanaa.

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<sup>1</sup> Summation of the following 1983-84 workplan headings:  
Dollar Account: Salary and Wages plus indirect costs and allowances plus Travel and Transportation plus Other Direct Costs.  
Local Currency: Core Salaries and Wages plus Operations plus Travel and Per Diem plus Other Direct Costs.  
Excludes DLRC, FOA Demo Form, Core expendables and non-expendables.

It has been recommended that the program direction roles be moved from OSU to CID/Tucson. If this occurs, then the salary budget for the on-campus Program Director, his assistant/secretary, and that of the off-campus Program Director (the Sanaá COP) and his assistant/secretary, can be abolished. Salaries and wages budgeted for these four positions in 1983-84 total \$202,000, plus \$47,348 for allowances, giving a total of \$249,348. At least the U.S.-based costs can be covered by CID's ADSP G&A revenue, which will exceed \$400,000 in FYS4.

**APPENDIX G**

**ADSP Problems, Issues and Suggested Solutions**

F-7

## APPENDIX G

### I. POSSIBLE SOLUTIONS TO PROBLEMS AND ISSUES

#### A. PROBLEM 1. ALTERNATIVE SOLUTIONS TO FUNDING

##### 1. Funding Alternative Number One

- a. The work plan as developed and approved by the three collaborators could be considered as the basis for funding approval.
- b. Upon approval of the work plan by the three parties, AID Yemen prepares a money amendment on an annual basis which when submitted to AID/W contracts office becomes the basis for issuance of a letter of credit for CID/T, which makes funds available. The funds made available should cover the last three quarters of the fiscal year and estimated funds for the first quarter of the following year.
- c. Authorization of these funds by AID's contracts office to CID/T also becomes the basis for CID/T to authorize the lead university to expend funds on a legal basis acceptable to auditors and university administrators. This is where the legal problems and contract contradiction now exist, and where the collaboration breaks down.

##### 2. Funding Alternative Number Two:

- a. CID/Y Chief of party and team leaders in collaboration with counterparts develop the first draft of the annual work plan early in the calendar year. (Draft one.)
- b. When the program director and subproject directors visit Yemen in March or April, they review and adjust Draft One collaboratively. (These adjustments become Draft Two.)
- c. Draft Two is reviewed by AID/Y to ensure concurrence and inclusion of any previously discussed inputs made collaboratively. (These adjustments become Draft Three.)
- d. Draft Three is reviewed by the Annual Field Review Team which includes the AID contracts officer. Any adjustments required are made. The approved work plan is signed by all parties including AID contracts officer which

becomes the legal basis for expenditures of funds. Issuance of what ever authorization document is required by AID contracts office becomes the legal basis for CID/T to contractually authorize lead universities to expend funds as approved in the work plan. Contradictory language in the AID-CID contract must be addressed collaboratively and a solution reached. This specifically means Article II which presently states the legal basis for starting a new subproject.

B. PROBLEM 2, POSSIBLE SUGGESTIONS ON COLLABORATION

All partners in the field and in the U.S. need to collaboratively redefine collaboration in terms of being equal partners in design, implementation and evaluation as visualized by Title XII. The evaluation team does not see this kind of collaboration in most of the operations at present.

C. PROBLEM 3, LACK OF ADEQUATELY DEFINED, WORKABLE RELATIONSHIPS, SUGGESTIONS.

Development of more adequate policies, procedures and relationships so that each partner and each individual in the program understands his role and is placed in a favorable position to accomplish it. General job descriptions and relationships for the program director and chief of party are being developed. These will assist in role definition.

D. POSSIBLE REDEFINITION OF PROGRAM STATUS STATEMENTS

The end-of-program-status statements are not properly defined for the program director to adequately accomplish his assignment and responsibilities (suggested EOPS).

1. Subprojects designed by priority according to the Agricultural Sector Assessment study and ~~some~~ *those EOP* implemented and in operation.
2. Mobilization assistance to subprojects during transition from planning to implementation.
3. ADSP plans and activities coordinated with ministries and donors participating in agricultural development.

4. Long-term linkages between YARG and CID institutions established.
5. A Ministry of Agriculture with appropriate structure and qualified staff for planning, policy analyses, evaluation, design and implementation of an effective agricultural development program.
6. A National Agricultural Research System conducting and coordinating research that is identifying agricultural technologies and adapting them to Yemen's resource situation.
7. National Agricultural Extension System identifying small farmer production problems/successes and the agricultural capabilities of local institutions and designing and implementing--with farmer and local institution input--responsive central or local extension and research activities.
8. An Agricultural Education System identifying small farmer/rural population educational needs and capabilities and providing responsive training, directly or indirectly through local and international institutions or donor programs, in technical, economic and administrative skills.
9. Efficient management, for maximum agricultural productivity by Yemeni farmers, of soil and water resources and agricultural production technologies.
10. Efficient control by all levels of the Government of the exploitation of natural resources for maximum conservation, restoration and preservation of these resources.
11. Increased and recognized participation of Yemeni women in agricultural development through suitable agricultural education, training and extension programs.
12. An Agricultural Credit System that is mobilizing savings and providing access to capital for long-, medium- and short-term use by farmers and agri-business firms.
13. Marketing infrastructure, including transportation, storage, processing facilities and other requirements for efficient internal

distribution and export of agricultural products.

14. Rural institutions, with farmer participation, such as cooperatives, water users' associations and the local development associations, providing marketing, import supply, credit and other services in support of agricultural production.

E. PROBLEM 5. RECRUITING PROCEDURE SUGGESTIONS

Before recruitment begins for a new or replacement position, a qualifications and scope of work needs to be developed and reviewed by those concerned, both field and home campuses. Advertising and recruitment should begin from the potential personnel pool. Each CID university should develop its potential pool. Review of applicants and selection of those who appear most promising should be expeditiously accomplished. A schedule needs to be developed which will indicate lead times needed to accomplish the tasks. After selection by the lead university of the potential candidate(s), the nomination and placement procedure begins. After approval of nominee in Yemen, the individual selected is given assistance to get to the field at an early date.

F. PROCUREMENT AND SHIPPING RECOMMENDATIONS

Instructions have been developed for procurement and shipping. These are being revised and greater specificity added to permit better operations.

G. PRE-IMPLEMENTATION FUNDING SUGGESTIONS

Pre-implementation funding levels for the HIT subproject have been exceeded for several months. This poses a technical and legal problem. Are all activities stopped when these limits are reached or can they be exceeded for subprojects in which the expenditures are approved in annual work plans? When the annual work plan is the authorization for expenditures and the work plan is not approved, does activity stop? These problems will be somewhat resolved by suggestions in A, 1 or 2 above. Collaboration needs to be continued in these areas to resolve the problems.