

EVALUATION OF IBB SECONDARY
AGRICULTURAL INSTITUTE (ISAI)

BY:

Dr. Wael S. Fahad
Consultant,
Development Alternatives, Inc.
Washington, D.C.

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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 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 valuation 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 (Ibb/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 staff 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 1984. 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 management 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:

1) The ISAI's formal academic and training program will provide the YARG 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 YARG'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 management, have continued to necessitate action.

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

- o "Physical facilities to be provided by the IBRD will be suitable for the accomodation 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.

- o "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.

- o "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.

- o "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 7 of the 47 hectares of agricultural land originally promised by the MOE have been made available to the school. The improvement of these 7 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 E of this report for further discussion of this matter.

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

- o "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.

o "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.

o "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 specialities, 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 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 1982); (b) training in beekeeping for two Yemeni women at Ohio State University; (c) the provision of beekeeping equipment and supplies to the farmers; (d) 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 at the ISAI program 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 other areas; families in large urban areas (e. g. Sanaa) 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: (i) 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 months 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 states 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 fully 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 credential 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 training. 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 Y-men, 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 sobgoal 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 ISAI subproject 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. Counterparts 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 to be established in the future should be patterned upon the ISAI.
- 2) The MOE female staff members have not favorably received the MOE 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 1970 - 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 Y-men; 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 interanally 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 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 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 program, 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 program 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 technical and vocational 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.

APPENDIX D

Ibb Secondary Agricultural Institute (ISAI) Subproject

IV-113

TABLE 1 - PATTERN OF STUDENT ENROLLMENT IN THE 1941 P. COURSE DURING THE PAST FIVE YEARS. (DATA OBTAINED FROM 1980 SECONDARY AGRICULTURAL INSTITUTE, QUARTERLY PROGRESS REPORT, 1979 - 1983, AND STUDENT RECORDS)

SCHOOL YEAR	APPLICATION FOR ENTRY		STUDENT ENROLLMENT STATUS BY YEAR OF STUDY (A)												NUMBER OF STUDENTS GRADUATED	MAXIMUM STUDENT CAPACITY OF SCHOOL	
	NUMER RECEIVED	NUMER 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	33	33	33	0	1	47	--	--	--	--	--	--	--	0	100	47	
1980-81	33	20	30	0	1	31	37	2	2	33	--	--	--	0	100	77	
1981-82	31	31	38	2	2	37	38	2	3	20	33	1	4	40	100	112	
1982-83	45	45	147	10	1	32	36	0	1	35	32	0	2	20	100	101	
1983-84	30	30	30	0	0	0	30	0	0	0	30	0	0	0	100	107	

- A - EMPLOYEES OF THE IRI WHO HAVE JUNIOR SECONDARY SCHOOL CERTIFICATE AND MORE THAN 3 YEARS OF WORKING EXPERIENCE ARE ADMITTED AS SECOND YEAR STUDENTS AND CONSIDERED AS SPECIAL STUDENTS (10 IN 1980-81, 10 IN 1981-82, 0 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 NOT DESIGNATED, 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	33	10	63	3	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	48	1	46	14	*	*	14	30.4
TOTAL	198	27	185	38	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 IBS 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		
IBS	21	10	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 NBSU TEAM AND TO THE YEMENI/ISAI MANAGEMENT
2 MR MEZA ALLAGABO [SUDANESE]	TEACHING STAFF	1/1/80	12/31/83	- M.S.C. HORTICULTURE, U. OF ARIZONA, TUCSON, ARIZONA - DIRECTOR OF HORTICULTURE FOR 18 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 ANIN ABUSHA'ER [JORDANIAN]	TEACHING STAFF	4/1/80	4/1/84	- M.S.C. SOIL AND AGRONOMY, NBSU, 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 (1976), 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 ABDEL-BEQU [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-GHAMBARI [EGYPTIAN]	TEACHING STAFF	12/1/81	12/1/83	- PH.D. IN FOOD TECHNOLOGY - PROFESSOR OF FOOD TECHNOLOGY, UNIVERSITY OF AIN-SHAMS, EGYPT FOR 15 YEARS	A- TEACHING DAIRY AND FOOD TECHNOLOGY TO SECOND AND THIRD YEAR STUDENTS
8 MR DONALD SWANJORD [USA]	TEACHING STAFF	6/1/81	7/1/83	- M.S. IN LANGUAGE EDUCATION, SOUTHERN CONNECTICUT STATE COLLEGE - ESL IN IRAN FOR 2 YEARS, AND ESL INSTRUCTOR FOR 18 YEARS AT VARIOUS US LOCATIONS	A- TEACHING ENGLISH LANGUAGE TO YEMENI COUNTERPARTS WHO ARE NOMINATED FOR THE M.S. TRAINING PROGRAMS (3-4 HOURS/DAY)
9 MR CRAIG RUNTUN [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	A- IN CHARGE OF SUPERVISION AND DEVELOPMENT OF THE ISAI FARM

TABLE 3 - 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	PURPOSE/RESPONSIBILITIES
1. ANDREW BRISTOL	SOIL SCIENCE	4/17/81	8/21/81	ISAI FARM ORGANIZATION AND DEVELOPMENT
2. JIM MACKLERBY	AGRICULTURAL MECHANIC	5/11/81	7/10/81	MECHANICAL MAINTENANCE AND SUPERVISION
3. SUEBY LANGHAM	ISAI SUBPROJECT COORDINATOR	8/11/81	7/10/81	ADMINISTRATIVE SUPERVISION AND FOLLOW-UP
4. HAROLD MATTESON	ISAI SUBPROJECT COORDINATOR	10/26/81	7/10/81	ADMINISTRATIVE SUPERVISION AND FOLLOW-UP
5. SUEBY LANGHAM	ISAI SUBPROJECT COORDINATOR	10/26/81	11/13/81	ADMINISTRATIVE SUPERVISION AND FOLLOW-UP
6. HAROLD MATTESON	ISAI SUBPROJECT DIRECTOR	12/3/81	12/10/81	ADMINISTRATIVE SUPERVISION AND FOLLOW-UP
7. SUEBY LANGHAM	ISAI SUBPROJECT COORDINATOR	1/20/82	3/3/82	ADMINISTRATIVE SUPERVISION AND FOLLOW-UP
8. HAROLD MATTESON	ISAI SUBPROJECT DIRECTOR	2/18/82	2/18/82	ADMINISTRATIVE SUPERVISION AND FOLLOW-UP
9. ELBERT JAYCOX	SEE KEEPING	3/20/82	4/30/82	ESTABLISHMENT OF APIARY AT ISAI
10. JIM MACKLERBY	AGRICULTURAL MECHANIC	4/21/82	8/11/82	MECHANICAL MAINTENANCE AND SUPERVISION
11. JAMES DEAN	AGRICULTURAL MECHANIC	5/10/82	6/10/82	ISAI MECHANICAL WORKSHOP DEVELOPMENT
12. HAROLD MATTESON	ISAI SUBPROJECT DIRECTOR	6/22/82	7/10/82	ADMINISTRATIVE SUPERVISION AND FOLLOW-UP
13. ELBERT JAYCOX	SEE KEEPING	8/30/82	10/10/82	TRAINING SEE KEEPERS AND DEVELOPMENT OF THE ISAI APIARY
14. MARY REYNOLDS	ACCOUNTING/INVENTORY	10/11/82	11/1/82	FINANCIAL AND BOOKKEEPING FOLLOW-UP
15. JOSEPH HAMILTON	MAINTENANCE MECHANIC	10/10/82	12/0/82	MECHANICAL MAINTENANCE AND SUPERVISION
16. EUGENE ROSS	AG EXTENSION AND EDUCATION	1/8/83	1/20/83	DEVELOPMENT OF THE OUTREACH/EXTENSION PROGRAM AT THE ISAI
17. SUEBY LANGHAM	ISAI SUBPROJECT COORDINATOR	4/4/83	9/3/83	ADMINISTRATIVE SUPERVISION AND FOLLOW-UP
18. HAROLD MATTESON	ISAI SUBPROJECT DIRECTOR	4/11/83	4/28/83	ADMINISTRATIVE SUPERVISION AND FOLLOW-UP
19. ELBERT JAYCOX	SEE KEEPING	5/9/83	6/22/83	TRAINING SEE KEEPERS AND ISAI APIARY DEVELOPMENT
20. GEORGE ABERNATHY	AGRICULTURAL ENGINEER	9/0/83	9/8/83	EVALUATION AND DEVELOPMENT OF THE AGRICULTURAL MECHANIZATION NETWORK
21. R. SPELEBERG	PLANT SCIENCE (BOTANY)	7/0/83	8/8/83	IDENTIFYING AND SURVEYING OF PLANTS IN AND AROUND THE ISAI
22. MARY REYNOLDS	ACCOUNTING/INVENTORY	10/20/83	11/10/83	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 ^a	1	--	--	--	--	--
	11- DAIRY AND FOOD TECHNOLOGY	--	--	2	2	2	2
	12- APICULTURE	--	--	--	--	1	2
TOTALS		29	12	27	18	23	18
TOTALS		41		43		41	

^aPRACTICAL TRAINING IS PROVIDED TO STUDENTS DURING SUMMER TRAINING.

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 MASF 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.

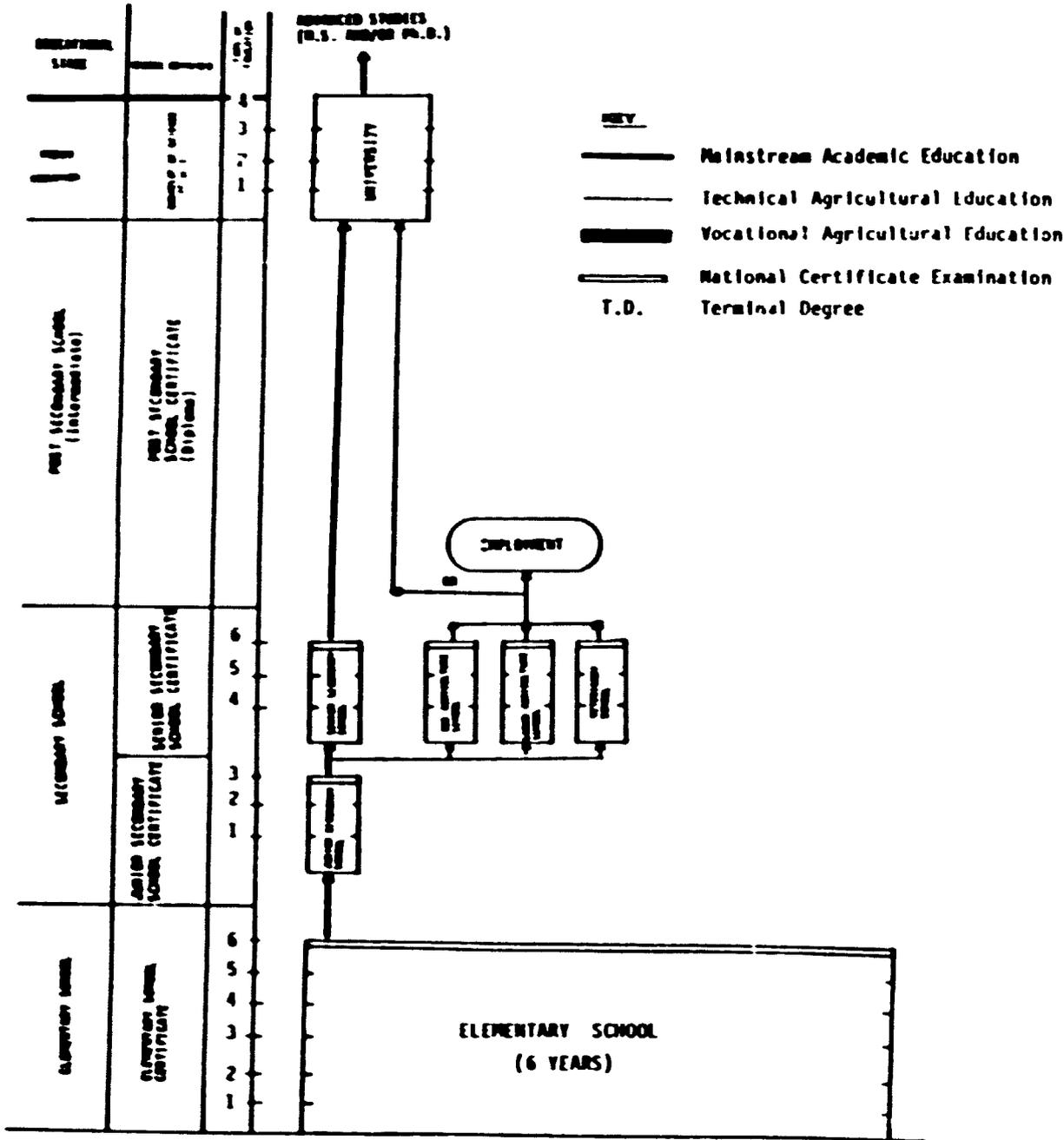
a) The majority of primary school leavers are the

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.

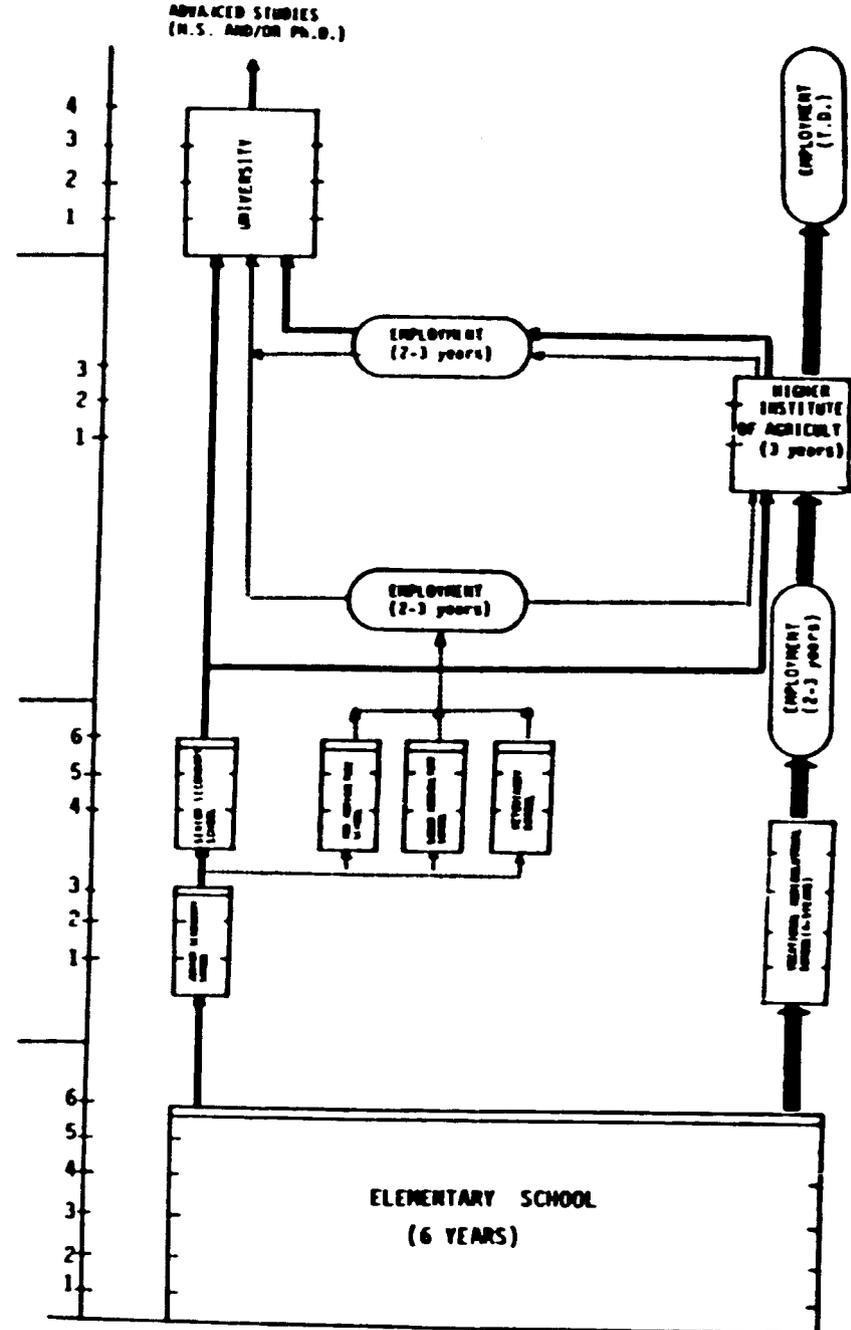
b) Ideally, as has been discussed above and is shown in Figure 1, a complete program of planned agricultural education should have a series of graduated stages corresponding to the jobs in the sector. There should be a period of field service after each stage. If a student is considered fit to continue 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-8 OF APPENDIX B



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:

- o Acceptance, adaptation and practice by farming communities of improved and advanced agricultural technologies and production methodologies.
- o Availability to farmers at affordable prices and use by them of such essential agricultural inputs as fertilizers, pesticides, improved seeds, tools, equipment, etc.
- o Increase in the quantity and improvement of the quality of land for agricultural production.
- o Improvement in the quantity and quality of agricultural production so that food becomes more abundant locally and imports are reduced.
- o Establishment and implementation of an agricultural marketing system and price control policies.
- o 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:

- o 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.
 - o Extension service offices and research stations are established within farming areas and staffed with capable, trained workers.
 - o 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.
 - o 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:

- o YARG will continue to view agricultural education as an important part of the educational system in Yemen and highly beneficial to the population.
- o It will be possible to recruit an adequate number of students motivated to enter a vocation in the field of agriculture.
- o 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.
- o 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.
- o Support for improving educational methods, subject matter, student attendance and staff development will be available to the three schools.
- o 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.
- o YARG will support Yemeni subproject staff members as stated in the contract.

- o 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:

- o Teaching and administrative staff members are trained and assigned to their respective positions.
- o Teaching, laboratory and farm equipment and supplies of appropriate quality and in sufficient quantities are delivered and in use.
- o Each school has an organizational structure and management procedures responsive to its student body's needs.
- o Short courses and in-service training programs for farmers and extension workers are fully developed and in operation.

- o Programs for creating a climate conducive to women's development are in operation.
- o Long term links are established between YARG and CID universities.
- o Each school has an operational school farm integrated into its curriculum and providing practical training relevant to YEMEN's experience.
- o 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:

- o 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.
- o AID funds remain available.
- o The community will accept and support all nonacademic and informal educational programs.
- o Programs for women's development will be socially and officially accepted and implemented.
- o 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.