AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT DATA SHEET

1. TRANSACTION CODE: A (A = Add, C = Change, D = Delete) — Amendment Number 7

DOCUMENT CODE 3

2. COUNTRY/ENTITY: Yemen Arab Republic

3. PROJECT NUMBER: 279-0052

4. BUREAU/OFFICE: USAID/Sanaa 279

5. PROJECT TITLE (maximum 40 characters): Agriculture Development Support

6. PROJECT ASSISTANCE COMPLETION DATE (PACD): MM 12 DD 31 YY 95

7. ESTIMATED DATE OF OBLIGATION (Under 'B.' below, enter 1, 2, 3, or 4)
A. Initial FY 79 B. Quarter 1 C. Final FY 95

8. COSTS ($000 OR EQUIVALENT $1 =)

A. FUNDING SOURCE	FIRST FY 79 B. FX	C. L/C	D. Total	LIFE OF PROJECT E. FX	F. L/C	G. Total
AID Appropriated Total	1,200		1,200	137,722		137,722
(Grant)	(1,200)	( )	(1,200)	(137,722)	( )	(137,722)
(Loan)	( )	( )	( )	( )	( )	( )
Other U.S. 1.						
Other U.S. 2.						
Host Country					59,439	59,439
Other Donor(s)					25,906	25,906
TOTALS	1,200		1,200	137,722	85,345	223,067

9. SCHEDULE OF AID FUNDING ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH. CODE 1. Grant	2. Loan	D. OBLIGATIONS TO DATE 1. Grant	2. Loan	E. AMOUNT APPROVED THIS ACTION 1. Grant	2. Loan	F. LIFE OF PROJECT 1. Grant	2. Loan
(1) FN	000			53,131				137,222	
(2)									
(3)									
(4)									
TOTALS				53,131				137,222	

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each): 300, 600, 700, 960

11. SECONDARY PURPOSE CODE

12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)

A. Code	XII	TNG					
B. Amount	ALL	ALL					

13. PROJECT PURPOSE (maximum 480 characters)

The purpose of the overall Agriculture Development Support Project and its subprojects is to improve the capacity of the YARG and Yemeni agricultural producers to develop and sustain an agricultural sector which effectively and efficiently uses Yemen's natural resources, is integrated into the economy and is supportive of broad-based and equitable social and economic development.

14. SCHEDULED EVALUATIONS
Interim MM 09 YY 86 MM 09 YY 94 Final MM YY

15. SOURCE/ORIGIN OF GOODS AND SERVICES
[X] 000 [X] 941 [X] Local [X] Other (Specify) 935

16. AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of a ____ page PP Amendment.)

BEST AVAILABLE COPY

17. APPROVED BY
Signature: Charles F. Weden, Jr.
Title: Director, USAID/Sanaa
Date Signed: MM 04 DD 25 YY 85

18. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION
MM DD YY

AID 1330-4 (8-79)

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT DATA SHEET

1. TRANSACTION CODE: A (A = Add, C = Change, D = Delete) — Amendment Number 2

DOCUMENT CODE 3

2. COUNTRY/ENTITY: Yemen Arab Republic

3. PROJECT NUMBER: 279-0052,05

4. BUREAU/OFFICE: USAID/Sanaa 279

5. PROJECT TITLE (maximum 40 characters): Ibb Secondary Agricultural Institute Subproject-Agricultural Development Support

6. PROJECT ASSISTANCE COMPLETION DATE (PACD): MM 12 DD 31 YY 91

7. ESTIMATED DATE OF OBLIGATION (Under 'B:' below, enter 1, 2, 3, or 4)
A. Initial FY 79 B. Quarter 1 C. Final FY 92

8. COSTS ($000 OR EQUIVALENT $1 =)

A. FUNDING SOURCE	FIRST FY 86 B. FX	C. L/C	D. Total	LIFE OF PROJECT E. FX	F. L/C	G. Total
AID Appropriated Total	689		689	17,000*		17,000*
(Grant)	(689)	( )	(689)	(17,000)*	( )	(17,000)*
(Loan)	( )	( )	( )	( )	( )	( )
Other U.S. 1.						
Other U.S. 2.						
Host Country		2,000	2,000		12,000	12,000
Other Donor(s)						
TOTALS	689	2,000	2,689	17,000*	12,000	29,000*

9. SCHEDULE OF AID FUNDING ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH. CODE 1. Grant	2. Loan	D. OBLIGATIONS TO DATE 1. Grant	2. Loan	E. AMOUNT APPROVED THIS ACTION 1. Grant	2. Loan	F. LIFE OF PROJECT 1. Grant	2. Loan
(1) FN	070			11,160		-0-		28,160*	
(2)									
(3)									
(4)									
TOTALS				11,160		-0-		28,160*	

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each): 600

11. SECONDARY PURPOSE CODE

12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)

A. Code	XII	TNG					
B. Amount	ALL	ALL					

13. PROJECT PURPOSE (maximum 480 characters)

To improve the efficiency of the secondary agricultural education system of the Ministry of Education to supply Yemen's agricultural sector, including the Ministry of Agriculture and Fisheries and the private sector, with qualified manpower.

14. SCHEDULED EVALUATIONS
Interim MM 06 YY 88 MM 06 YY 90 Final MM 01 YY 92

15. SOURCE/ORIGIN OF GOODS AND SERVICES
[X] 000 [X] 941 [X] Local [X] Other (Specify) 935

16. AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of a 205 page PP Amendment.)

This amendment extends the Ibb Secondary Agricultural Institute Subproject for another 6.25 years.

*Reflects $2,500 for which an ad-hoc delegation of authority has been requested.

17. APPROVED BY
Signature: Charles F. Weden, Jr.
Title: Director, USAID/Sanaa
Date Signed: MM 04 DD 25 YY 85

18. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION
MM DD YY

AID 1330-4 (8-79)

TITLE XII AGRICULTURAL DEVELOPMENT SUPPORT PROGRAM

(279-0052)

YEMEN ARAB REPUBLIC

IBB SECONDARY AGRICULTURAL INSTITUTE SUBPROJECT

PHASE II

SUBPROJECT PAPER

APRIL 1985

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PREFACE

The Ibb Secondary Agricultural Institute (ISAI) Subproject extension, a component of the Yemen Agricultural Development Support Program (Project 279-0052), was designed and developed by a Consortium for International Development (CID) team in cooperation with officials of the Yemen Arab Republic Government (YARG) and representatives of the United States Agency for International Development Mission to Yemen (USAID/Y).

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LIST OF ACRONYMS

ADSP	Agricultural Development Support Program, Project 279-0052
AES	Agricultural Education System
AID	Agency for International Development
AID/W	Agency for International Development. Offices in Washington, DC (as distinct from the USAID Mission to Yemen)
ASA	Agricultural Sector Assessment
BS	Bachelor of Science
CID	Consortium for International Development
CID/DED/Y	Consortium for International Development/Deputy Executive Director for the Yemen ADSP
CID/Y	Consortium for International Development/Yemen
CIP	Center for International Programs
COP	Chief of Party
CP	Counterpart
CPO	Central Planning Organization
EOP	End of Project
EPA	Environmental Protection Agency
ESF	Economic Support Fund
ESL	English as a Second Language
FOA	Faculty of Agriculture (University of Sanaa)
FFYP	First Five Year Plan (1976-1981)
FTE	Full-Time Equivalent
FX	Foreign Exchange
FY	Fiscal Year (October 1 to September 30)
GDP	Gross Domestic Product
HITS	Horticulture Improvement and Training Subproject
IBRD	International Bank for Reconstruction and Development
IDA	International Development Authority
IPA	Institute of Public Administration
ISAI	Ibb Secondary Agricultural Institute
LC	Local Currency
LDA	Local Development Authority
MAF	Ministry of Agriculture and Fisheries
MOE	Ministry of Education
MOF	Ministry of Finance
MS	Master of Science
NES	National Extension Service (MAF)
NE/TECH/AG	Near East Bureau, Office of Technical Support, Agricultural Development Division
NIPA	National Institute of Public Administration
NMSU	New Mexico State University
OYDA	Organization of Yemeni Development Authority
PACD	Project Agreement Completion Date
PES	Project Evaluation Summary
PETS	Poultry Extension and Training Subproject
PhD	Doctorate of Philosophy
PROAG	Project Agreement
RIRDP	Rada' Integrated Rural Development Project
RDA	Rural Development Authority
SAI	Secondary Agricultural Institute
SAE	Secondary Agricultural Education

SFYP	Second Five Year Plan (1981-1985)
SOW	Scope of Work
SPD	Subproject Director
SPP	Subproject Paper
SSAI	Surdud Secondary Agricultural Institute
SURDP	Southern Uplands Rural Development Project
SVS	Sanaa Veterinary School
TCN	Third Country National
TCP	Third Country Professional
TDA	Tihama Development Authority
TDY	Temporary Duty
TL	Team Leader
TOEFL	Test of English as a Foreign Language
UOS	University of Sanaa
US	United States
USAID, or	United States Agency for International Development
USAID/Y	Mission to the Yemen Arab Republic
USDA	United States Department of Agriculture
YALI	Yemeni American Language Institute
YAR	Yemen Arab Republic
YARG	Yemen Arab Republic Government
YR	Yemeni Rial(s)

TABLE OF CONTENTS

	Page
Project Data Sheet	
Title Page	
Preface	i
List of Acronyms	iii
Table of Contents	v
List of Annexes	vii
Executive Summary	viii
I. Subproject Rationale and Description	1
A. Background and Rationale	1
1. Socio-Economic Setting	1
2. Rationale and Justification for the Subproject Extension	3
3. Relationship to YARG and AID Development Plans	5
4. Current Status and Accomplishments of the ISAI Subproject	7
5. Current Status and Accomplishments of the Other SAIs	12
6. Important Issues and Lessons Learned	13
B. Subproject Description	18
1. Goal and Subgoal	18
2. Purpose	18
3. Outputs and End of Project Status	18
4. Inputs	19
II. Cost Estimate and Financial Plan	25
III. Implementation Plan	26
A. Implementation Responsibilities	26
1. USAID Yemen	26
2. Title XII University	26
3. YARG	26
B. Subproject Organization and Coordination	26

Page

IV. Evaluation and Monitoring Plan---------- 27
A. Baseline Data Development---------- 27
B. Monitoring and Reporting---------- 28
C. Subproject Evaluations---------- 28
D. Responsibilities for Conducting Evaluations---------- 29

V. Project Analysis---------- 32
A. Social Soundness---------- 32
B. Manpower Issues---------- 33
C. Administrative Capability of the YAR---------- 35
D. Technical Analysis---------- 36
1. Agricultural Education in the YAR---------- 36
2. Staffing of the SAE System---------- 36
3. Student Recruitment, Retention and Placement----- 37
4. Curriculum---------- 37
5. Outreach---------- 37
6. Instructional Facilities---------- 37
E. Financial Analysis---------- 38
1. Overview of Financial Performance of the ISAI Subproject---------- 38
2. Proposed Financial Plan---------- 38
3. Recurrent Cost Issues---------- 39
4. Analysis of Other Alternatives---------- 39
5. Conclusions---------- 41
F. Economic Analysis---------- 41
1. General Considerations---------- 41
2. Project Analysis---------- 42
G. Environmental Considerations---------- 42

VI. Conclusions and Recommendations---------- 42

LIST OF ANNEXES

A. Scope of Work for Project Design

B. Logical Framework Matrix

C. Project Checklist

D. Social Soundness Analysis

E. Manpower Issues

F. Administrative Capability of the YARG

G. Technical Analysis

H. Financial Analysis

I. Initial Environmental Evaluation and Determination

J. Study on Involvement of Women with Secondary Agriculture Institutes in the Yemen Arab Republic (YAR)

K. Survey of Appropriateness of ISAI Training

L. Study of Educational Aspirations of Preparatory Students in Yemen

M. Detailed Implementation Plan

N. Draft Project Authorization

O. Draft Amendment to Project Grant Agreement

EXECUTIVE SUMMARY

OVERVIEW

A. Background

The Ibb Secondary Agricultural Institute (ISAI) Subproject, the first subproject under the Yemen Title XII Agriculture Development Support Program (ADSP) was authorized in September 1979 for 11.16 million dollars. It was designed as a ten year project but was only authorized for a five year period. The Project Assistance Completion Date (PACD) was extended from September 30, 1984 to July 31, 1985. During this time a thorough assessment of progress to date was undertaken and a design for the Phase II extension completed.

Because this design effort was to reaffirm the advisability of extending the approved ISAI Subproject, no separate Project Identification Document was prepared. In lieu of a PID, a detailed Scope of Work for subproject design was prepared by USAID Yemen, modified and approved in AID/W and transmitted to USAID as 84 State 215575 (Annex A).

Various concept options for the extension were considered by the design team. Based on their analysis and the recommendations contained in the 1984 Pragma Evaluation report, it was determined that further development assistance in secondary agricultural education was warranted and should be directed at the Yemen Arab Republic Government's (YARG) secondary agricultural education system as a whole -- not just the existing school at Ibb. The goal of the ISAI subproject remains the same for the Phase II extension, but the purpose is somewhat broader. While the original purpose mentioned only the Ibb Secondary Agricultural Institute, the project included training of Yemeni teachers to staff Yemen's three Secondary Agricultural Institutes (SAIs).

Phase II will complete the development of the Ibb Secondary Agricultural Institute and the training of Yemeni teaching staff for the ISAI and the other two Secondary Agricultural Institutes as outlined in the original subproject paper. In addition Phase II includes some commodity support and limited technical assistance for the two other SAI's and training for Ministry of Education (MOE) personnel in the Directorate of Vocational Education. Phase II will concentrate on transferring the Ibb Secondary Agricultural Institute Program model to the other two SAI's and improving the efficiency and capability of the Ministry of Education to sustain the operation of the Secondary Agriculture Education (SAE) System.

B. Recommendation

This subproject paper amendment is presented to support the recommendation that 17 million dollars be authorized for a six and one quarter (6.25) year (FY 85 - FY 92) extension of the Ibb Secondary Agricultural Institute Subproject.

An ad hoc redelegation has been requested to extend the current PACD to June 30, 1986 and add 2.5 million dollars. The 2.5 million dollar addition and extension through June 30, 1986 is part of the total 17 million dollar subproject paper extension presented here. The interim extension is necessary to allow adequate time to complete approval of this subproject paper amendment and to complete the contracting with a Title XII university. Phase I was implemented by New Mexico State University (NMSU) as the lead university under an AID contract with the Consortium for International Development. The Phase II extension will be implemented by New Mexico State university through a direct contract with AID.

C. Purpose

To improve the efficiency of the secondary agricultural education system of the Ministry of Education (MOE) to supply Yemen's agricultural sector, including the Ministry of Agriculture and Fisheries (MAF) and the private sector, with qualified manpower.

D. Justification

Agriculture is the largest sector of Yemen's economy, and one of the major elements of its economic future. Traditional agricultural practices prevail, coupled with inefficient input supplies and management, and productivity is very low. Trained manpower shortages exist in both the public and private agricultural sectors, particularly in the MAF. Agricultural production in the YAR is expected to increase when there are strong indigenous educational institutions preparing Yemeni men and women in agriculture.

E. Method of Implementation

The ISAI Subproject extension will be implemented as an activity under the ADSP and will be accomplished via a negotiated contract between AID and New Mexico State University (NMSU). Under the contract, NMSU will provide technical assistance, participant training, commodity procurement, and various feasibility studies relating to expansion of the agricultural education system. Implementation details are further elaborated in Section III of the main text (Implementation Plan), and Annex M. General monitoring of the subproject will be provided by USAID/Y through its Agriculture Office, which has broad responsibility for ADSP activities.

F. End-of-Project-Status Accomplishments

1. Each secondary agricultural institute (SAI) fully staffed with trained Yemeni agricultural teachers, administrators, and a farm manager. The staff will be able to devise performance-based curricula, develop practical applications and conduct appropriate outreach activities, and demonstrate the ability to reach the secondary certificate standards of the MOE.

2. A relevant curriculum at each SAI which integrates farm activities with identified practicums and outreach activities.

3. Educational facilities adequately equipped and refurbished to deliver the curriculum.

4. Yemenized textbooks and other classroom teaching materials prepared and in use at each SAI.

5. A student recruitment, evaluation and placement system functioning and coordinated by the MOE sufficient to reach enrollment and graduation goals, with participation of the MAF and private sector companies.

6. Staff recruitment, retention, training, and placement programs functioning in the MOE to replace staff and maintain the agriculture schools indefinitely.

7. MOE management personnel trained in administration of agriculture education providing leadership, coordinating Yemen's agriculture education efforts, conducting long-range planning, and supervising the secondary agricultural institutes.

8. Feasibility studies completed and strategies developed to make secondary agricultural education available in all areas of the country.

9. Feasibility and need assessment of a possible mid-level technical agricultural institute completed.

G. <u>AID Assistance</u>

1. <u>Training, Approximately $2.72 Million:</u>

a. Thirty-nine (39) scholarships at the MS and BS levels in the United States to train present and potential secondary agricultural institute and MOE teaching, administrative, and technical staff.

b. Sixty (60) person-months of non-academic training aimed at upgrading management skills of key secondary agricultural education administrators in the MOE and the agricultural institutes.

c. 373 person-months of non-academic, in-country training for MAF extension personnel and MOE management personnel.

2. <u>Technical Assistance, Approximately $6.88 Million:</u>

52.6 person-years of technical assistance will be supplied by the Title XII University. The team leader, farm manager and other technical specialists will ensure that the ISAI model and curriculum is transferred when appropriate and adopted at the Surdud and Sanaa institutes.

Specialists on short-term assignment will assist in curriculum refinement and development of teaching materials, provide advice on financial planning, recruitment, and other implementation problems, and evaluate project accomplishments.

3. Institutional Equipment, Supplies and Other Services, Approximately $3.31 Million:

This will include farm equipment, agricultural mechanics equipment, learning resource centers, other laboratory equipment, library materials and textbooks. Additional commodities and support will be provided by the MOE for overall system support.

4. Feasibility Studies, Approximately $0.05 Million:

Two studies will be conducted: the first study will determine the need and feasibility of developing additional secondary agricultural schools in the YAR; the second will examine the need and feasibility of developing a more advanced technical agricultural institution in the YAR.

H. YARG Costs

The YARG will provide about $12 million, including provision of land for the extension and improvement of SAI instructional facilities, Yemeni and other expatriate teaching and administrative staff, technicians, and SAI operational costs.

I. SUBPROJECT RATIONALE AND DESCRIPTION

A. Background and Rationale

1. Socio-Economic Setting

The Yemen Arab Republic (YAR), also known as North Yemen, is the most fertile part of the Arabian Peninsula. The country is comprised of three major ecologic zones, two of which are significant with respect to agricultural production. The Tihama, a hot, humid, narrow plain along the Red Sea Coast, is a semidesert area with considerable potential for production of tropical crops under irrigated conditions. The Highlands, consisting mostly of mountains, upland plateaus, and eroded wadis, is more temperate. A third area, the eastern desert, adjoins the Empty Quarter of the Arabian Desert and is suitable only for extensive grazing by nomadic flocks of sheep and goats. Without major investments in irrigation works to utilize rainfall from the Highlands, it is of little significance for sedentary agriculture.

In the Tihama, annual rainfall varies from 100 to 300mm. The Northern Highlands area receives an average of 200mm rainfall annually near the Saudi Arabian border, but this increases to over 1200mm in the southern Highlands near the border with the People's Democratic Republic of Yemen (South Yemen).

Agriculture in the YAR relies primarily on dryland farming, where rainfall and runoff are carefully managed to produce a single crop annually. Only about fifteen percent of the cropland is irrigated, mostly through groundwater pumping, spring flows, and diversion of spate flows from the major wadis which drain the Highlands region.

Of North Yemen's eight million people, approximately 80 percent live in the Highlands, congregated mostly in small mountain villages scattered throughout the interstices of the central massif. Most are engaged directly in agriculture on small, fragmented farms.

Historically, dryland grains have been the major staple crop of North Yemen, with fruit, vegetables and legumes as supplements. Coffee, which was once a major crop, was first introduced in the 16th century, but production has declined dramatically during this century. There is some cotton production near the foothills of the Tihama. Livestock has always been linked to crop production in the YAR, providing both food and power to a self-contained system that offers little more than subsistence. Qat, a woody plant whose leaves have a mild narcotic effect when chewed, is grown widely and marketed as a cash crop; its widespread use is a growing social problem.

A new era in North Yemen's political and social development began in 1962. Revolution, civil war, and establishment of the YAR were major steps toward modern nationhood. The Civil War, accompanied by several years of drought, caused agricultural produc-

tion in North Yemen to decline significantly during the decade after 1962. At the same time, temporary out-migration of much of the male labor force to work in the oil fields of Saudi Arabia and other countries on the peninsula led to a de-emphasis on traditional agriculture. Sector output fell to a little more than half of historical production levels. Nevertheless, rural income increased during this period as migrant remittance flows from workers outside the YAR exceeded losses in agricultural production.

Beginning in 1972, the YAR economy underwent a dramatic transformation. The increased flow of remittances and resultant monetarization has accelerated the shift from a subsistence to a market economy. Outmigration of much of the male workforce has changed agriculture from a labor surplus sector to a labor deficit sector, and productivity and output has declined. Agriculture remains the largest sector, but sector growth continues to lag behind the rest of the economy. Declining agricultural production and lack of exportable commodities during this decade has led to significant increases in the annual import bill. Increased purchasing power generated by remittances has encouraged the demand for imports, with the result that the foreign exchange deficit is a problem of major proportions.

In spite of low productivity and lagging growth, the agricultural sector is still the largest sector and will remain a leading sector of the YAR's economy. Soil fertility and climatic factors are favorable. The socio-politico-economic milieu is conducive to sector growth and the national leadership is concerned and responsive to agricultural development needs.

Because of its recent emergence as a modern nation, Yemen has not yet developed the strong institutions needed for a modern agricultural sector. The Yemen economy is characterized by a climate conducive to private sector development. This must be regarded as a positive factor. Nonethless, those functions which require government interaction with the private sector are not yet well developed. The education system is a prime example. It is in these areas that international donor assistance can be most effective.

Development of Yemen's agricultural potential depends on three basic considerations: (a) effective leadership and sector planning to ensure the continuation of a favorable politico-economic environment to provide resources and efficient allocation of those resources to activities supportive of agricultural development; (b) access to scientific knowledge and technical information appropriate to the Yemen agricultural development context; and (c) availability of suitably trained manpower and proper utilization of human resources to address real development problems.

This Subproject extension focuses on consideration (c) above -- the recruitment and training of technically trained agriculturalists, who will ultimately contribute to Yemen's long-term agricultural sector growth and development.

2. Rationale and Justification for the Subproject Extension

One of the major constraints to Yemen's long-run development and social and economic growth is the lack of trained manpower to support the modernization process. This constraint, evident in all sectors of the economy, is particularly crucial in the agricultural sector.

The 1982 Agricultural Sector Assessment (ASA) concluded that the top priority for US development assistance should be in the area of agricultural education and training. It was noted that:

> "The major impediment to successfully carrying out development activities is the lack of an effectively-functioning staff or work force in the public and private sector."

Adequate agricultural education and knowledge of scientific agriculture is lacking at all levels in Yemen. In particular, limited knowledge at the farm level is a major constraint to agricultural development. Also, the MAF lacks sufficient trained staff to plan, manage and support agricultural sector growth effectively.

Basic to future improvement in Yemen agriculture is the critical need for additional indigenous technical, professional, and management personnel. Agricultural extension capacity is grossly inadequate, as is the technical capability of the government to plan and implement programs to improve crop and livestock production. The capacity of Yemeni scientists to conduct meaningful research likewise is almost totally lacking. Similarly, the private sector lacks sufficient trained manpower to provide effective agribusiness services and to establish the basis for agricultural production on a widespread commercial basis.

Improving agricultural education at all levels is considered critical to the long run development needs and welfare of the country, with priority being given to addressing the need for training at the baccalaureate and secondary levels.

This Subproject extension builds on previous AID assistance efforts to support agricultural education and complements other activities for which development assistance currently is being provided in both agriculture and general education. The Subproject fits into a sector-wide plan for manpower training and development being coordinated by the MOE and provides the foundation for expansion and extension of the agricultural education system as it may be expected to evolve and mature in future years. It addresses manpower constraints which currently impinge on the MAF, and it will contribute to private sector needs for well-trained and practically oriented agriculturalists.

AID technical assistance focused on the Ibb Secondary Agricultural Institute while teachers were being trained to staff all three of the secondary agricultural institutes. The initial design anticipated that it would take about ten years to accomplish

the subproject purpose and reach the end-of-project-status (EOPS) targets. However, due to AID's programming cycle, the project was only authorized for five years. The subproject is behind schedule in terms of training Yemeni staff for the three SAIs, mainly because the design was over-optimistic with respect to the number of teacher candidates who would be forthcoming for training. Attention will be focused on completing the development of the ISAI and strengthening the programs presently in place at the Surdud Secondary AGricultural Institute (SSAI) and the Sanaa Veterinary School (SVS), especially with respect to training of teachers and administrative staff. Additionally, there is need to provide encouragement and support to the MOE more generally to improve their capability to efficiently operate the secondary agricultural education system. Assistance will be provided to the Ministry to plan for an orderly expansion and extension of the secondary agricultural education system to meet future needs in the various regions of the country.

The SAIs have as their primary objective the training of mid-level agricultural workers and technicians for the MAF extension service and for donor-assisted projects in the public sector. The demand for these workers in the public sector remains high, as does student interest in this sector. It is estimated that over 2,000 mid-level agricultural workers will be required in the public sector from 1985 to 1992. Over 1,500 will be required in the private sector during the same period, based on the projected demands of only nine agri-businesses from survey results. The three SAIs can only be expected to supply about 700 graduates to help assuage this high demand, the majority of whom will likely enter public service, based on past graduating classes' performances. (See the Manpower Analysis, Annex E, for details of these projections.) The estimated manpower gap of over 2,800 skilled workers will have to be met from other, non-agricultural secondary schools, and other sources.

A 1984 survey of private agri-businesses indicated that ample employment opportunities exist for mid-level agricultural technicians. Graduates employed in private sector technician roles can be expected also to serve agricultural extension functions for farmers, typically as sales agents or production managers. Both public and private operations will continue to hire graduates from non-agricultural secondary schools and provide them with appropriate training to fulfill manpower needs.

The Pragma Evaluation Report identified the need for embarking on a new phase of SAE development that would focus on the development of a well organized and responsive SAE system, with the ISAI at the leadership and development core. Several options with respect to what form such a system should take were considered. These options included integration of SAE into the general secondary (i.e. non-agricultural) curriculum, provision of broad-based agricultural training through polytechnic programs which do not include the more general secondary education curriculum elements, providing narrowly specialized training programs of limited duration which focus on specific agricultural or vocational topics, or a system based on integration of agricultural training into a secondary education curriculum along the same lines as has been developed at the SAIs to date.

A proposed model for a long-range comprehensive agricultural education system was developed. The model builds on the existing SAE facilities and resources but provides flexibility to eventually incorporate the various options indicated above and to permit the SAE system to evolve as needs of the country dictate. This model is depicted in Figure 1 below.

The system-wide scheme depicts four levels of agricultural education: a) a secondary program that students could enter from the preparatory level; b) a mid-level technical agricultural institute that students could enter with or without secondary program preparation; c) a baccalaureate program accessed with at least a secondary certificate; and, d) a graduate training program. The model allows for students to enter and exit formal education at a variety of points and provides for upward mobility in terms of one's formal agricultural educational development.

At all levels of training there are proposed interactions with farmers. The students will receive training at the secondary level in agricultural extension topics and methods, both in their curriculum and in practicums. Both existing research stations and extension offices are involved in their summer practical training.

As the Faculty of Agriculture (FOA) comes on line at the University of Sanaa (UOS) (the first class of students was enrolled in the Fall term, 1984), the baccalaureate component of the model would begin to function and eventually provide an indigenous capacity to train secondary agricultural teachers. At that point, the mission of the SAIs should shift to that of providing mid-level technical training at regional centers and SAE should begin to develop at regular secondary schools as part of a comprehensive curriculum. Graduate education, the final element in the model, would result as the FOA matures, thus completing the system and providing an indigenous capacity to provide manpower to meet all elements of the model within the YAR. (For an additional discussion of this model, see Annex G, Section I.B.3.)

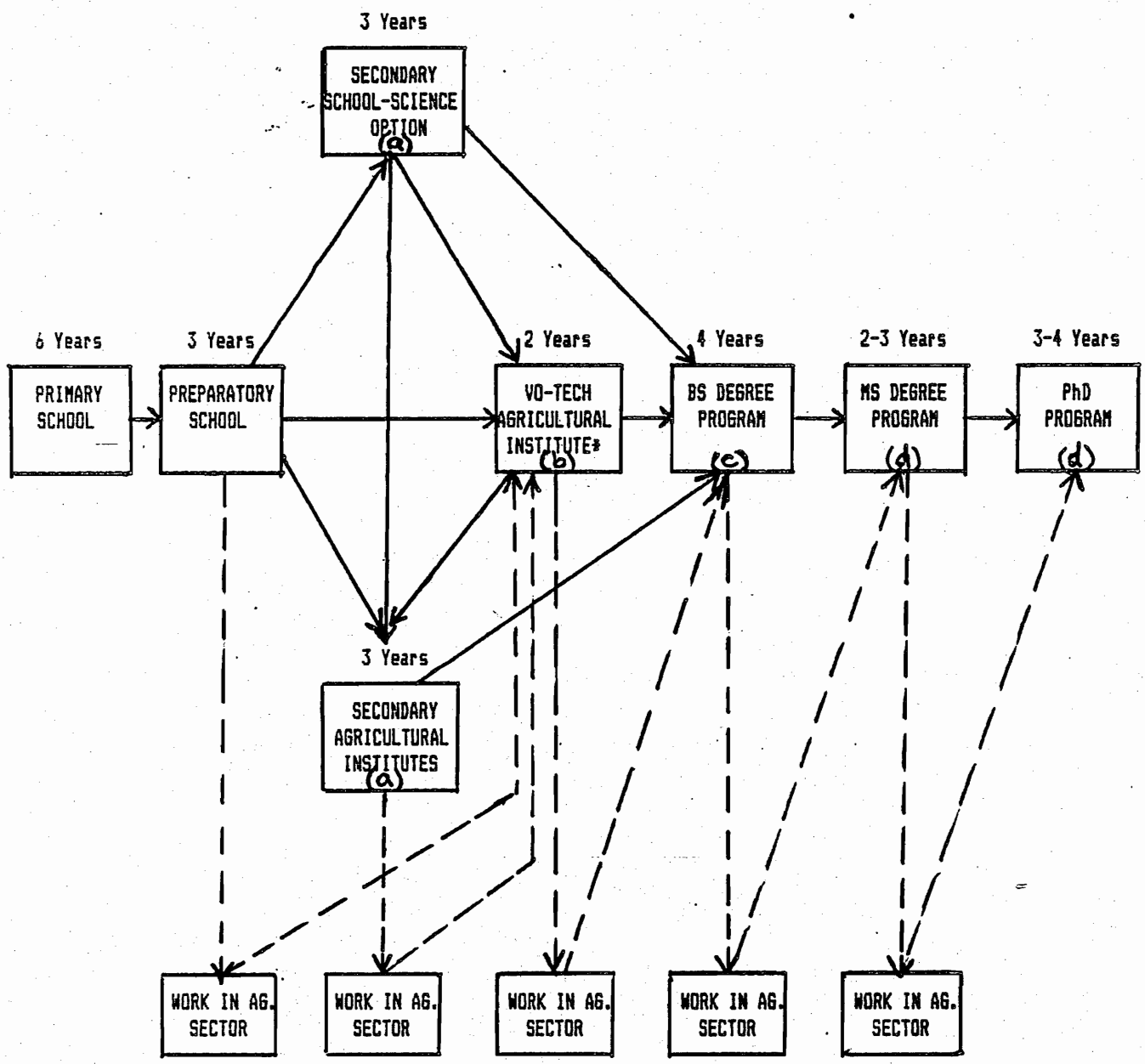
3. Relationship to YARG and AID Development Plans

The YARG's Second Five Year Plan (1982-86) has identified seven areas of focus for Yemen's development including: (a) development of agricultural production to reduce a deficit trade balance; (b) manpower development to increase literacy and technical training; (c) private sector incentives to increase infrastructure development; (d) increasing GDP to match consumption expenditures and reduce the overall deficit; (e) increasing savings and local investments; (f) reducing imports; and (g) reducing the level of government deficit spending. Compulsory basic education is advocated to increase school enrollments and ensure 100% literacy for school age children in 15 years. Technical and vocational education is to receive high priority, notably in the areas of agriculture and mining/manufacturing.

Manpower shortfalls are also indicated in the area of vocational education in USAID's Education Sector Assessment (1984).

Figure 1

PROPOSED DELIVERY SYSTEM FOR AGRICULTURAL EDUCATION IN THE YAR



*NON-EXISTENT

LINES OF ADVANCEMENT THROUGH EDUCATIONAL SYSTEM

LINES OF EXIT AND RE-ENTRY BETWEEN WORK/SCHOOL

USAID assistance to strengthen the secondary agricultural education system complements other USAID projects which assist primary and post-secondary education, institution building in the MAF, horticulture and poultry development activities, and rural development. AID is providing assistance to the YARG to improve its primary education system through the Basic Education Development Project (No. 279-0053). AID is also providing assistance to develop a Faculty of Agriculture at the University of Sanaa to establish a capacity for baccalaureate level training. All of these development efforts are consistent with USAID's FY 1987 Country Development Strategy Statement, and take cognizance of policy guidance provided in AID's "Policy Education and Technical Training" Policy Paper (December 1982).

4. Current Status and Accomplishments of the ISAI Subproject

In 1979 the YARG requested that AID provide assistance with the financing and development of the Ibb Secondary Agricultural Institute (ISAI). Construction of student dormitories, classrooms, dining hall, staff housing, and farm buildings had been undertaken previously with YARG's own budget resources and World Bank support. The ISAI Subproject, a component of the ADSP (USAID Project 279-0052), was authorized in 1979 for an initial period of five years. The purpose was "to establish a training center capable of serving Yemen governmental and rural sector needs for personnel with middle-level agricultural skills." It was recognized at that time that it would probably require ten years to develop the ISAI into a viable self-sustaining program which would meet Yemen's long-term needs.

The subproject focused on developing the ISAI into a model school to serve as a pattern for future development. Some of the organizational principles established at the ISAI and elements of the curriculum have already been transferred to the other schools.

CID was selected by AID as the contractor for the ADSP; and NMSU, one of its member institutions, was engaged to provide leadership in planning and implementation of a program under the ISAI Subproject. The ISAI was inaugurated on September 28, 1979, and classes began shortly thereafter.

The school provides a three-year curriculum in a range of subjects applicable to the Yemen agricultural sector context. Additional courses to meet the MOE's general education requirements (mathematics, religion, history, etc.) also are offered, but these do not receive support or attention through AID financing. Students enter the ISAI after completing six years of primary school and three years at the preparatory school level. Enrollees typically are 15-18 years of age when they enter secondary school, although there is no age limitation if they meet entrance requirements.

At the ISAI, NMSU has provided leadership and support in developing curriculum, staffing the instructional cadre, recruiting and training of Yemeni personnel for the permanent ISAI faculty and developing the instructional farm at the Institute. The current project assistance completion date for the ISAI Subproject is July 31, 1985. An extension through June 38, 1986 is being sought to

permit ample time for processing this multi-year extension which will include direct contracting with New Mexico State University for implementation.

Graduates of the first three ISAI classes total 113; 48 in 1982, 29 in 1983, and 36 in 1984. The 19 highest ranking graduates from the first three classes are currently enrolled in BS programs in Egypt; nine from the first graduating class, six from the second class and four from the third. Of the remaining graduates from the first class, 37 (or 77%) are employed in the government sector, primarily as extension agents, and only two are employed outside the field of agriculture. Similarly, 20 (or 69%) of the graduates from the second (1983) class are employed as MAF extension agents, while the employment status of three graduates is unknown. Of the third (1984) graduating class, 32 are serving military obligations. In the future, the majority of graduates are expected to continue to be employed by the YARG as extension agents or technicians for various agricultural institutions in Yemen, following completion of their military service obligation. Others may opt for positions in the private sector as the private sector becomes more actively involved in student recruitment, training and placement.

There are currently 88 students enrolled at the ISAI, with 34, 30 and 24 comprising the first, second, and third classes, respectively. Enrollments represent only 59% of the maximum capacity of 150. More than 90% of the students are from the Ibb and Taiz provinces, a trend that has prevailed since the opening of the school.

The MOE is concerned about low enrollment in all of Yemen's vocational/technical schools. Recent discussions and agreements between USAID and the MOE have emphasized strategies to increase SAI enrollments, including the participation of private individuals and businesses.

Specific efforts currently underway to increase enrollments at the ISAI (and the other two SAIs) include: (1) contacting the approximately 500 preparatory school students who indicated in the 1984 survey an interest in attending a SAI as a first, second, or third choice; (2) contacting the nine sampled agri-industries to pursue expressed interests in enrolling qualified relatives and employees; (3) preparing an advertising film of the employment opportunities in Yemeni agriculture and the opportunities at the SAIs for obtaining the necessary skills for employment, to be shown on national television and in all preparatory schools near the three SAIs; (4) preparing other advertising material for distribution at relevant preparatory schools and private agri-industries; and (5) making operational the National Agricultural Education Policy Committee, comprising the MOE, MAF and private agri-industries and concerned individuals, to coordinate efforts to increase enrollments and job opportunities, and improve curriculum at the SAIs. Another approach which will be tried next year is to establish alumni committees among the SAI graduates to identify potential students.

Interest in attending the SAIs remains high: a survey of 990 students in ten preparatory schools conducted by ISAI staff in 1984 revealed that over 50% of those sampled indicated interest in attending a vocational agricultural secondary school as a first, second, or third choice. Interest in an agricultural school increased after a short presentation by an ISAI staff member. (See Annex L for detailed results of the survey.) Both individuals and companies have also expressed considerable interest in guaranteeing enrollment for family members or employees, based on another 1984 survey of nine private agri-industries (details of this survey are presented in the Manpower Analysis, Annex E).

Private sector involvement has been incorporated in ISAI summer practicums for several years, but private sector involvement in enrollment has not been promoted. The MOE and the MAF are attempting to increase SAI enrollments and to involve the private sector. These efforts will continue and expand under the ongoing ISAI Subproject. Involvement of the private sector at this stage would also facilitate the placement of those SAI graduates interested in employment with private sector companies. Although very few of the ISAI graduates have thus far joined private concerns, more may choose this option as private sector involvement in SAE increases, and as students become aware of employment possibilities.

An approved and relevant curriculum is in place and being taught by a largely Yemeni faculty, supplemented by some expatriate faculty. Five of the Yemeni faculty have recently returned to the ISAI after successfully completing MS training at NMSU. They have assumed full teaching responsibilities from their expatriate counterparts, enabling three of the expatriates to devote full time to textbook writing. Also, one of the returned graduates is now the ISAI Director and another is the Assistant Director. Improved teaching materials are being provided under the subproject by the staff, and are being tested, refined and presented to the MOE for formal adoption. Both the curriculum and teaching materials have already been drawn upon by the MOE for use in the other two SAIs.

Table 2 summarizes the accomplishments of the ISAI Subproject in terms of achieving specified outputs. Staff training through the MS level is behind schedule, but baccalaureate training activities are somewhat ahead of schedule. Good progress has been made in the area of curriculum revisions, and the ISAI is extending this leadership to the SSAI and the SVS. Significant improvements have been made to physical facilities and the equipment inventory of the ISAI has been upgraded. Plans are currently underway to develop a food processing laboratory and expand the instructional farm. Administrative policies and management procedures are being revised. An outreach program to serve as a training device for students has been initiated, but thus far, this has been largely a faculty endeavor and students have not yet been involved in these activities as a means of practical preparation for extension work when they complete their formal training program at the ISAI. The outreach training program has included about ten one- to two-week classes for women extension agents.

TABLE 2

ISAI SUBPROJECT
TARGETED OUTPUTS VERSUS ACCOMPLISHMENTS

TARGETED OUTPUTS	MAGNITUDE OF OUTPUTS	ACCOMPLISHMENTS
Staff Trained	30 participants obtained an MS degree	5 participants completed MS degree 4 participants in MS program in US 4 participants in MS program in Egypt 2 participants in ESL program in Yemen
	12 participants receive BS degree in Mid-East universities	9 participants initiated BS degree programs in Egypt in September 1982, 6 in September 1983, and 4 in March 1984.
Training materials developed	Lesson plans prepared for agricultural subjects.	Lesson plans have been prepared, used and revised for each agricultural subject.
	Course syllabi are prepared for agricultural subjects.	Syllabi have been prepared, used and revised for each agricultural subject.
	Instructional material developed for agricultural subjects.	Student handouts and audiovisual aids have been prepared for each agricultural subject. A draft text has been prepared for each agricultural subject.
Curricula developed for a three-year secondary program in agriculture.	Provide training in curriculum development.	Curriculum development training has been provided to ISAI, SSAI, SVS and MOE staff.
	Develop a three-year agricultural curriculum.	A three-year curriculum for ISAI has been prepared, revised and subsequently approved by the MOE.
	Practical training provided for students at ISAI.	All students are involved in on-farm practical experiences in each agricultural subject in which they are participating. Students are involved in a one-month practicum in an agricultural business and/or MAF projects in Yemen during June each year.
Facilities completed and equipped	Buildings completed and water and electrical supplies are adequate.	Buildings completed in Fall 1983 with completion of food processing building; water tower was completed in Fall 1983; and school has been hooked up to main electrical source.
	Laboratories have adequate equipment and supplies.	(a) Soils and entomology labs are operational; (b) food science and vet labs are marginally equipped and have adequate supplies; (c) farm shop is operational and is reasonably well equipped; and (d) greenhouse has basic equipment and minimal operational budget for supplies.

TABLE 2 (Cont.)

ISAI SUBPROJECT
TARGETED OUTPUTS VERSUS ACCOMPLISHMENTS

TARGETED OUTPUTS	MAGNITUDE OF OUTPUTS	ACCOMPLISHMENTS
	School farm developed and operational	(a) An initial school farm plan has been prepared and is being implemented; (b) The the farm has become self-sufficient in forage; (c) livestock and crops needed to provide student practical experience in agricultural production are grown; (d) demonstration has been prepared for outreach program; and (e) an irrigation system has been completed for a portion of the farm.
Administrative policies and procedures developed and operational.	By-laws prepared for ISAI.	By-laws have been prepared, revised and are currently waiting approval in MOE. Several of these procedures such as effective scheduling, student discipline, etc. have not been effectively operationalized.
	Student recruitment and admission policies and procedures established.	Student recruitment policies are included in the by-laws. Procedures used to recruit students have not been completely effective since anticipated enrollment has not been obtained.
	Budgetary and accounting procedures developed to facilitate adequate operational budget.	Adequacy of operational funds has been a continuous problem. Accounting and control procedures are reasonably well instituted. Some delegation of decision authority to School Directors for operational procedures has been achieved.
	Short-and long-range plans for the ISAI developed.	Some short-range planning has occurred but a long-range plan has not been developed.
	Staff supervision and in-service training.	The contractor has provided supervision of trained and returned Yemeni staff and expatriate staff and some in-service training of expatriate faculty and Yemeni staff who are currently assigned at ISAI.
An outreach program developed and operational.	Short courses and training for farmers and extension agents are an integral part of ISAI overall programs.	19 workshops held for 486 participants; 5 field days with 121 participants; 9 demonstrations conducted for 21 farmers; and 45 individuals contacted.

5. Current Status and Accomplishments of the Other SAIs

Two other SAIs were subsequently developed independently of the AID sponsored ISAI Subproject and have begun preparing mid-level agricultural technicians for the YAR's agricultural sector. The Surdud Secondary Agricultural Institute (SSAI), financed by the International Bank for Reconstruction and Development (IBRD) enrolled its first students in 1981. Like the ISAI, it trains students for positions as agricultural extension agents and for other public sector agricultural technician positions. The Sanaa Veterinary School (SVS), also initially financed by the IBRD, began operations in 1982. It is designed to prepare graduates in animal production and health. The ISAI, the SSAI and the SVS have training capacities to enroll about 50, 45 and 40 new students per year, respectively.

The SSAI graduated its first class of 30 students in 1984. It currently has 62 students enrolled, including 20 in the first class, 18 in the second, and 24 in the third scheduled to graduate in 1985. The SVS will graduate its first class of about six or seven students this year. Thirty-eight students are currently enrolled at the SVS, with 14 in the first class, 17 in the second and 7 in the third. Enrollments at both schools are well below design capacities: enrollments are only 41% of capacity at the SSAI and only 24% at the SVS.

Both schools are fully staffed and both use third country national (TCN) staff, primarily Egyptian. Yemeni teachers are considered trainee/counterparts to the TCN staff, similar to the situation at the ISAI with respect to untrained Yemeni teaching staff. There are a total of 12 teachers at the SSAI and a total of 11 at the SVS. Other supporting MOE-employed staff total 38 at the SSAI and 25 at the SVS.

The SSAI uses the same curriculum developed at the ISAI, including practicums, but the SVS has a more specialized curriculum in livestock and veterinary services. Equipment at both schools was provided by the World Bank and is limited to larger size items. The SSAI has adequate farmland of about 17 hectares, but very few student-managed plots are in use. The SVS has very limited land, insufficient to grow livestock feed requirements.

The SAIs have all gone through a phase of development where primary concerns have focused on physical facilities, staffing, and basic curriculum development. They must now focus on program quality. Surveys of graduates and employers indicate there are areas of weakness that must be corrected if the SAIs are to be effective in the future. Many of these concerns are summarized below. The YARG needs and seeks technical assistance and financial resources to establish a more efficient system of agricultural education, to moderate their recurrent cost and administrative burdens, and to relate their programs more effectively to employment opportunities and manpower training needs in the country.

6. Important Issues and Lessons Learned

AID support for the establishment of secondary agricultural education systems in the developing world has been relatively limited. There are several countries in which AID has co-financed or assisted secondary agricultural education schools established and operated by churches and other non-profit organizations. Relatively few reports evaluating these efforts are available. At least three other AID funded projects providing assistance for the development of agricultural education at the secondary level have been identified (Liberia, Jamaica and Botswana). Selected evaluation reports of these projects have been reviewed. In general, most issues and concerns identified in those reports are similar to those raised by the January 1984 external evaluation of the ISAI by the Pragma Corporation: e.g., recruitment of students to the schools; staffing and training of the teacher cadre; curriculum content; and project management and coordination. This suggests that these issues are generic ones -- not just peculiar to the Yemen situation. That there is no clear indication of generic solutions suggests that each of these questions must be carefully considered in the project design, and that imaginative leadership to alleviate these problems is required as project implementation proceeds.

The Pragma evaluation of the ISAI Subproject identified seven major concerns, including: (a) the need to utilize the full capacity of the ISAI by increasing enrollment to design capacity; (b) development and adoption of curriculum and teaching materials which are geared to student needs and relevant in the Yemen agricultural context; (c) the need to effect greater cooperation between the MOE and the MAF on curriculum content, recruitment and post-graduation placement; (d) the need to strengthen subproject management and communication; (e) the need to provide quality host country faculty to staff the ISAI over the long term; (f) insufficient land and student involvement in the ISAI farm as an instructional facility; and (g) the need to place greater emphasis on curricula and programs which are applicable to women in the rural sector.

Although these concerns or issues have not been fully resolved, they have been carefully addressed here. Detailed discussions of these issues are provided below.

a. Declining Enrollments in the SAIs

As noted above, recent agreements have been reached between USAID and the MOE on the strategies to increase SAI enrollments, including the participation of the private sector. Five specific efforts currently underway were also indicated above. The consultant report entitled "Study on the Relevance of Current ISAI Curriculum" (reproduced as Annex K) concludes that low numbers of students enrolled in the SAIs are not due so much to dissatisfaction with curriculum content, but to a general lack of awareness about the SAIs among preparatory school students, and to the poor professional and economic incentives facing extension agents in the public agricultural sector, for which students are now being trained. Additional surveys support the contention that awareness of the SAIs and opportunities in agriculture is low. However, it is

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less clear that the low professional and economic incentives for public-sector extension agents has inhibited school enrollment, since virtually all of the ISAI graduates are employed as government extension agents except those who have gone on to higher education.

Student interest in attending the SAIs appears high once full awareness of the institutes is made known. Plans for an ambitious recruiting program are currently underway in order to attract qualified and interested students.

Enrollment is expected to increase when the private sector companies begin to utilize the SAI's as a source of trained personnel. Many of these companies have initiated their own training programs and have sent personnel for training in Europe. The owners of these companies have expressed considerable interest in sending personnel and family members to the SAI's for training, as well as in hiring SAI graduates. The increasing private sector demand for SAI graduates is largely a result of the improvements in the quality of curriculum and training.

b. Lack of Practical Training in the Curriculum

The curricula of the SAIs were examined in the light of the criticism that graduates lacked practical training or the practical application of theory. Several strategies have been proposed that would achieve a better balance of theory and practice in the curriculum, make the curriculum more relevant to Yemen agriculture, establish practical training experiences, and incorporate the use of a skills performance record for each student (see Annex G, Technical Analysis, for full details). Instructional facilities at the SAIs were also studied and recommendations made concerning needed expansion and/or modernization, including an analysis of existing farmland for instructional purposes. Sufficient land for the ISAI will be provided by the MOE. Efforts are also underway at the ISAI to increase and improve instructional materials, including the start of a Learning Resource Center for teachers and staff and the writing and publication of some 15 needed Yemeni agricultural textbooks. An improved food technology and nutrition curriculum is recommended for both the ISAI and the SSAI, as are library and learning resource centers at each SAI.

c. A Functional Secondary Agricultural Education System

There are a number of alternatives that could be pursued that deviate from current programs at the SAIs. They all fall into two categories: a) those offering specialized vocational agricultural education without a secondary certificate; and b) those offering specialized vocational agricultural education in conjunction with the completion of the secondary certificate requirements.

The first category includes options involving a curriculum comprised of a series of courses of limited scope and duration which would meet limited training objectives and skill level competencies. However, this alternative would not provide for the completion of a broader based program of study which meets the

more general secondary education requirements prescribed by the MOE. Students could move in and out of such a program at an appropriate point as they needed or attained appropriate agricultural skills. Such approaches have the decided disadvantage of limiting the upward mobility of the student in terms of reaching important educational goals. Achievement of a secondary certificate is an important goal of Yemeni young people, and many would like to continue their formal education beyond that level.

While, indeed, there are training requirements for more narrowly focused technical agricultural skills, these can best be met through recurring or ad hoc short term training programs sponsored through the MAF. The training activities being carried out under the PETS and HITS activities are illustrative of these. Other donors likewise have similar short term training programs which are being carried out to meet these specific needs.

The first priority of the MOE for improving the SAE system should be to develop a capability to train students who have broad based agricultural skills and who can respond to a wide variety of employment opportunities in the agriculture sector. Thus, the secondary certificate is an important consideration. While the cost of providing special technical training is less than providing a secondary degree, we believe the cost difference is justified by the additional flexibility gained by the students and a broader educational base. Once such a capability is established, the MOE can then transfer its attention to more narrowly focused vocational training objectives and establish formal training programs with facilities, staff and curriculum to meet those needs.

Accepting the premise that a functional agricultural education system should include completion of secondary certificate requirements, the issue then becomes whether SAE should be provided in secondary schools as part of a diversified comprehensive curriculum, or whether SAE should be provided in specialized agricultural secondary schools.

Results of cross-sectional studies generally indicate that specialized secondary school training in agriculture, as well as other technical subjects, exhibit per-student training costs that are somewhat higher than general secondary education costs. This suggests that diversification of general secondary curriculums should be considered on the basis of cost criteria. The high costs of specialized secondary education are to be expected. The specialized classroom and instructional facilities (agricultural mechanics lab, instructional farm, greenhouse, etc.) that are necessary and essential to provide students with "learning by doing" experiences necessitate much higher per-student costs than general secondary education.

Implementing secondary agricultural education programs and making them no less credible than general secondary education programs is a major issue which permeates past experience in this area. It poses difficulties in implementation because of the limitations of student training time which can be devoted to practical agriculture. It poses problems for those seeking to

document social profitabilty of programs (especially in terms of benefits stemming from advances in agricultural production at the small holder level), since secondary school diploma holders are upwardly mobile and are likely to seek paraprofessional status (both inside and outside the agriculture sector) away from field positions.

Diversification of general secondary curriculums as a means of introducing vocational and applied agricultural training is a possible course of action, but is not a preferred option given the development and investment that has already taken place at the three SAIs, and given that it is not the most cost-effective means of providing secondary agricultural education in Yemen (see the Financial Analysis, Annex H, for details).

This project focuses on SAE as distinct from general secondary education, but provides the opportunity for integration in the future as secondary education in the YAR evolves. The project will strengthen and improve the efficiency of the existing SAIs and help integrate them into a system which will meet immediate agricultural manpower needs. The management and administrative capability of the MOE to provide leadership for the SAE system was assessed. Following is a summary of the assessment and recommendations addressed in this SPP extension:

(1) This Subproject will continue to extend the philosophical approaches and teaching methodologies established at the ISAI to the SAE more generally by focusing on appropriate technical assistance and training (including management/administrative training) at the MOE and the SAIs. This transfer process has already begun in the form of curriculum content with renewed emphasis on practical, "hands-on" training.

(2) YARG policy regarding SAE needs to be formulated jointly by the MOE, the MAF, the CPO and perhaps representatives of agri-business and the people at large. The formal coordinating committee which was established by decree in 1977 is being revitalized to become an important and useful policy and planning mechanism. (See Annex F, Administrative Analysis, for more details of policy-making mechanisms through committees.)

(3) An improved monitoring and evaluation system to assess progress and identify problems will be established involving the MOE, the MAF (Department of Extension) and even private sector representatives. Specialized training in monitoring and evaluation is planned. (See pp. 27-31 below for complete details.)

(4) The SAIs should become more attuned to the requirements of the regions and communities in which they exist and be responsive to local needs. The curricula will increasingly reflect these concerns as the Yemenized textbooks (currently being written) are in full use of trained Yemeni teachers.

(5) Systems for monitoring expenditure patterns and cost effectiveness need to be established and integrated into the MOE planning and budgeting process. Training for appropriate MOE staff is planned under the subproject, including training in the

financial management software being supplied with a personal computer for the MOE.

(6) Training of SAE staff should be an ongoing and continuing activity in order to provide for professional growth and up-to-date developments. The subproject provides funds for up-date training in professional areas and teaching methods, including the possibility for in-country training using TDY technical assistance.

(7) The FOA at the University of Sanaa should be capable of providing replacement SAI teachers by 1990. To help meet this target, a participant trainee will be identified for PhD training in Agricultural Education by 1986 after planned FOA Subproject approval. Upon successful completion of training, this participant will be expected to initiate a Department of Agricultural Education in the FOA and begin training Yemenis at the BS level by 1990.

d. SAI Teacher Training

The MOE and MAF must work together in this regard to assure high quality teacher candidates. The specialization required for each staff position of the SAIs is indicated in Annex G, Table G-1. The staffing plan provides for full localization of the SAI faculty by the EOP and indicates when each position will be filled by Yemeni teachers. The planned duration (6.25 years) of this subproject is related to the time required in the SAI staffing process. The Technical Analysis also addresses the question of the appropriate degree level (MS or BS) training which should be planned for teacher candidate participants.

e. Availability of SAE for Women

In view of current YARG policies prohibiting co-education at the secondary level and prevailing attitudes about education for women both in and out of government, it is unrealistic to expect that existing SAIs will enroll women. Nevertheless, in view of the importance of women as agricultural producers, the need for SAE opportunities exists. Realistically, the only way that comparable formal training opportunities can be provided to women is through establishment of a separate SAI for women. Separate facilities would have to be constructed or dedicated for such use, and separate teaching cadres would have to be mobilized. This subproject includes funds for preliminary survey work to determine demand among female prepatory students, likely areas of emphasis, etc.

The subproject to date has trained over 150 women extension agents. The teachers at the ISAI have also provided individual consultations and advice to numerous women farmers since subproject inception. The Coordinator of Outreach Programs, a position for a Yemeni woman to focus on training primarily women extension agents and farmers, and will be hired this year in coordination with the MOE. Training of women extension agents in technical short courses is expected to continue and expand during Phase II.

B. Subproject Description

The Ibb Secondary Agricultural Institute Subproject - Phase II is a six and one-quarter year follow-on to the existing ISAI Subproject. Many of the activities proposed under the subproject extension are designed to make further progress toward the goal and purpose which were identified by the original ISAI Subproject. While considerable progress has been made in establishing the ISAI as a pilot program and model SAI, there is need for continued support to consolidate the gains already made, to maintain the momentum of institutional development, and to pioneer new ideas, concepts, and strategies which will enhance development and attainment of Yemen's long-run national objectives for secondary agricultural education.

In addition to continued support for the ISAI, support will be provided to the secondary agricultural education system more generally. The subproject specifically will provide resources and assistance to strengthen, expand, and improve programs at the Surdud Secondary Agriculture Institute (SSAI), and the Sanaa Veterinary School (SVS). The ISAI Subproject also recognizes implicitly the need to be supportive of the MOE's attempts to rationalize its long-term strategy and planning efforts. The subproject seeks to improve the MOE management of the system integrating all secondary agricultural institutes (SAIs) in coordination with the Ministry of Agriculture and the private sector.

1. Goal and Subgoal

The broad goal of the ADSP is "to increase income and improve the quality of life for rural inhabitants in the YAR through agricultural development". Each subproject contributes to the realization of this goal by supporting a more specific strategy. That strategy, or subgoal, of the ISAI Subproject is:

> To increase the supply of appropriately trained men and women capable of performing mid-level technical and management tasks in the public and private agricultural sector.

2. Purpose

> To improve the efficiency of the secondary agricultural education system of the Ministry of Education (MOE) to supply Yemen's agricultural sector, including both the Ministry of Agriculture and Fisheries (MAF) and the private sector, with qualified manpower.

3. Outputs and End-of-Project Status

The ISAI Subproject extension is expected to continue for 6.25 years, beginning August 1, 1985. At the end of the subproject in 1992, the following end-of-project outputs are expected to be achieved:

a. SAI-Level Impact

(1) Each SAI fully staffed with trained Yemeni agricultural teachers, administrators and a farm manager. The staff will be able to devise performance-based curricula, achieve practical applications and conduct appropriate outreach activities without detriment to the secondary certificate standards of the MOE.

(2) A relevant curriculum at each SAI which integrates the farm activities with identified practicums and outreach activities.

(3) Educational facilities adequately equipped and refurbished to deliver the curriculum.

(4) Yemenized textbooks and other classroom teaching materials prepared and in use at each SAI.

(5) A student recruitment, evaluation, and placement system functioning and coordinated by the MOE sufficient to reach enrollment and graduation goals, with participation of the MAF and private sector companies.

b. Management

(1) Staff recruitment, retention, training, and placement programs functioning in the MOE to replace staff and maintain the SAIs indefinitely.

(2) MOE management personnel trained in administration of agricultural education providing leadership, coordinating Yemen's agriculture education efforts, conducting long-range planning, and supervising the SAIs.

c. Planning

(1) Strategies and feasibility studies to make secondary agricultural education available in all areas of the country, including consideration of establishing additional secondary agricultural institutes on a regional basis, and a separate SAI for women.

(2) Feasibility and need assessment of possible mid-level technical agricultural institute completed.

4. Inputs

AID support to this subproject extension will be in four major categories: a) participant training; b) technical assistance for implementation (personnel); c) instructional equipment and supplies; and, d) special strategy and feasibility studies.

a. Participant Training

The subproject will provide participant training at three levels: (1) long term academic training in the US for

potential SAI and MOE administrative, teaching, and technical staff; (2) non-academic training in the US aimed at upgrading management skills of key SAE administrators in the MOE; and (3) non-academic, in-country training for MAF extension personnel and MOE management personnel.

Annex G provides a detailed schedule for long-term academic training of SAI staff and faculty. A total of 39 new scholarships will be provided by the subproject. Some of these may be at the MS level, others at the BS level. The training provided will ensure adequate numbers of personnel for established teaching positions at each of the SAIs at the end of the subproject. A total of 22 faculty positions have been proposed for the SAIs. Training will also be provided for an additional pool of staff (14) to cover normal attrition or for selected MOE administrative positions. It should be noted that one staff position is targeted for the extension outreach program at the ISAI. Additionally, three selected SAI graduates will be sent to the US for BS-level training as farm managers for the three SAIs.

Candidates for participant training positions will continue to be recruited from MAF and MOE personnel whenever possible. Attention will be paid to obtaining qualified candidates who have high aptitude and motivation to be successful in the training program. Likely candidates are expected to include returned BS degree holders from Egypt and the US trained participants under the ISAI and other subprojects, MAF extension personnel, and other MOE nominees.

Baccalaureate training in Middle East countries for SAI graduates, which was an element of the ISAI Subproject but which did not relate directly to the purpose of the institutes, will not be an element in this second phase. Such training may be available under the Core Subproject or other donor projects.

English language training will be necessary to prepare Yemeni participants to undertake long-term training in the US. As discussed elsewhere in the SPP (see Annex G), formal ESL training will be carried out at YALI and at the SSAI for a limited period.

Short-term, non-academic training is planned to prepare MOE administrative personnel to manage the agricultural education system better. Special study tours, in-service sessions dealing with long-range planning, office management systems, personnel recruitment and management, and performance-based staff evaluation are examples of training that will be carried out in the US under the subproject. Past experience has clearly indicated a need for strengthening the MOE's capabilities in managing the SAIs, and such training will be carefully tailored to meet those needs.

Estimated dollar and local currency costs for the various participant training components are developed in detail in Annex H. Table 3 shows a summary of the major cost elements for training.

TABLE 3
Training Cost Estimates 1/

Item	US $ Thousands FX	LC	Total
Participant Degree Training	2162	--	2162
Non-Academic Training in the US	186	--	186
In-Country Training	--	75	75
ESL and Arabic Training	50	247	297
Total	2398	322	2720

1/ Does not include contingency and inflation factors.

b. Technical Assistance

Technical assistance and backstop support for the project will be provided by a Title XII University. Long term TA initially will include ten expatriate staff members, but this number will be reduced rapidly beginning in the second year of implementation as trained Yemeni teachers replace Third Country Professional (TCP) staff.

A total of 28 person years of long term technical assistance is provided in-country. This includes continuation of the Team Leader and Instructional Farm Manager at the ISAI for the duration of the project. The ESL Instructor at Surdud and the Extension Program Coordinator at the ISAI will be gradually phased out beginning in the second year. Midway through the project, an Agriculture Education Specialist will be assigned at Surdud for a two year period to provide guidance and assistance to returned participants being assigned to the teaching staff there and at the SVS. The expatriate teachers will also be involved in ensuring that the ISAI curriculum is transferred and adopted at the other SAIs at Surdud and Sanaa.

Short term TDY assistance will be provided to assist in curriculum refinement and development of teaching materials, give advice on financial planning, recruitment, and other implementation problems, conduct the feasibility studies related to further extension and expansion of the SAE system, and for routine and special evaluation of project accomplishments. TDY assistance to conduct in-country management training will also be provided.

Table 4 summarizes the technical assistance services which are to be provided in each implementation year.

TABLE 4

Planned Technical Assistance by Project Year (Person Years)

	Year 1	2	3	4	5	6	7	Total
US Hire at the ISAI:								
Team Leader	1	1	1	1	1	1	0	6
Farm Manager	1	1	1	1	1	1	0	6
Outreach Prg. Coord.	1	0.75	0	0	0	0	0	1.75
TCP Staff at the ISAI:								
Horticulture	1	1	1	0.5	0	0	0	3.5
Food/Dairy Proc.	1	1	1	0.5	0	0	0	3.5
Animal Science	1	0.58	0	0	0	0	0	1.58
Extension Education	1	1	0	0	0	0	0	2
US Hire at the SSAI:								
ESL Instructor	1	0.75	0	0	0	0	0	1.75
Agric. Educ. Spec.	0	0	0	1	1	0	0	2
US Hire at Home Office:								
Subproject Director	0.5	0.5	0.5	0.5	0.5	0.32	0.25	3.07
Admin. Assistant	0.8	0.8	0.8	0.8	0.46	0.35	0.06	4.06
Secretary	1	1	1	1	1	1	0.17	6.17
Bookkeeper	1	1	1	1	1	1	0	6
At-Large Prof. Staff	0.33	0.33	0.33	0.33	0.33	0.33	0	2
TDY from Home Office:								
Admin. Staff	0.05	0.05	0.05	0.05	0.05	0.05	0	0.30
Subj. Matter Spec.	0.58	0.58	0.58	0.43	0.21	0	0	2.38
Eval. & Study Teams	0.08	0.08	0.41	0.41	0	0	0	0.98
TOTAL	12.34	11.42	8.67	8.52	6.55	5.05	0.48	53.00

A summary of technical assistance and related support cost estimates is provided in Table 5.

TABLE 5

Technical Assistance and Support Cost Estimates 1/

Item	US $ Thousands FX	LC	Total
Long Term Technical Assistance and Support	2359	2239	4598
Short Term Technical Assistance	615	--	615
Home Office Support Services	1668	--	1668
Total	4642 1/	2239	6881

1/ Includes salaries, fringe benefits, travel and transportation, other allowances, and applicable indirect costs. Does not include contingency or inflation factors.

c. Instructional Equipment, Supplies & Other Services

The subproject extension will provide for procurement of teaching and library materials and other equipment needed to support programs at the three SAIs. Equipment is especially needed to upgrade the instructional farm, the agricultural mechanics teaching facility, a learning resources center, and a food science laboratory at each SAI. Some modification of existing facilities may be required, but no major construction activities are contemplated. In addition, long-term staff will assist in developing instructional materials, class handouts, and Arabic textbooks in each agricultural subject area. When approved by the YARG, these materials will be printed in textbook form for use in the SAIs. Additional copies will be provided to the MOE for distribution to general secondary schools as reference materials. Some of these materials are in preparation at present and will be published and disseminated in the early phases of this ISAI Subproject extension.

Additionally, commodities and services will be required for overall project support. The MOE also has need for limited equipment and supplies in order to establish an improved base for curriculum development activities, monitor student progress, and effect improved evaluation of school performance. The Ministry has indicated its interest in developing a micro-computer capability for monitoring and evaluation.

Table 6 indicates the proposed allocation of selected commodity funding to the various SAIs, and suggested funding allocation levels for the MOE and for general project support. These amounts should be considered illustrative. Detailed commodity specifications and a procurement plan for each user will be prepared as implementation proceeds.

TABLE 6
Allocation of Commodity, Supply and Service Costs to Various Users
(all figures in $US thousands)

Category	Overall Subproject Support	ISAI	SSAI	SVS	MOE	TOTAL
Non Expendables:						
Teaching Materials	52	168	208	188	47	663
Library Materials		40	70	50	100	260
Office Equipment	20	25	30	30	40	145
Farm Equipment		225	300	200	--	725
Vehicles	51	17	17	17	--	102
Subtotal	123	475	625	485	187	1,896
Expendables:						
Parts, Supplies & Materials	148	95	95	95	40	473
Communication Services	209	--	--	--	--	209
Textbooks	--	--	--	--	125	125
Other	--	25	25	25	27	102
Subtotal	357	120	120	120	192	909
Freight or Transfer Costs:	157	194	250	204	121	926
TOTAL	637	789	995	809	500	3,371

A summary of commodity, supply and service cost estimates is presented in Table 7 below. Further detail may be found in Annex H.

TABLE 7
Commodity, Supply and Service Cost Estimates 1/

Item	US $ Thousands FX	LC	Total
Expendable Equipment & Materials	634	275	909
Non-Expendable Equipment & Materials	1683	213	1896
Freight or Transfer Costs	926	--	926
Total	3243	488	3731

d. Feasibility Studies

It is proposed that two feasibility studies be conducted under the aegis of this subproject. Both are aimed at analyzing possible needs for expansion of the existing SAE system to meet anticipated needs to train Yemeni men and women in agriculture in the future.

The first study will determine the need and feasibility of developing additional SAIs in the YAR. The MOE is currently considering the possibility of locating a new agricultural secondary school at Marib and/or Sadah to serve regional training needs in those locations. This study would focus on the need, feasibility, and practicality of developing these additional schools. Political, social, economic and manpower issues will get special emphasis in this assessment. The feasibility of establishing a separate SAI to serve women students, probably in the Taiz area, also could be considered in this review. It will be determined whether there is sufficient demand for such a school and the extent to which curriculum might need to be modified to meet student desires for education and jobs. It will also identify any specific issues which will need to be addressed in providing SAE to women.

The second study will examine the need and feasibility of developing a more advanced technical agricultural institution in the YAR. As presently conceived, this institution would be similar to post-secondary vocational schools and/or community colleges in the US. The objective of such an institution would be to provide specialized technical training for SAI graduates who do not continue to the baccalaureate level, or to others who aspire to additional vocational/technical training. The costs of carrying out these studies have been included in the Short Term Technical Assistance component in Table 5.

1/ Includes instructional materials, equipment and services to upgrade SAIs, and project support procurement items such as vehicles, etc. Does not include contingency and inflation factors.

II. COST ESTIMATE AND FINANCIAL PLAN

A summary of AID contribution cost estimates shown in the previous section is presented in Table 8 below. These estimates are based on March 1985 price levels. A 5 percent contingency factor has been added for technical service and commodity costs, to cover estimation errors. Additionally, an adjustment for inflation, projected at 8 percent compounded per year, is provided.

TABLE 8
Summary of AID Contribution to the ISAI Subproject

Item	US $ in Thousands FX	LC	Total
Technical Assistance and Support	4462	2239	6881
Commodities and Services	2826	488	3314
Participant Training	2398	322	2720
Contingency	376	152	528
Inflation Factor	2652	907	3559
Total	12,895	4,107	17,002

AID will provide $17 million in grant funds for the subproject. Initial obligation would be from FY 85 funding availabilities, with the final obligation being provided in FY 91. The YARG contribution is projected at $11,965 million equivalent, representing approximately 41 percent of the total life of project cost estimated at $28,723 million. Annex H contains detailed financial tables and itemized cost estimates for both the AID and YARG contribution. The YARG contribution consists mainly of salaries and operational costs, some additional land for the ISAI, and limited commodities.

The proposed schedule of expenditures by year is shown in Table 9 below.

TABLE 9
Summary Cost Estimates and Financial Plan
(US $, Thousands)

	AID Contribution				YARG Contribution		
Year	FX	LC	Total	Percent	LC	Percent	Total
1	2431	758	3189	75	1042	25	4231
2	2650	765	3415	71	1408	29	4822
3	2859	766	3622	68	1684	32	5305
4	2349	640	2989	60	1962	40	4951
5	1637	555	2191	49	2307	51	4498
6	957	491	1448	36	2591	64	4039
7	16	133	148	13	972	87	1120
Total	$12895	$4107	$17002	59%	$11965	41%	$28967

III. IMPLEMENTATION PLAN

A. Implementation Responsibilities

This subproject will be implemented using the letter of credit (for FX) and direct reimbursement (for LC) methods of financing. Both methods of financing were chosen because they offer the USAID Mission the greatest degree of control over subproject expenditures, in addition to being prescribed in the general policies of AID as preferred methods of financing.

1. USAID Yemen

The USAID Mission in Yemen will have major monitoring responsibilities. This will involve approving annual budgets and workplans, organizing and directing external evaluations, acquiring approval for waivers and facilitating approvals and diplomatic relations with the YARG. A USAID Project Officer will establish communication and working relationships with the Subproject for the coordination of activities of this subproject.

2. Title XII University

The subproject will be implemented by a Title XII University as an extension and expansion of the activities initiated under the ISAI Subproject of the ADSP (279-0052). The Assistant Administrator signed a procurement waiver of competition on _____ which will permit direct contracting with New Mexico State University.

3. YARG

The YARG, through the Central Planning Organization (CPO), the MOE, and the MAF will have implementation responsibilities in the following areas:

a. Approval of long- and short-term expatriate personnel;

b. Recruitment, selection, and approval of participants for ESL and long term training in agricultural education;

c. General administration of SAI programs;

d. Salaries for all Yemeni staff, capital expenditures and maintenance of facilities;

e. An increasing assumption of recurrent costs related to commodities; and

f. Joint participation in monitoring subproject progress and evaluating subproject performance.

B. Subproject Organization and Coordination

The Team Leader (TL) in the field has the major responsibility

for subproject communication and coordination relative to fiscal management, personnel concerns, preparation of work plans, maintaining implementation schedules, preparing reports, responding to internal and external evaluations, etc. The TL must work closely to coordinate activities of the Subproject with other ADSP activities, and at various levels of the MOE and the MAF. The Campus Coordinator will provide US backstop support as required to the TL. The MOE will be responsible for leadership, coordination, planning and supervision of the SAIs, and the ISAI Subproject will provide in-service training to strengthen MOE administrators in that role. The MAF will provide employment for a portion of the graduates and will be called on by the MOE to coordinate internship and career opportunities for SAI graduates who choose to work as extension agents in the public sectors. The MOE coordinates student recruitment, internship and career placement opportunities, outreach activities, and in-service training opportunities, in the private agricultural sector and general public. The subproject TL and the MOE Director of Agricultural Education will provide leadership and guidance in coordinating this activity.

IV. EVALUATION AND MONITORING PLAN

Initial attention will be given to assessing accomplishments which impact directly on the project purpose of improving the efficienty of the secondary agricultural education system in the YAR which will help provide trained manpower for the agricultural sector. In the late stages of the subproject, the evaluative focus will shift to subproject goals and subgoals.

In addition, evaluation and monitoring will involve active participation of MOE and MAF officials to familiarize them with the concept and usefulness of self-evaluation, and to prepare them to use evaluation and monitoring strategies at key decision points as secondary and technical agricultural programs expand in the future.

A. Baseline Data Development

It is essential to continue to expand on the body of baseline data that has been collected in the initial ISAI Subproject in order to accomplish evaluation and monitoring objectives. Accordingly, it is proposed that a joint evaluation study committee concerned with the total SAE system be established composed of: Director of Agricultural Education, MOE; Directors of the ISAI, the SSAI, and the SVS; Director of the National Extension Service, MAF; the ISAI Subproject Team Leader; and private agribusiness representatives.

This committee would be charged with monitoring and assembling a comprehensive set of baseline data on the continuing development and impact of SAE in the YAR and any other matters deemed relevant to a more complete picture of agricultural manpower training. It is expected that the ISAI Subproject Team Leader will take the major initiative in the collection of data in the early years of subproject extension implementation. MOE, MAF and private sector representatives, in this order, will gradually assume major responsibilities for data collection and analysis. This data should include, but not be limited to, the following:

1. Manpower assessment data in the public and private agricultural sectors of the YAR for secondary and technical agriculture graduates.

2. Staff recruitment and training, ESL training, and graduate training, retention, and placement data.

3. Facilities assessment; additional needs for expansion; equipment and supplies procurement data.

4. Student recruitment, training, matriculation, retention, graduation, and placement data.

5. Evidence of established linkages between the SAIs and the MOE, the MAF and the FOA at the UOS.

6. Socio-economic data of the rural agricultural sector and the impact on the sector of persons trained under the subproject that will form the basis for assessing the achievement of the subproject goal and subgoal.

The joint evaluation committee, with the assistance and participation of a short-term consultant, will prepare a report summarizing this baseline data by the end of the initial subproject extension year. This report will provide benchmark information needed for subproject evaluation and a basis for monitoring and data collecting in succeeding years.

B. Monitoring and Reporting

Monitoring and reporting will be carried out routinely to track the subproject inputs and outputs. Activities will focus on the narrative of who, what, where and when things happened, as well as why they happened the way they did. Regular progress reports, on a quarterly basis, are required by the YARG, the Title XII University, and USAID. These will provide the basis for information which is necessary for decision-making, accountability, and motivation. The proposed monitoring and reporting plan is designed to contribute to success in carrying out the periodic subproject evaluations as described below. Overall responsibility for carrying out this plan will rest with the Title XII University.

Specific monitoring and reporting tasks and the schedule for their completion are delineated more fully in Table 10. Note that in this list some events occur irregularly or only once (episodic), and some occur on a regular periodic basis. Subproject management should give serious attention to this plan in preparation for the evaluations described below.

C. Subproject Evaluations

Table 11 specifies a sequence of external evaluations that are proposed in order to assess subproject progress and to ensure that the design remains relevant to the needs of the YAR. Significant subproject milestones are identified, and in each case the timing, key questions to be asked, and decisions to be made as a result of each assessment are indicated.

A final external evaluation, which at this point must be considered only as a recommendation, is projected for an interval of time about five years beyond the end-of-project (EOP). This evaluation will assess the extent to which the subproject has contributed to the general goals and subgoals of the ADSP. The impact of the subproject is expected to extend beyond the PACD, and assessment at EOP is considered inappropriate. Because the ADSP is expected to continue well beyond the termination date for this subproject, such a recommendation is deemed feasible.

D. Responsibilities for Conducting Evaluations

Responsibility for external evaluations will rest with USAID/Y; i.e., selecting the team, final review, and acceptance of the report and submission to AID/W. It is expected that USAID will collaborate with the contractor, the MOE and the MAF in determining the timing and scope of these evaluations.

TABLE 10

MONITORING AND REPORTING PLAN (PROVISIONAL)

ITEM OR MILESTONE	EPISODIC (E) PERIODIC (P)	TIMING	INDICATOR	TARGET	DATA SOURCES	REPORT:RECIPIENT
Conditions precedents are met	E	Before subproject agreement signed	Progress of YARG in meeting conditions	All conditions met	YARG Records; signed agreement	Contractor, YARG, USAID/Y
US Administrative personnel in place	E	ASAP after PROAG	Final acceptance	Permanent duty station ASAP after PROAG	Correspondence; contracts	Contractor; Individuals
Yemeni leadership (SAI Directors, Ass'ts.)	P	Annual, beginning of Year 2	Establish and maintain working relationship w/ Team Leader, staff and teaching faculty	Smooth functioning operation; admittance of students; staff development underway; good rapport with faculty, US counterpart	YARG records; evaluations	Contractor; MOE; USAID
Participant training, selection, performance	P	Annual	Identification, lang. scores, acceptances, academic progress, elapsed time	Highly qualified candidates	Application, ref's; university records	Contractor; USAID; MOE
Technical assistance, US	E,P	Annual	Participation, administrative/ faculty professional development	Professional development program for all personnel	CID/YARG records; evaluations	Contractor; USAID; MOE
Graduates employed	P	Annual	Proficiency, effectiveness	Well-prepared, motivated	MOE records; evaluations	Contractor; MOE; USAID/Y
Expansion surveys completed	E	During fourth year of subproject	Needs assessment, feasibility, financial study completed	Thorough, comprehensive study approved	CID records; evaluation reports	Contractor, USAID; MOE

TABLE 11

Overview of Subproject Evaluation Process Including Purpose, Proposed Key Questions to be Answered, Key Indicators and Assumptions, and Data Needed for each Internal and External Evaluation

EVALUATION	EVALUATION PURPOSE	KEY QUESTIONS TO BE ANSWERED	KEY INDICATORS AND ASSUMPTIONS	DATA NEEDED
First External (Year 3)	1. Assess training of staff and students, facility expansion, equipment and material procurement and technical assistance.	1. Did each item planned actually happen? If not, why not? 2. What was the relationship between the various subproject levels? 3. Were the activities and resources suitable and sufficient for producing the outputs? 4. What was the rough cost/effectiveness at each level? 5. Were there any unanticipated secondary benefits or costs related to the subproject?	Indicators: 1. Trained staff and students. 2. Availability and use of expanded facilities and teaching materials 3. Preparation of revised curricula, individual course syllabi, initiation of administrative procedures. Assumptions: 1. US training can prepare Yemeni MS candidates to teach relevant courses at the secondary level. 2. Land and buildings necessary for facilities expansion and teaching resource centers available in a timely manner. 3. Technical assistance available in a timely manner.	1. Land and equipment procurement data, schedule progress. 2. Inventory lists 3. Interview data from MOE & support staff. 4. Course syllabi, schedules. 5. Employer interview data.
Second External (Year 6)	1. Assessment of achievement of subproject purpose.	(same as for the first internal evaluation, above)	Indicators: 1. SAIs are fully developed and upgraded in line with design expectations. 2. Field survey results to determine the need and feasibility for establishing additional SAIs and a technical agriciultural institute. Assumptions: 1. The YARG will continue to support SAE and encourage expansion to a middle-level technical agricultural institute when feasible.	1. MOE data and subproject records. 2. Survey of graduates and employers. 3. Subproject evaluation reports and monitoring plans.
Third External (Year 11)	1. Assessment of achievement of subproject goal/subgoal.	(same as for the first internal evaluation, above)	Indicators: 1. Increased agricultural production. 2. Improved agricultural trade balance. 3. Increased farm income. 4. Increase in trained agricultural manpower. Assumptions: 1. Agriculture will remain an important economic activity in rural YAR. 2. Incentives exist to attract secondary graduates to agricultural sector. 3. Demand will continue for secondary agriculture graduates.	1. YARG agricultural sector statistics. 2. Socio-economic analysis of rural agricultural sector. 3. MOE, MAF records. 4. Previous subproject evaluation reports.

V. PROJECT ANALYSIS

A wide range of problems and issues were considered during subproject design. Studies and documents were reviewed, primary data was collected, and discussions were held with YARG officials, AID representatives, CID staff, and others in the YAR.

The various issues addressed have been summarized in separate analyses contained in the Annexes, including:

Annex D	Social Soundness Analysis
Annex E	Manpower Issues
Annex F	Administrative Capability of the YARG
Annex G	Technical Analysis
Annex H	Financial Analysis
Annex I	Initial Environmental Evaluation

Additionally, several other reference documents based on primary survey data or expert knowledge of the YAR situation have been prepared. These are included as Annexes J, K and L.

The analyses reflect the accomplishments to date, YARG official views, and perceived needs and constraints which can be addressed through AID assistance. Summaries of these analyses are presented in the sections which follow.

A. Social Soundness

The subproject is designed to meet important social and economic needs of lower and middle income classes in the YAR, and is compatible with the sociocultural environment in the country. The project will provide a needed institutional capacity to train Yemenis as mid-level agriculturalists, to contribute directly to public and private sector manpower needs, and to respond to the demand for agricultural sector support services.

A major objective of the Subproject is to "Yemenize" the curriculum. This involves training of Yemeni nationals to staff the schools and a revision of curriculum content to ensure that it is relevant in the Yemeni context. These objectives are consistent with YARG policy to reduce reliance on expatriate teaching staff, and with concerns for establishing a knowledge base that will lead directly to increases in agricultural sector productivity.

At the present time the government of Yemen is not prepared to open enrollment of SAE schools to women. Justifications for separate SAE programs for women appear strong, but the feasibility of establishing a separate women's SAE program has not been demonstrated. This will be looked at during the course of the subproject. In the meanwhile, outreach extension activities for women from the SAE will continue. Efforts to link the SAE system with agricultural extension will be encouraged under the Subproject.

The potential spread effects of the Subproject and its focus on a large socially important beneficiary clientele must be viewed positively. The Subproject design is socially sound, and there are

no negative social impacts which are likely to be encountered as a result of implementation.

B. Manpower Issues

It is widely recognized that the YAR does not have sufficient workforce resources to effectively carry out the wide range of programs necessary to achieve development objectives. This is not at all surprising, since the country began its course toward modern nationhood only about two decades ago, from a state of isolation characterized by mass illiteracy and a labor force that was poorly qualified in modern methods, albeit with a well-earned reputation for hard work and an aggressive entrepreneurial tradition. There is general agreement, both among senior YARG officials and informed development practicioners, that workforce development is a problem of major dimensions and should be accorded a high priority both for donor assistance and the YARG's own development budget.

While the assertion of a workforce shortage is accepted as true for the economy as a whole, it is particularly important with respect to the agriculture sector, both in absolute terms and relationship to requirements. Shortages of skilled and semi-skilled agricultural workers, as well as science-based professionals and sub-professional technical staff, are prevalent in both the private and public sectors.

Efforts to resolve shortages are being undertaken by various donor groups which provide assistance for agricultural training programs directed at several different target groups. Many of these programs are of a short-term nature, and while important in terms of addressing specific skill level objectives, they do not meet needs for a flow of entrants into the agricultural services work force who have a suitable knowledge base upon which the sector as a whole can depend for its modernization and contribution to the nation-building process.

The ISAI Subproject is designed to meet this need -- to train Yemeni citizens for service in public and private sector enterprises which will support the growth and development of the agriculture sector as a whole.

Several important manpower issues were considered, which are analyzed in detail in Annex E and elsewhere in the SPP. These are summarized below as follows:

1. The subproject is designed to produce secondary school graduates who will be technically qualified and motivated to contribute to the long-run needs of the agricultural sector. Special attention is given to the SAE's curriculum content to ensure that it is relevant, that it is practical in meeting those needs, and that it is broad enough to prepare graduates for a wide range of employment opportunities in agriculture. There is little need for specialization at the secondary school level, but there are special needs for graduates with training in agricultural economics, farm mechanics, food processing, and poultry and dairy production. The curriculum is designed to meet those needs. The subproject design

also emphasizes the importance of practical training in which the student must demonstrate his competence to perform certain tasks which are relevant to potential employment needs.

2. Long-range employment opportunities for SAE graduates were considered to determine if there will be sufficient demand for their services to justify extending the subproject. While a quantitative assessment of supply and demand for agricultural personnel is limited by the lack of reliable data, survey results indicate that lack of job opportunities for qualified graduates of the SAE system will not be a constraint to the full utilization of subproject resources. In fact, evidence indicates a need for eventual expansion of the SAE system to regions not now being served. Separate SAE facilities for women may also be justified. These aspects will be more carefully analyzed through the proposed feasibility studies.

The capacity of the agricultural sector to absorb the annual flow of 150 or so SAI graduates which the system ultimately will produce is deemed sufficient. Public sector opportunities will depend on how rapidly the central and regional needs expand, and on YARG policy with respect to budget allocations to agriculture. The availability of a well trained manpower pool can, to some extent, influence the direction of YARG policy in this respect. Without such a pool, public sector investment in agriculture will not be forthcoming.

The private agribusiness sector will also provide opportunities for well trained agricultural graduates. Growth of this component will depend in a large part on the availability of private capital for agribusiness development, a comprehension of modern technology and the attractiveness of profit opportunities, and strong markets for agricultural products. Availability of capable manpower will contribute to the expansion of the agribusiness sector, and thus create new job opportunities as the agribusiness system matures.

3. The design team also analyzed the flow patterns and career goals of preparatory school graduates in determining that there will be sufficient SAE system enrollment to justify continuing investment.

Numerical estimates of the flow of preparatory school graduates and the results of a recent survey of their aspirations and interests indicate that student availability for secondary agricultural education enrollment is high. The project design recognizes the need to undertake a more active recruitment effort to capitalize on this interest, and to attract well qualified students to the SAE system. Opportunities for further education beyond SAI graduation will, in part, affect SAE system recruitment. The establishment of the FOA at the University of Sanaa must be viewed as a positive incentive in this respect.

In conclusion, student enrollment at the SAIs should not be constrained by lack of numbers or interest in SAE. What will be important is an active information program directed at preparatory school graduates and their parents, to make them aware of the avail-

ability of SAIs as an educational option, and the long run employment prospects which can be anticipated at graduation and beyond.

Whether the SAE system model which has been suggested as a long range strategy for agricultural education in Yemen will be adopted and implemented will depend on the effectiveness of its various components in meeting manpower needs in the short run. The design team is confident that the SAE Subproject will be effective to that end.

C. Administrative Capability of the YARG

The administrative capability of the YARG, and more specifically the MOE, to support the subproject and effectively utilize the resources which are proposed, was reviewed. It was concluded that the basic organizational structure of the MOE is sound and that a framework for effectively administering a comprehensive SAE system is now in place. Thus, no significant reorganizational effort within the MOE or other restructuring of government agencies is required.

During the past five years, the MOE has been involved in the ISAI Subproject implementation. Thus, considerable insight has been gained as to the MOE's administrative and financial ability to support the continuation and expansion of this subproject. The MOE is committed to strengthening the SAE system by:

1. Having the Directorate of Agricultural Education in the MOE assume a greater leadership role in development and management of an SAE system. The Director of Agricultural Education will focus on:

(a) Developing and maintaining a system for recruitment, placement, and retention of professional staff; (b) developing and maintaining a comprehensive student recruitment system; (c) collecting and maintaining current information on manpower needs and future job opportunities for SAI graduates; (d) developing and implementing an in-service training program for ISAI professional and administrative staff; (e) reactivating the National Agricultural Education Policy Committee, and ensuring that membership includes representation from those entities in both private and public (MOE, MAF, CPO, etc.) sectors interested in agricultural education; and (f) developing and maintaining a SAE coordination committee which could assist in overall operation of the SAE program. Membership of this committee would include the three SAI Directors, Director of Extension from the MAF, and representatives from relevant public and private agencies interested in the SAE program. The Director of Agricultural Education, Director of Vocational Education, and the ISAI Subproject Team Leader would serve as ex-officio members of this committee.

2. Having the SAI Directors develop local advisory committees to provide a local network of support and feedback systems involving both private and public sectors.

3. Improve the MOE budgeting process and the releasing of funds on a timely basis. The MOE has requested that the Ministry of

Finance release operating funds on a six month basis, rather than the present quarterly system. More responsibility needs to be delegated to local school directors for implementation of their schools' programs.

4. Having the subproject provide training for the administrators and agricultural professionals at each of the SAIs, as well as management and administrative training for relevant staff in the Directorate of Agricultural Education.

D. Technical Analysis

1. Agricultural Education in the YAR

Agricultural education in the YAR consists of three secondary agricultural institutes and several short-term training programs for extension workers and producers. A FOA at the University of Sanaa is a separate subproject of the ADSP for the training of agriculturalists at the professional level.

The long-term needs for agricultural training in the YAR should be pursued in the context of a total delivery system in which each level of training is supportive of other levels. Each component must be developed in a way that complements a total delivery system of the future. A conceptual model for such a comprehensive agricultural education system has been proposed. This subproject will conduct feasibility studies to determine the need for expansion of secondary agricultural programs to other locations and if special facilities for women should be established, and to determine the need for a vocational-technical institute level of agricultural training.

2. Staffing of the SAE System

The counterpart staffing plan for this subproject has been strengthened in several critical areas:

a. Procedures have been defined for selection of staff who will be sent to the US for degree training and efforts are already underway to identify the required number of trainees.

b. New configurations for ESL training have been identified to reduce the time-frame for achieving TOEFL scores of 500.

c. Training plans have been developed for the three agricultural institutes in a scope that will provide a full complement of US-trained Yemeni staff at each site by the end of the subproject. Responsibility for training replacement staff will then be shifted to the YARG. It is anticipated that the FOA at the UOS will assist in meeting these needs.

d. Staff development will be given a high priority and directed toward the needs of the curriculum.

3. Student Recruitment, Retention and Placement

Effective student recruitment will be given priority. A planned, coordinated recruitment program will be implemented for the purpose of increasing enrollments to the design capacity of each SAI. A recruitment plan will provide for the involvement of staff in preparatory and secondary schools within their geographic region. Retention is not a major problem at this time. Employment opportunities are available through the MAF and private industry after the student's military obligation is fulfilled. Given the pool of trained students to draw upon as candidates for SAE and post-graduate employment opportunities, recruitment to the SAE program is not considered a major constraint.

4. Curriculum

Two major curriculum concerns include the practical application of knowledge and the relevance of the curriculum to the agricultural development of Yemen. Several strategies have been advanced for achieving a better balance of theory and practice in the agricultural curriculum. These are described further in Annex G, Section 4.

Establishment of a relevant curriculum was given considerable emphasis in the design. The lack of Yemeni-developed textbooks and instructional materials is a major constraint to relevance of subject matter. Also, the curriculum seems to be directed more toward commercial farming than to the small farmer. The formation of local advisory committees is planned as a way of "Yemenizing" the curriculum. Other strategies for making the curriculum more relevant to Yemen are suggested throughout Annex G.

5. Outreach

The ISAI is rapidly expanding its outreach function in Yemen agriculture. The Outreach Extension Coordinator position will be filled by a Yemeni woman BS degree holder. Since one of the important missions of the SAIs has been to train extension staff, the SAIs can serve as outreach training centers and as role models for the other agricultural training centers. The outreach component has been strengthened in the second phase of the subproject. Job descrip- tions will identify the responsibilities of each faculty member, and ensure that projected workloads allow 30 percent of staff time for outreach activities. A strong focus on outreach must be mandated to all staff, and should be supported by policies and procedures of the administrative institutions that control the agricultural institutes. The ISAI outreach program must be introduced in the other two institutes, and set in place as an ongoing component of the instructional program.

6. Instructional Facilities

In general, the classrooms, laboratories, offices and other buildings are adequate to deliver the existing curriculum. Some modifications will need to be made in facilities to accommodate new or expanding curriculum areas.

The instructional farm at Ibb is too small at present. Negotiations are underway to increase the farm size at Ibb and include some four hectares of terraced land. Surdud's instructional farm is adequate for delivery of its curriculum. The Sanaa Veterinary School farm is too small, and "hemmed in" by commercial and residential properties. There is no possibility of increasing the size of the present site. The SVS is currently utilizing nearby farms as a way of extending their instructional farm. This situation appears to be satisfactory for planned enrollments.

The equipment is inadequate for the instructional farms at all three schools. Additions of laboratory and instructional equipment will be needed throughout the life of the subproject. Small demonstration-type farm equipment and supplies are desperately needed for student practical training and student-managed production plots.

A learning resource center is being established at Ibb. Once this model is established, it should be replicated at the other two institutes. The learning resource center includes a library and teaching materials and resources.

Student housing will not be a problem in the immediate future. After maximum enrollments are reached, decisions will need to be made on expansion needs. Additional new institutes may be required at other locations in Yemen.

E. Financial Analysis

1. Overview of Financial Performance of the ISAI Subproject

Unavoidable delays in program implementation prevented the ISAI Subproject administration from expending funds on schedule. Some program areas, however, were found to be underbudgeted. The YARG has made significant financial commitments to the operation of the SAE system, but important deficiencies in budgeting and disbursements need to be corrected. In the concept of overall YARG budget allocations this should not present a serious problem, but the fairly rapid increase during the LOP is a matter for concern. AID and the implementing Title XII University should continue to monitor the YARG budgeting process in this regard.

2. Proposed Financial Plan

The summary budget is shown in Table 12. Detailed budgets are presented in Annex H. Continued development of a SAE system within the YAR from 1985 to 1992 will cost approximately $29 million. The estimated cost of the proposed AID subproject is approximately $17 million.

a. AID Funds

It is recommended that AID provide approximately $13 million in foreign exchange grant funds to finance the technical assistance, commodity support, and participant training elements of the subproject extension. It is further recommended that approximately $4 million of the total $17 million grant be made in Yemeni Rials.

b. YARG Contribution

The total YARG contribution to the subproject will be $11.97 million (or 41 percent of the total cost) for salaries and other personnel expenses, operating costs, commodity support, etc. This amount reflects the direct costs of improved SAE management within the MOE. Excluded from the contribution are any costs of overhead in the MOE.

c. Other Donor Contributions

Under provisions of the ongoing IBRD/IDA Third Education Project, external donor funds will be available for the retention of four TCP staff in the SAE system through July 1987. There are, in addition, limited funds available (less than $50,000) for commodity support for the SAE system. Indications are, however, that these funds will be expended in 1985, and therefore are not included in the financial plan.

d. Physical Contingency and Price Escalation

The budget includes a physical contingency of five percent for each year of the project, computed on all direct costs except participant training. There are no capital construction costs in the budget.

The local rate of inflation has remained in the range of ten percent net of currency depreciation in the last year. The budget (given in 1984 prices) includes a lump sum "expected inflation" line item computed at eight percent per annum (compounded). The inflation component is computed across all direct costs, contingency costs, and participant training costs.

3. Recurrent Cost Issues

There is reason to have some concern over the state of fiscal affairs in the YARG. Total government expenditures (capital expenses and recurrent costs) are nearly 2.5 times reported revenues. Recurrent costs are more than 1.5 times revenues. Although there are resources that the YARG can tap to cover these deficits, it is apparent that a long-term plan to rectify fiscal imbalances should be implemented. On the other hand, allocations within the YARG budgets tend to reflect increasing amounts for education services. The best estimate of current annual total disbursements for the SAE system is $1.1 million. This will have to increase significantly during the period of subproject life, however. In view of the importance which is being accorded to SAE by the YARG, and the relatively small share of the total education budget which is allocated to agriculture, such increases of the YARG matching contribution for this subproject should be manageable.

4. Analysis of Other Alternatives

In order to ensure that the proposed subproject conforms to efficiency in the use of financial resources, a financial analysis was conducted. This analysis compares the proposed subproject

TABLE 12
SUMMARY AGRICULTURAL EDUCATION SUBPROJECT
SUMMARY BUDGET
($000)

YEAR	1	2	3	4	5	6	7	
	PROJECT YEAR (12 months) AUGUST 1 TO JULY 31						4 mo.	
BUDGET ITEM	'85-'86	'86-'87	'87-'88	'88-'89	'89-'90	'90-'91	'91-'92	TOTAL
I. AID FX BUDGET								
A. Technical Assistance & Support	1130	1017	850	776	530	329	9	4642
B. Commodities	838	679	609	344	257	99	0	2826
C. Contingency (5%)	99	85	73	56	40	21	0	376
D. Participant Training	184	490	735	551	286	153	0	2398
SUBTOTAL	2251	2271	2267	1727	1113	602	9	10242
INFLATION (8.0%, cmpd)	180	378	589	622	523	354	7	2652
TOTAL AID FX BUDGET	2431	2650	2856	2349	1637	957	16	12895
II. AID LOCAL CURRENCY BUDGET								
A. Tech. Assistance & Support	437	434	414	341	298	253	62	2239
B. Training	105	79	70	37	14	14	2	322
C. Commodities	127	112	94	70	47	28	10	488
D. Contingency (5.0%)	33	31	29	22	18	15	4	152
SUBTOTAL	702	666	608	471	377	309	77	3200
INFLATION (8.0%, cmpd.)	56	109	158	170	177	182	55	907
TOTAL AID LOCAL CURRENCY BUDGET	758	765	766	640	555	491	133	4107
TOTAL AID FX + AID LC BUDGET	3189	3415	3622	2989	2191	1448	148	17002
III. YARG LOCAL CURRENCY BUDGET								
A. Total Recurring Costs	965	1207	1337	1442	1570	1633	567	8720
B. Inflation (8.0% cmpd.)	78	201	347	520	737	958	405	3245
TOTAL YARG LOCAL BUDGET	1042	1408	1684	1962	2307	2591	972	11965
TOTAL PROJECT BUDGET	4231	4822	5305	4951	4498	4039	1120	28967

plan (operating over a planning horizon of 20 years) with several alternative staffing plans, including the use of a staff of TCP agricultural education instructors employed over the planning horizon. It is contended that important quality differences would emerge from the alternative plans to implement the SAE system development as discussed in this subproject paper. Even if that difference is considered to be negligible, the proposed subproject is shown to have a least cost advantage over the expatriate-hire alternative. This analysis is presented in Annex H.

5. Conclusions

It is submitted that the financial plan to implement the continuation of development of a SAE system in the YARG is well-coordinated with the envisioned subproject program plan, economizes on the use of resources, and exhibits cost-effectiveness compared to alternative means of implementation.

F. Economic Analysis

1. General Considerations

Several economic factors should be noted with regard to overall aspects of the project environment.

In aggregate terms, the economy of the YAR may be considered to be reasonably healthy. Projected GDP growth rates give cause for cautious optimism. Balance of payments accounts, while having deteriorated somewhat in recent months, are not in disarray. The agricultural resource base is fairly well established, and the sector is well poised to respond to stimuli for modernization and productivity gains.

The recent discovery of oil resources is a favorable omen. Economic relationships with other Arab countries on the Peninsula are cordial, and there is a demonstrated willingness of those countries to share their wealth with their Yemeni partners. The international donor community continues to show support for the YARG, and their willingness to invest in the YAR's future must be considered a positive factor.

The YARG enjoys a reasonably favorable reputation for responsible budget management and planning. The debt service ratio is manageable, military expenditures are within reason, monetary and fiscal policy reflects responsible conservatism, and the country does not have an overbearing public sector or a large bureaucracy.

There is a strong private sector orientation, and resource allocations flow freely in response to market forces. The distribution of income is relatively egalitarian, and concentration of wealth is beginning to take similar shape.

It may be observed that while the economic environment is fragile, the development potential threshold is positive, and the economic and political climate for donor assistance is favorable.

The YARG policy and will to invest its own resources

heavily in the education sector and to otherwise develop the human resource base must be applauded. There appears to be a responsible government commitment to development objectives which are consistent with the needs of people. The recognition of these social priorities reflects a well-conceived commitment to modern nationhood that is worthy of support.

2. Project Analysis

With respect to economic considerations related specifically to donor assistance projects, it is usually desirable to analyze the social profitability of the specific assistance effort Typically, the analysis takes the form of a cost-benefit determination. However, formal cost-benefit analyses of projects which do not produce pecuniary benefits (e.g., education, health, etc.) are not very meaningful when social welfare outputs cannnot be readily quantified. Quantification of benefits of the proposed subproject would be difficult to accomplish without considerable time and effort, and estimates would likely be highly unreliable.

In such cases, AID guidelines recommend the use of a least-cost analysis to determine social profitability. The subproject paper, therefore, contains only an analysis of financial issues and a least-cost analysis.

G. Environmental Considerations

The subproject will have no significant effects on the environment which warrant undertaking an environmental assessment. A negative environmental threshold determination has been recommended.

VI. CONCLUSIONS AND RECOMMENDATIONS

In conclusion, the subproject as proposed is socially sound and meets an important development need for the cooperating country. The subproject is technically feasible, and appropriate to the Yemeni development context. The cooperating country has the administrative and financial capability to support the project during its implementation, although their ability to provide steadily increasing budget support will be closely monitored by USAID staff. It is expected that such support will continue when AID assistance is concluded. The project costs are consistent with the inputs which are proposed, and the overall design is believed to be cost effective in achieving the design objectives. The economic environment in which the project will be implemented is considered favorable, and it is believed that the project meets the test of social profitability. There are no adverse environmental effects which need to be considered.

It is recommended that funding for Phase II of the Ibb Secondary Agricultural Institute Subproject, a component of the Yemen Agricultural Development Support Program, be approved in the amount of $17 million. Implementation would begin concurrently with the conclusion of the existing Ibb Secondary Agricultural Institute Subproject, for which authority will expire on July 31, 1985. A six and one-quarter year implementation period is recommended.

ANNEX A

Scope of Work for Project Design

Explanatory Note

Because this design effort was conceived as an extension of the ISAI Subproject, no separate Project Identification Document was prepared. As plans were initiated for preparation of the SPP, USAID/Y and CID staff considered various concept options for the extension. In reviewing the recommendations contained in the 1983-84 Pragma Evaluation Report and as a result of deliberations at the 1984 Joint Annual Field Review, it was determined that further development assistance in secondary agricultural education was warranted and should be directed at the YARG's secondary agricultural education system as a whole -- not just the existing school at Ibb.

It should be noted that while the ISAI-II Subproject goal is identical to that of the original ISAI Subproject, the purpose is somewhat broader.

As noted above, no formal PID document has been prepared for review by AID/W, and a formal AID/W response to the PID proposal is not available. In lieu of these, a detailed Scope of Work for project design was prepared by USAID/Y, modified and approved in AID/W, and transmitted to USAID as 84 State 215575. This constitutes the guidance which has been followed in the preparation of the SPP. The text of that message is included herewith.

44

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SUBJECT: PROJECT 279-0052. AGRICULTURAL DEVELOPMENT SUPPORT PROGRAM. SCOPE OF WORK - IBB SECONDARY AGRICULTURE INSTITUTE

REF: (A) SANAA 3618; (B) STATE 143511; (C) SANAA 2700; (D) STATE 091406

1. The PRC met June 22, 1984 and endorsed Mission's view that entire secondary agricultural education system in Yemen needs to be strengthened and that knowledge gained during implementation of ISAI Subproject is key to possible expanded support to that system. The PRC reconfirms conclusions of earlier PRC's that simple extension of ongoing subproject activities appears unlikely to achieve objectives outlined in ref. A. Although there are obvious linkages between Ibb school and other two schools, ability of AID to assist overall secondary agricultural systems is limited by language in current authorization for ISAI Subproject. Authorization language quote authorized Mission to assist grantee with developing the first three-year agricultural training/education institution at Ibb capable of serving the grantee's rural sector needs for personnel with middle level agricultural skills unquote.

2. The opportunity exists at this time to take a new look at the entire agricultural education system and the type of assistance which that system needs if it is to become truly useful to the Yemeni. The type of training to be provided to both the public and private sectors in agricultural education may be much broader than currently envisioned. There is a need to look at various alternatives, at all levels and try to focus upon those areas which show the greatest potential.

3. The SOW submitted by the Mission incorporates a broad range of potential activities and analyses for possible subproject extension. It has been rewritten to more sharply define specific tasks of team members. At JAFR in Pomona, California, the revised SOW was reviewed and approved by Weden, Atwood and Donnelly from USAID; Sherper, Thomas and McLeod from AID/W; and Fendall, Ross, Edington and Brooks from CID and participating universities. The team has been assigned the responsibility to meet the descriptive, analytical and format requirements of a project paper as outlined in A.I.D. H83. Although determination of the type of document to be submitted to AID/W following the team's work is a Mission decision, it is assumed it will be a new subproject paper or an expanded

45

amendment of the current subproject, if it is confined to the present subproject purpose. DAA Langmaid has concurred this this approach. The revised SOW follows:

I. BACKGROUND

1.01 The Ibb Secondary Agriculture Institute was proposed in 1973 as a component of the first IBRD education sector loan. In 1977 the Yemen Arab Republic Government and the IBRD asked AID to assume responsibility for the program. Yemen's secondary agricultural education system was then composed of three schools that were under construction. The Ibb Institute opened in 1979. The Surdud School followed in 1981. The Sana'a Livestock School opened in 1982.

1.02 In 1979 AID authorized the Ibb Secondary Agriculture Institute Subproject under the Agricultural Development Support Program (279-0052). The Consortium for International Development was contracted by AID to implement the project. New Mexico State University became the lead university in the Consortium under a five-year, 1979-1984 contract. That agreement was subsequently extended tq July 1985 to permit adequate time for design and continuation of a second phase of the subproject.

1.03 The Ibb Secondary Agriculture Institute Subproject was evaluated in 1983 (Yemen Agricultural Development Support Program, External Evaluation Project, January 18, 1984, the Pragma Corporation). The evaluation report recommended a second, five-year phase of the Subproject. In March, 1984 the Near East Advisory Committee, A.I.D., approved that recommendation and suggested that USAID/Sana'a should prepare a design team scope of work for such extension of the Ibb Institute Subproject.

II. SCOPE OF WORK

2.01 A team of experts will be recruited to go to Yemen, review the Ibb Institute Subproject, and prepare a report ("Project Paper") that includes its recommendations for a subproject extension. The design team's efforts will be guided by the scope of work that follows, including: (1) administration and management; (2) curricula; (3) financial management; (4) social aspects; and (5) manpower.

2.02 Based upon the recent evaluations and other relevant material, assess the progress attained by the present Ibb Institute Subproject during the past four and a half years. Estimate the degree to which original objectives are expected to be achieved. Identify the major issues that are expected to affect institutional development of Yemen's secondary education system. Assess long-range training requirements for secondary agricultural programs in Yemen. Make recommendations to the Ministry of Education on the establishment of a long- and short-range planning system for secondary agricultural education and, where possible, to adjust the school calendar to coincide with the growing season.

2.03 Study possible spread effects of the secondary agricultural education program and recommend a system for improved communications and linkages among the Ministry of Education,

46

Ministry of Agriculture and Fisheries, bilateral donor aid programs, training programs for women, the Faculty of Agriculture at Sana'a University, and the various news media to the extent possible and practical.

2.04 Administration and management inter-school coordination. One of the Near East Advisory Committee's principal concerns was the expansion of the Ibb Secondary Agriculture Institute activities to include other secondary agriculture schools and the agricultural education system in general. If the Ibb and other secondary agriculture institutes are to become viable institutions, they must be nurtured by a functioning secondary agricultural education system. Accordingly, the scope of this inquiry will extend beyond the Ibb institute. It will include Yemen's other two secondary agriculture education institutes. The design team will assess the feasibility of developing a joint Ministry of Education/Ministry of Agriculture and Fisheries committee to review the curricula of the three secondary agricultural institutes, Ibb, Surdud, and Livestock, with a view to their further coordination and integration. Due consideration will, however, be accorded to distinctions which may arise due to environmental and geographical factors. Procedures to facilitate replication of the Ibb institute program in the other two agricultural schools will be investigated and, if feasible, developed.

2.05 The design team will further assess the Ministry of Education's administrative and managerial support for each of the three agricultural secondary schools, Ibb, Surdud, and Livestock, including: current status; recommendations for the proposed five-year second phase of this subproject; suggested management systems for each school. Assessment and, where applicable, recommendations, will include provision for periodic review and revision of the three schools' curricula and administration, improving the lines of cooperation and communication among the three schools, the Ministry of Education, and the Ministry of Agriculture and Fisheries. Consideration will be given to appointment of MS-trained school directors for each of the three secondary agricultural institutes to strengthen leadership and technical resources and otherwise to insure that the institutional development process will be properly functioning when expatriate staffs depart.

2.06 The design team will examine the experience of the Ibb institute to date in developing and implementing an outreach program. The team will assess whether this experience provides a basis for additional activities under the proposed subproject extension. If the team concludes that the Ibb experience provides a basis for expansion to the other schools, they will identify specific recommendations for replication of outreach programs in the other two schools.

2.07 Manpower. The design team will prepare a manpower analysis looking at the supply of students for the secondary agriculture institutes and the demand for graduates in the public and private sectors. The analysis will include an estimate of the percent of graduates likely to pursue further education. The supply and attrition of trained Yemeni staff will also be analyzed.

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47

2.08 Personnel. The staff requirements (teachers, technicians, laborers, administration) for the three agriculture institutions and the Ministry of Education's Department of Agriculture Education will be examined. This analysis will include a review of the subjects to be taught and the teaching load. Recommendations will be made for the adequate training required to develop the full staff of the three schools. Particular attention will be given to the ESL training of MS participants and also to the training of farm managers and administrative personnel. "Yemenization" of the secondary agricultural school faculty, including that of the Ibb institute, was a principal concern of AID's Near East Advisory Committee. Accordingly, the design team will make recommendations concerning the most appropriate pace for placement of returning trainees and ultimately replacement of expatriate instructors by Yemeni instructors during this second phase of the subproject. Particular attention will be directed to the anticipated return to Yemen of BS and MS-trained Yemeni teachers and their integration into teaching positions in the three schools. The probable schedule for trained Yemeni to staff the agriculture institutes and the agriculture education department of the MOE will be analyzed and used as one criteria to determine phasing of US assistance.

2.09 Student personnel. The design team will examine the recruitment of secondary agriculture students and MS candidate participant trainees and will make specific recommendations to assist the Ministry of Education and Ministry of Agriculture and Fisheries with such recruitment programs. Included in this examination will be an assessment of priorities for target groups to be recruited, e.g. those who plan careers as extension agents, those desiring university degrees, etc. Consideration will be given to a coordinated Yemen Government program to monitor the careers and utilize the talents of the graduates of the three secondary agriculture institutes, particularly as feed-back into the continued development of Yemen's agricultural education program. This inquiry will include consideration of possible special incentives for persons seeking careers in agriculture and agricultural education.

2.10 Curricula. The AID Near East Advisory Committee specifically questioned the adequacy of the present curriculum at the Ibb Institute. The design team will assess the curricula at each of the three schools to determine whether or not they are technically adequate and are appropriately keyed to socio-economic realities and job opportunities in Yemen. This review will examine the skills needed by the graduates to meet the demands of the public and private sector. It will address the content, scope, level, depth, and relevancy of subject matter. The balance between theoretical and practical laboratory work will be assessed. This will include assessment of facilities, teaching material equipment, and farmland at each school as they relate to the current curriculum. Relevancy of curricula at the Ibb, Surdud, and Livestock institutes will be tested by reviewing the employment records of recent graduates.

2.11 Make appropriate recommendations for improvements in the curricula of the three secondary agricultural institutes, including, if appropriate, incorporation of apiculture (beekeeping), expansion

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48

of English language training, and inclusion of farm management and agricultural economics.

2.12 Size and location of farmland. The design team will examine the quantity and quality, including location of farmland available to the Ibb institute. This will also include the availability of terraced land. The team will make appropriate recommendations concerning any necessary additions, changes, or administration of institutional farmland at the Ibb institute.

2.13 Provide recommendations for equipping, occupying, and implementing the program of the new food technology building at the Ibb institute, and for establishing a functional library system and visual aids laboratory.

2.14 Financial. Review the overall approaches of the three secondary agricultural institutes to resource utilization and long-range financing. Assess the Yemen Government's commitment to finance the implementation of the proposed extension of this project. Analyze capital and operating costs of the secondary agricultural schools' sources of financing and assess the capability and intentions of the government to sustain recurrent costs after donor assistance ends. Examine the budgeting and accounting systems of the three agricultural secondary schools and of the Ministry of Education as the pertain to the secondary agricultural schools. Make appropriate recommendations for improvements in financial management and resource utilization of the three schools.

2.15 Economic. A least-cost economic analysis will be prepared.

2.16 Social. Review the social and cultural implications of the secondary agricultural institutes' development. Review social factors that have affected agricultural development in Yemen. Discuss the manner in which such social factors are expected to influence the programs at the three secondary agricultural institutes. Analyze past and projected student enrollment at the three secondary agriculture institutes, including aggregation by geographic origin, social status, and rural or farming background. Make appropriate recommendations ocncerning student recruitment and program emphasis.

2.17 Role of women. Examine the involvement of women with the three secondary agricultural institutes. Assess the influence of the institutes on female farmers. Discuss social norms in Yemen applicable to the education of women and their participation in farming activities. Make appropriate recommendations for expansion of the role of women in Yemeni agriculture in genera, and specifically, in the three secondary agricultural institutes.

III. ADMINISTRATION

3.01 Design team composition. A five-person team is contemplated for the design of this follow-on project in accordance with the above study scope of work: (1) the team leader, design officer expert in general development issues and capable of drafting the study team report ("Project Paper"); (2) an agricultural

49

education curricula specialist; (3) an education planning and administration specialist; (4) a social scientist; (5) an agriculture economist/financial management specialist; (6) an outreach extension specialist.

3.02 Design schedule. The design team's draft report ("Project Paper") will be presented to USAID/Sana'a within four weeks from the date of the team's arrival in Yemen. Mission review of the interim reports will be conducted weekly during design. The design team's final report, reflecting the comments and recommendations provided by USAID/Sana;a at the end of the fifth week, will be completed in the US and mailed to USAID/Sana'a within 30 calendar days after the team's departure from Yemen. A nine-week study and report effort, exclusive of travel time to and from Yemen, is therefore contemplated.

3.03 Design team coordination. The design team will report to G. Tracy Atwood, Agricultural Officer, USAID/Sana'a. Upon arrival of the design team in Yemen, they will be provided with names of Yemeni counterparts in the Ministry of Education, the Ministry of Agriculture and Fisheries, and in each of the three secondary agricultural institutes, with whom the team members will interface.

3.04 Design team support. The Consortium for International Development at Sana'a will provide logistical, secretarial, and administrative support for the design team while it is in Yemen. Engineering assistance will be available from the CID or USAID/Sana'a.

3.05 Design team orientation. Prior to the arrival of the design team in Yemen, the Chief of Party of the Consortium for International Development will gather existing studies and data and have it ready for the team members to review upon arrival The CID Chief of Party will be available as a resource to clarify issues, provide initial orientation, and assist with Yemeni introductions and contacts. The Ibb Secondary Agriculture Institute Subproject Team Leader will also assist with initial orientation and be available to the team as a resource. The principal documentary review, either prior to departure from the US, or immediately after arrival in Yemen, will comprise the Yemen Agricultural Development Support Program External Evaluation Project, January 18, 1984, the Pragma Corporation.

3.06 Project Paper. The design team's draft and final reports will be in the form and content of an AID project paper as described in AID Handbook 3, chapter 3, and as modified for the description and analysis of this technical assistance project, i.e. the portions of Handbook 3 guidance that are applicable only to capital infrastructure projects will be disregarded. The text of the final version of the project paper will not exceed 35 single-spaced, typewritten pages. Although significant annexes may be attached, the text of the paper will contain all of the significant information called for by Handbook 3 and the above scope of work. Social soundness analysis, as described in Handbook 3, is required.

Schultz

ANNEX B

Logical Framework Matrix

ANNEX B
LOGICAL FRAMEWORK

PROJECT TITLE: Ibb Secondary Agricultural Institute Subproject
Agricultural Development Support Program (Project 279-0052)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
PROGRAM GOALS	MEASURES OF ACHIEVEMENT	MEANS OF VERIFICATION	ASSUMPTIONS
GOAL:			
*To increase income and improve the quality of life for rural inhabitants in the YAR through agricultural development.	*Increased agricultural production. *Improved agricultural trade balance.	*Improvement in quality of life. *YARG statistics.	*Agriculture will remain an important economic activity in rural Yemen.
	*Consumption by rural families increased.	*Socio-economic analyses.	*YARG taxing and pricing policies will allow families to derive the benefits of increased production
SUBGOAL:			
*To increase the supply of appropriately trained Yemeni men and women capable of performing mid-level technical and management tasks in the public and private agricultural sector.	*Increased number of trained Yemeni men and women working in agriculture and rural development and a corresponding decrease in expatriates in mid-level positions.	*YARG employment data. *MOE and MAF records on expatriate involvement in education and rural development.	*There will continue to be a demand for trained Yemeni personnel in the agricultural sector. *Mid-level agriculture technicians will increase agricultural productivity.

52

ANNEX B
LOGICAL FRAMEWORK (Continued)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
SUBPROJECT PURPOSE	CONDITIONS INDICATING ACHIEVEMENT	MEANS OF VERIFICATION	ASSUMPTIONS
*To improve the efficiency of the secondary agricultural education system of the MOE to supply Yemen's agricultural sector, including both the MAF and the private sector, with qualified manpower.	*Technical agricultural secondary schools, i.e., Ibb, Surdud, and the Sanaa Veterinary School: (1) bring student enrollment and output capacity in line with design expectations for each school. This means that the schools are (2) staffed with well-qualified Yemeni teachers; (3) staffed with well-qualified Yemeni administrative support employees; (4) supplied with curricula, Arabic textbooks, student handouts, training techniques; and (5) facilities designed to provide students with educational programs relevant to Yemeni agricultural conditions and responsive to the needs of the YAR.	*School records, MOE records, survey and feasibility reports, and evaluation reports.	*YARG will continue to view agricultural education as an important part of the educational system in Yemen and highly beneficial to the population. *YARG will provide support for improving educational methods, subject matter, student attendance, and staff development to the three schools. *YARG will continue to provide secondary agricultural education rather than turning it over to the private sector. *YARG will support Yemeni staff members.

57

ANNEX B
LOGICAL FRAMEWORK (Continued)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
SUBPROJECT OUTPUTS	MAGNITUDE OF OUTPUTS	MEANS OF VERIFICATION	ASSUMPTIONS
1. Each SAI fully staffed with trained Yemeni agricultural teachers, administrators, and a farm manager. The staff will be able to devise performance-based curricula, achieve practical applications, and conduct appropriate outreach activities without detriment to the secondary certificate standards of the MOE.	1. Ten trained Yemeni staff in place at the ISAI, 10 at the SSAI, and 5 at the SVS. Short courses and in-service training programs for farmers and extension workers, and special programs designed to reach women are developed and in operation at each SAI.	*School records, records of USAID and contractors, MOE records, internal evaluation reports, and external evaluation reports.	*The YARG will accept and support all non-academic and informal education programs, particularly those aimed at women. *Participant teacher trainees will continue to be nominated by the MOE for BS or MS degree training, who have acceptable transcripts.
2. A relevant curriculum at each SAI with identified practicums and outreach activities.	2. One curriculum at each SAI.		*Strategies to increase enrollments to full capacity at each SAI developed and implemented on a continual basis.
3. Educational facilities adequately equipped and refurbished to deliver the curriculum.	3. At each SAI: a. An operational instructional program. b. A functional agricultural mechanics facility (except SVS). c. An operational learning resources center. d. A functional food-science laboratory.		
4. Yemenized textbooks and other classroom materials prepared, and in use at each SAI.	4. Textbook and classroom materials in use for each agricultural subject area in the curriculum.		
5. A student recruitment, evaluation and placement system functioning at each SAI and coordinated by the MOE sufficient to achieve enrollment and graduation goals.	5. Targeted graduation goals a. 40 graduates/yr at ISAI. b. 35 graduates/yr at SSAI c. 30 graduates/yr at SVS		
6. Staff recruitment, retention, training ,and placement programs functioning in the MOE to replace staff and maintain the SAIs indefinitely.	6. A staffing plan implemented at each SAI.		

54

ANNEX B
LOGICAL FRAMEWORK (Continued).

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
SUBPROJECT OUTPUTS	MAGNITUDE OF OUTPUTS	MEANS OF VERIFICATION	ASSUMPTIONS
7. MOE management personnel trained in administration of agricultural education providing leadership, coordinating Yemen's agricultural education efforts, conducting long-range planning, and supervising the SAIs.	7. a. A staffed and functioning SAE administrative unit in the MOE under the Director of Agricultural Education. b. A staff performance evaluation system in operation. c. Evidence of delegation of authority and responsibility. d. A monthly status report of the SAE.		
8. Strategies and feasibility studies to make secondary agricultural education available in all areas of the country, including consideration of establishing additional SAIs on a regional basis, or for women.	8. Surveys and feasibility assessments completed.		
9. Feasibility and need assessment of possible mid-level technical agricultural institute completed.	9. One survey completed.		

55

ANNEX B
LOGICAL FRAMEWORK (Continued)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
INPUTS	LEVELS OF EFFORT/EXPENDITURE	MEANS OF VERIFICATION	ASSUMPTIONS
1. USAID Grant over a 6.25 year period. a. Training, i) 39 BS & MS scholarships for SAI & MOE staff for a total of 106 p.y. ii) Non-academic management training out-of-country for SAI & MOE administrators, 60 p.m. iii) Non-academic, in-country management training for MOE staff & technical training for MAF extension personnel, 373 p.m. b. Technical assistance, 52.6 p.y. c. Instructional equipment and supplies. d. Special strategy and feasibility studies.	1. USAID Dollar and Local currency budget, $17 million (with inflation & contingency) a. Training, $2.72 million 1/ b. Technical assistance, $6.88 million. 1/ c. Commodities, $3.31 million. 1/ d. Feasibility studies, $0.05 million. 1/	*USAID Subproject Agreement(s). *YARG budget and record of budget allocations. *NMSU contract.	*USAID grant to support subproject will be approved and funds will be released. *USAID and YARG commitment to support of subproject will remain strong throughout the life-of-project. *YARG will contribute YR 11.97 million over the life-of-project, which includes a budget for operating each school, insuring program support at the level required by new and growing institutions, and an increasing assumption of recurring costs.
2. YARG inputs a. Salaries and wages for SAI personnel. b. SAI operating costs. c. Expendable & non-expendable equipment & materials. d. Capital expenditures. e. Other direct costs.	2. YARG Budget, $11.97 million a. Personnel, $4.1 million b. Operations, $0.4 million c. Commodities, $3.0 million d. Capital expenditures, $3.3 million. e. Other, $1.2 million.		

1/ Exclusive of inflation and contingencies

56

ANNEX C

Project Checklist

Project Checklist

Listed below are statutory criteria applicable to projects. This section is divided into two parts. Part A. includes criteria applicable to all projects. Part B. applies to projects funded from specific sources only: B.1. applies to all projects funded with Development Assistance Funds; B.2. applies to projects funded with Development Assistance Loans; and B.3. applies to projects funded from ESF.

CROSS REFERENCES: IS COUNTRY CHECKLIST UP TO DATE? HAS STANDARD ITEM CHECKLIST BEEN REVIEWED FOR THIS PROJECT?

A. GENERAL CRITERIA FOR PROJECT

1. FY 1985 Continuing Resolution Sec. 525; FAA Sec. 634A; Sec. 653(b)	1.
(a) Describe how authorizing and appropriations committees of Senate and House have been or will be notified concerning the project;	(a) Advise of Program Change and Activity Data Sheet; and FY 1987 Congressional Presentation.
(b) Is assistance within (Operational Year Budget) country or international organization allocation reported to Congress (or not more than $1 million over that amount)?	(b) Yes.
2. FAA Sec. 611(a)(1). Prior to obligation in excess of $100,000, will there be:	2.
(a) Engineering, financial or other plans necessary to carry out the assistance; and	(a) Yes.
(b) A reasonably firm estimate of the cost to the US of the assistance?	(b) Yes.
3. FAA Sec. 611(a)(2). If further legislative action is required within recipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purpose of the assistance?	3. No further legislative action required.

68

4. <u>FAA Sec. 611(b); FY 1985 Continuing Resolution Sec. 501.</u> If for water or water-related land resource construction, has project met the standards and criteria as set forth in the Principles and Standards for Planning Water and Related Land Resources, dated October 25, 1973? (See AID Handbook 3 for new guidelines.)	4. N/A
5. <u>FAA Sec. 611(e)</u>. If project is capital assistance (e.g., construction), and all US assistance for it will exceed $1 million, has Mission Director certified and Regional Assistant Administrator taken into consideration the country's capability effectively to maintain and utilize the project?	5. N/A
6. <u>FAA Sec. 209</u>. Is project susceptible to execution as part of regional or multilateral project? If so, why is project not so executed? Information and conclusion whether assistance will encourage regional development programs.	6. No.
7. <u>FAA Sec. 601(a)</u>. Information and conclusions whether project will encourage the efforts of the country to:	7.
(a) Increase the flow of international trade;	(a) N/A
(b) Foster private initiative and competition;	(b) The Subproject will involve private sector companies and individuals in student recruitment and graduate job placement, and in training curriculum.
(c) Encourage development and use of cooperatives, credit unions, and savings and loan associations;	(c) Yes.
(d) Discourage monopolistic practices;	(d) Yes.

(e) Improve technical efficiency in industry, agriculture and commerce;	(e) The graduates of the three agricultural institutes will improve agricultural technical efficiency in both private and public sectors.
(f) Strengthen free labor unions	(f) N/A
8. FAA Sec. 601(b). Information and conclusions on how project will encourage US private trade and investment abroad and encourage private US participation in foreign assistance programs (including use of private trade channels and the services of US private enterprise).	8. No direct effect is anticipated.
9. FAA Sec. 612(b), 636(h); FY1985 Continuing Resolution Sec. 507. Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the US are utilized in lieu of dollars.	9. The host country has been contributing all local support costs to the Ibb Secondary Agricultural Institute for five consecutive years, to the Surdud Secondary Agricultural Institute for three years, and to the Sanaa Veterinary Institute for two years.
10. FAA Sec. 612(d). Does the US own excess foreign currency of the country and, if so, what arrangements have been made for its release?	10. N/A
11. FAA Sec. 601(e). Will the project utilize competitive selection procedures for the awarding of contracts, except where applicable procurement rules allow otherwise?	11. Yes.

12. FY 1985 Continuing Resolution Sec. 521 If assistance is for the production of any commodity for export, is the commodity likely to be in surplus on world markets at the time the resulting productive capacity becomes operative, and is such assistance likely to cause substantial injury to US producers of the same, similar or competing commodity?

12. N/A

13. FAA 118(c) and (d). Does the project comply with the environmental procedures set forth in AID Regulation 16? Does the project or program take into consideration the problem of the destruction of tropical forests?

13. Yes.

14. FAA 121(d). If a Sahel project, has a determination been made that the host government has an adequate system for accounting for and controlling receipt and expenditure of project funds (dollars or local currency) generated therefrom?

14. N/A

15. FY 1985 Continuing Resolution Sec. 536. Is disbursement of the assistance conditioned solely on the basis of the policies of any multilateral institution?

15. No.

B. FUNDING CRITERIA FOR PROJECT

B.

1. Development Assistance Project Criteria:

a. FAA Sec. 102(b), 111, 113, 281(a). Extent to which activity will:

a.

(a) Effectively involve the poor in development, by extending access to economy at local level, increasing labor-intensive production and the use of appropriate technology, spreading investment out from cities to small towns and rural areas, and insuring wide participation of the poor in the benefits of development on

(a) The Subproject is directly designed to assist the poor, encouraging local farmer participation, local student recruitment and student involvement with local farmers through

61

a sustained basis, using the appropriate US institutions;	outreach/extension activities. Appropriate technologies are being utilized on student plots, particularly on terraced land.
(b) Help develop cooperatives, especially by technical assistance, to assist rural and urban poor to help themselves toward better life, and otherwise encourage democratic private and local governmental institutions;	(b) Private and local provincial government institutions are directly involved in curriculum, student recruitment, and graduate job placement.
(c) Support the self-help efforts of developing countries;	(c) The graduates of the schools are trained to work with lower income farmers in the rural villages to increase agricultural production and develop a higher quality of life.
(d) Promote the participation of women in the national economies of developing countries and the improvement of women's status;	(d) Training courses have been designed for women extension agents at ISAI, but the full participation of women students at the institutes is not currently feasible.
(e) Utilize and encourage regional cooperation by developing countries?	(e) N/A
b. <u>FAA Sec. 103, 103A, 104, 105, 106</u> Does the project fit the criteria for the type of funds (functional account) being used?	b. Yes. The Subproject uses Section 103 funds in the field of agricultural education.

c. FAA Sec. 107. Is emphasis on the use of appropriate technology (relatively smaller, cost-saving, labor-using technologies that are generally most appropriate for the small farms, small businesses, and small incomes of the poor)?	c. Yes, notably for use on student plots and outreach extension activities.
d. FAA Sec. 110(a). Will the recipient country provide at least 25% of the costs of the program, project, or activity with respect to which the assistance is to be furnished (or is the latter cost-sharing requirement being waived for a "relatively least developed" country)?	d. Yes.
e. FAA Sec. 110(b). Will grant capital assistance be disbursed for project over more than 3 years? If so, has justification satisfactory to Congress been made, and efforts for other financing, or is the recipient country "relatively least developed"? (M.O. 1232 defined a capital project as "the construction, expansion, equipping or alteration of a physical facility or facilities financed by AID dollar assistance of not less than $100,000, including related advisory, managerial and training services, and not undertaken as part of a project of a predominantly technical assistance character").	e. N/A
f. FAA Sec. 122(b). Does the activity give reasonable promise of contributing to the development of economic resources, or to the increase of productive capacities and self-sustaining economic growth?	f. Yes.
g. FAA Sec. 281(b). Describe extent to which program recognizes the particular needs, desires, and capacities of the people of the country; utilizes the country's intellectual resources to encourage institutional development; and supports civil education and training in skills required for effective participation in governmental processes	g. A particular need in the agriculture sector (currently the largest sector) is for well-trained and motivated middle-level technicians in both private and public sectors. These technicians include agricultural production and sales

63

essential to self-government.

personnel in the private sector and agricultural extension personnel in the public sector.

2. Development Assistance Project Criteria (Loans Only):

2. N/A

a. FAA Sec. 122(b). Information and conclusion on capacity of the country to repay the loan, at a reasonable rate of interest.

b. FAA Sec. 620(d). If assistance is for any productive enterprise which will compete with US enterprises, is there an agreement by the recipient country to prevent export to the US of more than 20% of the enterprise's annual production during the life of the loan?

3. Economic Support Fund Project Criteria

3. N/A

a. FAA Sec. 531(a). Will this assistance promote economic or political stability? To the extent possible, does it reflect the policy directions of FAA Section 102?

b. FAA Sec. 531(c). Will assistance under this chapter be used for military, or paramilitary activities?

c. FAA Sec. 534. Will ESP funds be used to finance the construction of the operation of maintenance of, or the supplying of fuel for, a nuclear facility? If so, has the President certified that such use of funds is indispensable to non-proliferation objectives?

d. FAA Sec. 609. If commodities are to be granted so that sale proceeds will accrue to the recipient country, have Special Account (counterpart) arrangements been made?

64

ANNEX D

Social Soundness Analysis

TABLE OF CONTENTS FOR ANNEX D

		PAGE
I.	SOCIO-CULTURAL CONTEXT	D-1
	A. Regional Ecologic and Geographic Zones	D-1
	1. The Tihama	D-1
	2. The Highlands	D-1
	3. The Eastern Plateau	D-1
	B. Population Factors	D-2
	C. Social Structure	D-3
	1. Traditional Distinctions	D-3
	2. Regional Differences	D-3
	3. Social Change	D-4
	D. Economic Factors	D-4
	1. The Traditional Economy	D-4
	2. Land Tenure	D-5
	3. Recent Changes	D-5
	E. Government	D-6
	F. Religion	D-6
	G. Education in Yemeni Society	D-7
	1. Religious Education	D-7
	2. Secular Education	D-7
	3. Agricultural Education	D-9
	4. Education of Women	D-11
II.	IMPACT	D-11
	A. Intra-Regional Spread	D-11
	B. Inter-Regional Spread	D-12
III.	BENEFICIARIES	D-13
	A. Primary Beneficiaries: Students	D-13
	B. Secondary Beneficiaries: Agricultural Sector Institutions	D-14
	C. Tertiary Beneficiaries: Farmers and Farmer Groups	D-14
	D. Women as Beneficiaries	D-15
IV.	PARTICIPATION	D-15
V.	CONCLUSIONS	D-17

I. SOCIO-CULTURAL CONTEXT

A. Regional Ecologic and Geographic Zones

The Yemen Arab Republic is primarily a mountain country with a rich agricultural tradition. Although comparatively small in size (135,000 km), it is characterized by considerable diversity. The three major geographic regions are: the coastal region (Tihama), the Eastern Plateau, and the Highlands.

1. The Tihama

The Tihama is a humid, semi-desert coastal plain that borders the Red Sea and extends inland approximately 65 km. Annual rainfall varies from 100 to 300 mm.

The Tihama is intersected by seven seasonal waterways (wadis). They originate in the highlands and extend to the sea. Lands along these waterways are irrigated by seasonal floods. Traditionally, major agricultural activity in the Tihama was confined to these wadi areas. The major crops grown included sorghum, millet, sesame and cotton.

Recently, some areas of the Tihama, have experienced increased agricultural activity as a result of the installation of tubewells. In addition to sorghum and millet, these well-irrigated areas now produce cash crops such as cotton, tobacco, tomatoes, okra, melons, papayas, bananas and some citrus.

2. The Highlands

The Highlands are located between the Tihama and the eastern desert. Ninety percent of the country's population live in this region. Many of the people live in fortified rock houses in villages that are perched high on mountain ridges.

The Highlands are characterized by steep mountains, plateaus, and sharply eroded wadis. Arable land is extensively terraced to control rainfall runoff. Annual rainfall ranges from less than 200mm in the north to over 1200mm in the south.

The southern areas of the Highlands have the highest rainfall and the highest population density. Dry-land farming is supplemented in many parts of the Highlands by water harvesting, which sometimes allows for multiple croppings per year. The major crops grown include sorghum, maize, wheat, barley, potatoes, and legumes. In areas of high rainfall or where spring irrigation is available, cash crops such as coffee, qat, lucerne, and some fruits are grown. (Qat is a tree-like shrub; the leaves are chewed to produce a mild euphoric effect.)

3. The Eastern Plateau

A third zone occupies the easternmost regions of the YAR and joins the Empty Quarter of the Arabian Peninsula. This

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is an arid, sandy desert region with little rainfall. Only in the wadis which drain the eastern slopes of the Highlands is sedentary agriculture occasionally found. Population is sparse, limited mostly to nomadic tribes who pursue a pastoral existence with small flocks of sheep and goats. This ecological zone is of little agricultural significance.

B. Population Factors

Population estimates for the YAR must be considered imprecise. The only census was taken in 1975. Recent projections place the 1984 population near 8.5 million. About 90 percent is resident, with the remainder being emigrant labor working in other Arab countries, primarily Saudi Arabia.

The estimated number of households is about 1,000,000 with an average size of 7.3 persons per household. Households generally consist of the extended family (parents, children and their families, cousins, aunts and uncles) under patriarchal control.

Net annual population growth is estimated between 2.6 and 2.9 percent. Life expectancy is 42 years but is rising rapidly with improved access in rural areas, better health facilities and other benefits of modernization, enhanced by increased educational opportunities and mass media communications.

An important characteristic of Yemen is its extraordinarily large rural population. Ninety percent of the resident population lives in rural areas, usually in small villages of under 500. Although there is some rural-urban migration, most Yemenis prefer to live in rural areas, citing "healthy air," more attractive scenery, and, for women, greater mobility, as reasons for this preference.

There are important differences between communities locally defined as villages (mahal or garya) and those defined as towns (madina). Towns are market centers as well as traditional centers of learning and the arts. They are inhabited largely by members of the religious elite and low-status service providers. Villages generally have no such amenities and are mainly congregations of rural residences with few economic or social services.

In the traditional subsistence-based economy of the village, the household is the main economic unit. All members of the household participate actively in food production, and women play important roles in agriculture, livestock care and other aspects of food production and processing. Traditionally, rural women, whether wealthy or poor, participated in agricultural work. Village women do not veil and their mobility is considerably greater than that of townswomen, although the degree of rural women's participation in the market varies with region and sometimes with village.

Because of their mobility and active participation in the household economy, rural women tend to have more decision making powers than their urban sisters. On the other hand, literacy rates are greater among urban than rural women. Such urban-rural distinctions imply differences in the need for agricultural extension services for men and women.

C. Social Structure

1. Traditional Distinctions

Historically in Yemen, the traditional social structure was three-tiered, composed of a religious elite, a large "middle class" of agriculturalists, herders, or fishermen, and a service group responsible for low-status and menial occupations. These distinctions continue today, though perhaps not in such a rigid context as previously.

The religious elite is composed of two groups: Sada, who claim descent from the Prophet Muhammed, and Qudat (also know as Fugaha), who are religious scholars of tribal (i.e., Yemeni) descent. Sada and Qudat are teachers, healers, and dispute mediators. They composed the ruling elite during the Imamate.

The large middle group is composed of tribesmen Qaba'il, (sing. Qabili), the vast majority of whom are farmers who cultivate land which they own and/or rent. Where sedentary agriculture is not practiced, as in parts of the Highlands, Tihama, and Eastern Plateau, these Qaba'il are herders or fishermen.

The low-status group of service providers is internally differentiated. This group is associated with the market, and its members perform low-status occupations including that of growing and selling vegetables, butcher, barber and musician.

2. Regional Differences

There are regional differences, as well, in the elaboration of the status distinction described above. In the rural central and northern Highlands and the Eastern Plateau, economic differences between the three status groups are not marked. Most of the land is owned and cultivated by small landholders. Correspondingly, the interaction between members of the three groups is relatively egalitarian. Members of the religious elite cultivate their own land alongside tribesmen. Tribal and village leaders (Shaykh or Aqil) are usually of the same social status as their constituents.

In the southern Highlands status distinctions traditionally have been accentuated by a feudal economic system. Members of the elite were large landowners, and the middle group was composed primarily of an economically dependent peasantry (ra'iya). In this area the label Shaykh (leader) is given to large landowners. The low status service providers are also more highly differentiated than they are elsewhere. In parts of the Tihama there are a similar economic differentiation between large landowners and a poor middle- and lower-status segment.

There is also a difference between urban and rural regions, with greater differentiation in towns and a de-emphasis of status distinctions in the rural areas. Notwithstanding this social class system, it is difficult in much of rural Yemen to distinguish between members of the different status groups through clothing, occupation, or interaction with others.

3. Social Change

Several forces are serving to break down status distinctions in Yemen. These include the equalizing effects of labor migration and changing attitudes toward status-related occupations. Members of all status groups are engaging in service occupations that were once disdained, and new occupations are not linked with traditional status categories. Access to education is open to all, and because of remittances, many members of the lower status groups are currently as wealthy as members of the religious elite. YARG's policy to erase status distinctions is as important as economic change; the use of traditional status labels is frowned upon and all are encouraged to contribute equally to the development of their country.

D. Economic Factors

1. The Traditional Economy

The traditional economy of Yemen was based on subsistance agriculture and a regional market system. Production was primarily for family consumption while a limited amount was used for barter or for sale. The traditional system is very labor intensive for all activities, including household chores of fuel and water gathering, cooking, crop production, livestock herding, terrace building and community activities such as road and school construction.

Terrace building was the principal method to preserve and conserve the most scarce productive resources: land and water. Drought-resistant sorghum and millet were the principal subsistence risk-aversion crops. Cows, kept in confinement, utilized crop residues for forage and provided milk and cheese, and dung for fuel. Goats and sheep utilized marginal land for grazing and provided meat. Camels, donkeys and cows provided transportation and power for field cultivation and plowing, threshing and well lifts. For many farmers, the system of agricultural production has not changed for more than a thousand years.

Climate in the Highlands is amenable to year-round production, but availability of water limits this choice to a small proportion of the farm population. Where water is available, crop production has consisted mainly of subsistence grain crops, mostly sorghum and millet. Coffee and cotton once were grown on a commercial scale, but these have declined in importance in part because of high labor requirements, and because of deteriorating markets in the face of international competition.

2. Land Tenure

In the northern and central Highlands most agriculturalists were small holders who cultivated their own land. Some also rented or sharecropped land belonging to emigrant relatives and neighbors. Agricultural activity was positively valued and even the wealthiest members of the community usually cultivated their own land.

In contrast, ownership patterns of the Southern Highlands and parts of the Tihama resembled a feudal system with most of the cultivatable land owned by a few large owners. These lands were cultivated primarily by sharecroppers who owned no land. In the Tihama, poor farmers whose landholdings were marginal would often migrate to the wadis at peak periods to work for wages on the large plantations.

Land holdings continue to be highly fragmented due to traditions such as Islamic inheritance laws, and the geography and terracing on steep terrain. Fragmentation also is used by Yemeni farmers as a hedge against variable micro-climates and moisture conditions.

The size of family holdings varies greatly. More than 90 percent of all family or household holdings are less than five hectares. Some two-thirds of all family holdings are less than one hectare. While in terms of numbers very small holdings dominate the Yemeni scene, distribution of land area is skewed toward larger holdings.

Over 50 percent of the land area in the major agricultural areas is in holdings larger than five hectares. These comprise less than 10 percent of land holders in these areas.

Most farmers -- about 60 percent -- own their farm land. About 12 percent are landless sharecroppers, with the balance being mixed ownership and lease or share arrangements.

3. Recent Changes

Ravaged by civil war in the mid 1960's and a seven-year drought from 1967 through 1973, the country experienced a decline in agricultural production of one-fourth to one-half of previous levels. This has led to a number of adjustments in the sector.

The primary impetus for change in the agricultural system however, has been the extensive male labor migration to the nearby oil-producing states, with a resultant increase of remittance wealth in rural areas. Male labor migration to the oil-rich Arab countries commenced in the early 1960's and continues to this day. As remittances began to flow back to Yemen from the oil fields, the traditional economic system changed.

Land prices increased rapidly. Availability of water increased as new wells were dug. Purchases of consumer goods,

including food imports, increased. The price of preferred Yemeni food goods, especially fresh chickens and locally-grown crops, increased significantly. Large investments in secondary road construction, wells with motorized pumps, trucks for transport, tractors for hire, and home construction have occurred. Remittance wealth has been invested in tubewells and feeder roads from villages to major government-built roads. New lands have been cultivated with cash crops, including gat, vegetables, and fruit.

This outmigration has transformed the agricultural sector into a labor-scarce and relatively capital-abundant economy. The shortage of agricultural labor has resulted in the abandonment of marginal agricultural lands in some areas. Other effects of labor shortages have been a shift towards capital intensive agricultural production, neglect of terraces, some erosion, adjustment of some terraces to accommodate mechanization, and in general, an increase in the cost of production. Since 1970, labor wage rates have increased from YR 5 to YR 40-70 per day. In many areas, women are now responsible for much of the crop production, in addition to traditional roles in livestock and poultry production.

With the availability of cheap imported wheat and other foods it is currently less expensive to consume imported foods than to grow traditional staples.

E. Government

Historically, Yemen did not have a strong central government. The Central and Northern Highlands, Eastern Plateau, and parts of the Tihama were composed of autonomous tribes who supported the Imamate economically and militarily. The Imam did not (or could not) establish a strong administrative structure in tribal areas. These tribes were not anarchic; a well-developed system of tribal law has maintained order within and among tribes for centuries. Major projects were accomplished through well-established tribal mechanisms for cooperation. One consequence of tribal ideology is the strong entrepreneurial tradition which helps to explain the strength of the private sector in Yemen. There is also a traditional disdain for central authority among the tribal population. Notwithstanding the respect given to tribal structure, a growing dependence on the central government has developed over the past decade, with increases in government services and media messages that emphasize these services.

Some areas of Yemen have been effectively detribalized for at least 400 years, if not longer. These are the portions of the Southern Highlands and Tihama in which the Rasulid invaders established a strong administrative structure. This may explain the differences in social stratification between these areas and the Central and Northern Highlands.

F. Religion

The vast majority of Yemenis are Muslim with a small proportion of Jews. There are regional sectarian differences, but the differences are primarily legal and do not significantly affect life-styles.

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Although most Yemenis consider themselves devout Muslims, strict religious orthodoxy traditionally did not play an important role in daily life. This is changing with growing trends toward religious fundamentalism in other countries of the Middle East. Migrants are often influenced by these ideas. Expatriate teachers in Yemen frequently preach a very conservative creed. This attitude tends to be combined with a rejection of imported innovations and with pressures to veil and seclude women wherever possible.

G. Education in Yemeni Society

1. Religious Education

Prior to the 1962 revolution, the only formal education that was available was offered through the religious schools and colleges. These schools were attended almost exclusively by men.

The school curriculum included study of the Arabic language, the Quran, Fiqh (Islamic rules), Hadith (words of the Prophet) and elementary arithmetic. The three religious colleges were located in Bir Al Azab, Dhamar and Zabid. Subjects taught at the college level included Arabic philosophy, Islamic Law, commentary of the Quran, traditions and history.

Most religious schools were and still are maintained by religious endowments (Waqf). Generally, they are part of the Mosque Foundation. Each religious sect has its own mosque where the Shaykhs pass on religious learning. Oral recitation and memorization are emphasized.

The traditional religious educational system (Kuttab) still exists in Yemeni towns and villages as it has for centuries. However, today, the religious schools play a relatively minor role in comparision to the formal secular educational system that has evolved since the revolution.

2. Secular Education

The idea of a formal education is a new one in Yemen. Almost no institutional capacity for education and training existed at any level prior to 1970. At the time of the revolution in 1962, only 919 primary schools existed in the entire country, with enrollment of 61,000 students, as shown in Table D-1. There were only eight preparatory and secondary schools enrolling about 2000 students. There existed no central government budget for education. Teachers depended entirely upon religious donations, contributions from private parties and irregular contributions from the Imam. No improvement in this situation occurred until after 1969 with termination of civil war activity.

In the decade of the 1970's, the YARG placed major emphasis upon establishment of an educational system. The system utilized a year structure of 6, 3, 3, and 4 respectively for primary, preparatory, secondary and university levels. Most primary

TABLE D-1

GROWTH IN SCHOOLS AND ENROLLMENT IN THE YAR EDUCATION SYSTEM, 1962/63 TO 1981/82

LEVEL	NUMBER OF SCHOOLS				NUMBER OF TEACHERS				NUMBER ENROLLED (Thousands)			
	1962/63	1971/72	1979/80	1981/82	1962/63	1974/75	1979/80	1981/82	1962/63	1971/72	1979/80	1981/82
PRIMARY	919	1115	2543	3711	--	5825	6727	11700	61	119	335	522
PREPARATORY	5	47	197	324	--	599	1061	1640	1	6	20	32
SECONDARY	3	6	55	94	--	233	480	806	--	1	8	12
UNIVERSITY	--	1	1	1	--	14	153	210	--	1	4	5
TOTAL	927	1169	2796	4130	--	6671	8421	14356	62	127	367	571

Source: Ministry of Education and University of Sanaa

*For 1971/72, 1974/75 figures used.

Source of Table: FOA Subproject Paper, 1984

and preparatory school facilities have been built by the Local Development Association (LDA). The number of such schools increased to over 3,700 by 1980/81. The number of secondary schools increased from three in 1962, to 94 in 1980/81. The number of teacher training institutes totaled 17 in 1981/82. Enormous educational progress has been made in YAR. By 1980, 36 percent of the primary school-age population and 4 percent of the secondary school-age population were enrolled.

In addition to the secondary schools, there are four long-term technical schools and vocational training institutes, a health and manpower institute, and three SAIs. These schools and institutes have been financed largely by YARG (MOE) and with donor assistance.

The University of Sanaa, YAR's only university, opened in 1970. Sixty-four students were enrolled in the faculties of Arts, (literature), Law and Religion, and Sciences, while the staff numbered 14. In 1973/74 two other faculties were added; Education, and Business and Commerce. In 1983, the faculties of Engineering and Medicine were added. Plans exist to add faculties of Agriculture, Veterinary Medicine, Pharmacy and Dentistry. By 1980, there were 4,220 students enrolled in the five faculties of the UOS; 449 women and 3,771 men. In addition, there were 630 students on grants in Arab-friendly countries in various specializations in 1979/80. Table D-2 shows the growth of the YAR education system since the 1962 revolution.

Several non-formal education and training programs also exist. The MOE has primary responsibility for such activities. In addition to the technical secondary schools, MOE has initiated about 100 literacy centers which reached over 2,200 adults in 40 villages since 1979. Such adult classes provide training courses in electricity, carpentry, sheet metal and welding, construction, automotive and general mechanics, agriculture, health care, home economics, nutrition, sewing, and weaving. Also provided are country-wide adult literacy classes which are intended to provide Grade-4 literacy and arithmetic skills. Enrollment levels in the literacy classes exceeded 10,000 in 1979/80. Health Centers provided by the Ministry of Health enrolled 90,000 in 1979/80 in their health classes. Eight community development centers provide non-formal training programs in embroidery, sewing and home economics.

3. Agricultural Education

Agricultural education in YAR is limited. No formal agriculture is taught in the primary, preparatory or general secondary schools. However, students can take a science option in the secondary school system including three years of training in mathematics, biology, chemistry, physics, mechanics and statistics, which provides a sufficient academic background for pursuing further education in agricultural subjects. Specialized long-term training in agriculture in the YAR is available through the three technical agricultural secondary schools (ISAI, SVS and SSAI). Short-term training programs are offered by various donor projects.

75

TABLE D-2

STUDENT ENROLLMENTS IN PRIMARY, PREPARATORY, SECONDARY,
TEACHER TRAINING AND TECHNICAL INSTITUTES AND UNIVERSITIES

	1979/80					1981/82				
	FEMALE		MALE		TOTAL	FEMALE		MALE		TOTAL
	No.	%	No.	%	No.	No.	%	No.	%	No.
Primary	41,707	12	293,542	88	335,249	71,394	14	451,602	86	522,996
Preparatory	2,795	13	17,969	88	335,249	71,394	14	27,995	86	32,566
Secondary	1,046	13	7,183	87	8,229	1,353	12	10,292	88	11,645
Teacher Training (Primary)	303	33	604	67	907	284	43	375	57	659
Teacher Training (General)	285	48	312	52	597	310	35	578	65	888
Commercial Secondary	81	21	313	79	394	96	22	331	78	427
Technical Secondary	1	.3	355	99.7	356	0	0	454	100	454
Ibb Secondary Agricultural Institute	0	0	53	100	53	0	0	118	100	118
Surdud Secondary Agricultural Institute	0	0	0	0	0	0	0	32	100	32
Sana'a Veterinary School	0	0	0	0	0	0	0	0	0	0
Sanaa University	449	11	3,771	89	4,220	654	13	4,518	87	5,172
Universities Abroad	0	0	630	100	630	0	0	652	100	652

Source: Ministry of Education and The Agricultural Sector Assessment, 1982

Source of Table: FOA Subproject Paper, 1984, Table F-2. (Amended for ISAI, SSAI and SVS.)

4. Education of Women

Traditionally women have not been educated in Yemen. The major constraints to educating females in Yemen have been social attitudes and family obligations that keep girls at home and the pattern of early marriages. Because of cultural mores, families object to educating daughters in coeducational schools with boys and male teachers. It is felt that women do not need to be educated because their families or husbands are responsible for taking care of them.

Today, many of these attitudes toward educating girls are beginning to change, and the number of females receiving formal education has increased in many areas. Literacy among women still is only 2 to 3 percent compared to overall literacy which exceeds 20 percent.

The current stated policy of the YARG encourages women to attend school. Preparatory and secondary schooling for women are available where separate classrooms are provided. In 1981/82, of the total enrollment in primary and preparatory schools, 14 percent were girls and in secondary schools 12 percent were girls. Furthermore, 13 percent of the students enrolled in UOS are women. Opportunities for educating Yemeni women are increasing slowly. It is important that serious thought be given to encouraging and supporting this trend at all levels of training. However, in view of the cultural tradition and sensitivity about social interaction of the sexes, this area must be approached with caution.

II. IMPACT

The ISAI Subproject is designed to strengthen the secondary agricultural education system, which is administered through the MOE. Initially, subproject inputs will be directed mainly toward the three existing SAIs and to select elements of MOE's own internal management structure. But, with emphasis on developing the SAE system as a whole, the Subproject, ultimately, will have a wider impact than may be initially perceived. The proposed feasibility studies to examine the needs for SAE in other regions of the country, to explore the desirability of separate SAE programs for women, and to determine what agricultural education programs are appropriate at other levels, are especially important in this respect. Both inter-regional and intra-regional spread effects may be anticipated.

A. Intra-regional Spread

Those agricultural areas in which the SAIs are located can be expected to have a special relationship with their respective schools. Enrollment data at the three schools shows that most of the students at the ISAI are from villages and towns which are located nearby. Students who are enrolled at these schools will serve as a special channel through which technical knowledge and experience can flow back to their local villages. There is

77

considerable exchange of information amongst farmers within a region through local markets and personal communication with relatives and friends locally and in other communities. SAI students, both while in training and following their graduation, may be expected to serve as effective change agents with these groups even though they may not have job responsibilities which are directly related to the traditional agricultural extension functions which they will in fact perform.

The SAE system is expected to have a lasting effect on Yemeni agriculture through the spread of agricultural information to farms and agricultural service agencies in regions where graduates are employed.

Additionally, outreach programs which are utilized as instructional experiences for SAI students will reach local farmers with useful knowledge of modern agricultural technology. Thus, the existence of the SAIs will have a favorable local and intra-regional impact on agricultural development in Yemen.

B. Inter-regional Spread

While communication lines within a region are strong, they are considerably weaker between regions. One should not expect information disseminated in Ibb Province, for example, to spread to distant regions, such as the Tihama, Saada Province, or Jawf.

It is unlikely that many students will enroll at SAIs located at a distance from their homes. Student enrollment figures at ISAI show that out of 160 students enrolled between 1979 and 1983, 80 percent came from the two governorates closest to Ibb. The rest were from other nearby regions.

Family ties in Yemen are strong, and students, especially at the preparatory and secondary levels, are loath to leave home for extended periods of time.

The ISAI's high rates of absenteeism characterize students from Zabid (Hodeidah Governorate). These students are apt to go home during the school year for visits that last a month or longer, much to the detriment of their studies and future performance at work. Similar problems of absenteeism and a lack of commitment to work are experienced by extension agents who work far away from their families. These problems disappear when provisions are made for the extension agents' families to join them. Thus the SAIs are expected to remain largely local or regional institutions rather than draw their student clientele from a national base.

In the present context of the YAR's social development, this is not likely to seriously exacerbate regional differences. Spread effects involving the desire for economic benefits which SAE is expected to generate are more apt to lead to pressures for expanding the SAE system to other regions, and ultimately to more effective social integration in the long run, which typically follows from advances in education.

Already the MOE is giving consideration to establishing SAIs to serve the needs of the northern highlands and the eastern plateau. The Subproject will assist the Ministry to assess those needs and provide the basis for developing a strategy to extend SAE to those regions at such time as economic considerations and other social pressures dictate.

It may be concluded that the Subproject will not contribute to serious regional disparities, but will have beneficial effects in terms of the technology diffusion which may be expected as a spillover effect of the project.

Because of the dominance of the agricultural sector in the YAR, the ISAI Subproject will contribute directly to the needs of the agricultural population, which occupies a centrist position in the social structure. YARG policy with regard to access to education, the availability of general secondary education opportunities, and the comparative magnitude of investment in SAE versus general secondary education, provide ample basis to conclude that the ISAI Subproject will not impact adversely on the social structure of the country or have any meaningful destabilizing effects.

III. BENEFICIARIES

A. Primary Beneficiaries: Students

The primary beneficiaries of the SAE system in the YAR will be the agricultural graduates of the training institutes. Not only will they receive a much coveted high school diploma, but they are virtually assured of attractive employment opportunities after graduation. Some will enter the public or private sectors directly. Other graduates may choose to get advanced training in agriculture at the Faculty of Agriculture in the University of Sanaa, or at a university in the Arab world or abroad.

The majority of the students at the ISAI are from middle- to low-income families, with lower average income levels than those of students in general secondary schools. Thus, the ISAI Subproject is directly aiding lower income groups in Yemen by providing them with educational opportunities and cash income.

The local rural population will benefit from the education of their offspring in SAIs. Although the first graduating class of the ISAI was composed primarily of "urban" youth from large urban centers, such as Taiz, and smaller rural towns such as Jibla and Rada', student composition has changed to a more rural population over the five years of the school's existence. The class that entered in 1983 is almost entirely rural, with only one student who has not had previous personal experience in agriculture.

This is a positive development since students with agricultural backgrounds are more likely to understand the applicability of theoretical classroom material. As extension agents, students who grew up on farms are more likely to understand farmers' problems.

The greatest benefit will accrue to those from the region of the particular institute and neighboring regions. The ISAI's experience has shown that the majority of students attending come from nearby areas. Although graduates might be employed anywhere in the country, those who live with or near their families are by far more successful in their work than those separated from their families.

B. Secondary Beneficiaries: Agricultural Sector Institutions

The secondary beneficiaries of the ISAI Subproject will be the agricultural sector institutions and the people directly served by these institutions. The SAIs will provide trained Yemeni staff to fill lower- and middle-level technical and supervisory positions in both public and private institutions.

Public institutions include the research and extension components of the MAF. The semi-automous regional development authorities, such as the Tihama Regional Development Authority and the Agricultural Research Authority, and other public institutions. The MOE will benefit by the availability of agricultural graduates to service their programs. The MOE will also directly benefit from the improved organizational and management system for the SAE sector through training, technical assistance, and commodity support. Improved management skills and expertise will translate into enrollments, timely and adequate financial support for the institutes, enhanced quality of instruction and institute administration, and improved graduate job placement. This would be expected to spill over into other aspects of MOE management, with effects on attitudes and perceptions which would impact favorably upon the institutional performance of the Ministry as a whole.

Private institutions that will benefit include the small but expanding agri-business sector of Yemen, including credit banks, agricultural input supply firms, agricultural product processing and marketing firms, and private poultry farms. International donors involved in agricultural development in Yemen will be able to have trained Yemeni to staff their projects as counterparts and make donor assistance more effective.

Currently, private sector industries are staffed largely by expatriate technicians. Because of the high wages offered in the private sector, the possibility of employment in these areas is expected to encourage recruitment at SAIs. All of the above will contribute to the growth and management of the sector.

C. Tertiary Beneficiaries: Farmers and Farmer Groups

The tertiary beneficiaries of the SAI institutes are the local villagers and village groups. Paraprofessionals will benefit from the training they receive through technical classes offered by trained change agents. Local development associations will benefit, in turn, from the availability of more trained paraprofessionals to staff their local service centers. Farmers will benefit from interaction with the graduates of SAIs who contact them through their work.

Specific benefits will result from advice farmers receive from extension agents on the use of newly introduced irrigation methods (tubewells); on the cultivation of new cash crops (e.g., vegetables, fruits); and on effective marketing techniques and methods of forming small village-based marketing cooperatives. Those farmers who cultivate subsistence crops will benefit from outreach programs focused on the treatment of livestock and crop diseases, the proper use of chemical fertilizer, and ways to halt erosion on abandoned terraces. Terrace farmers who cannot use agricultural machinery will benefit from advice on improvements in traditional draft implements.

D. Women as Beneficiaries

Women also can be beneficiaries of secondary agricultural education in Yemen. They will have access to knowledge in a wide range of agricultural subjects through SAI outreach and extension activities, and thus be able to benefit from increased productivity from the sector of which they are so vitally a part.

IV. Participation

Active beneficiary participation at all levels of project implementation has been the case with the ISAI Subproject, and is expected to continue. The following specified levels of participation are anticipated.

1. SAE is under the direction of MOE. MOE's involvement is complete as it is with other secondary schools in the country.

2. The MAF participates in SAE by nominating students to be trained at the SAIs, and by employing graduates in agricultural projects. The MAF's extension program participates actively in ISAI's outreach program by requesting short courses, arranging for their employees to participate in them, and providing participants' transportation to and from the ISAI.

3. The effectiveness of beneficiary participation would be increased if the MAF and the MOE could coordinate their inputs into SAI programs and curricula.

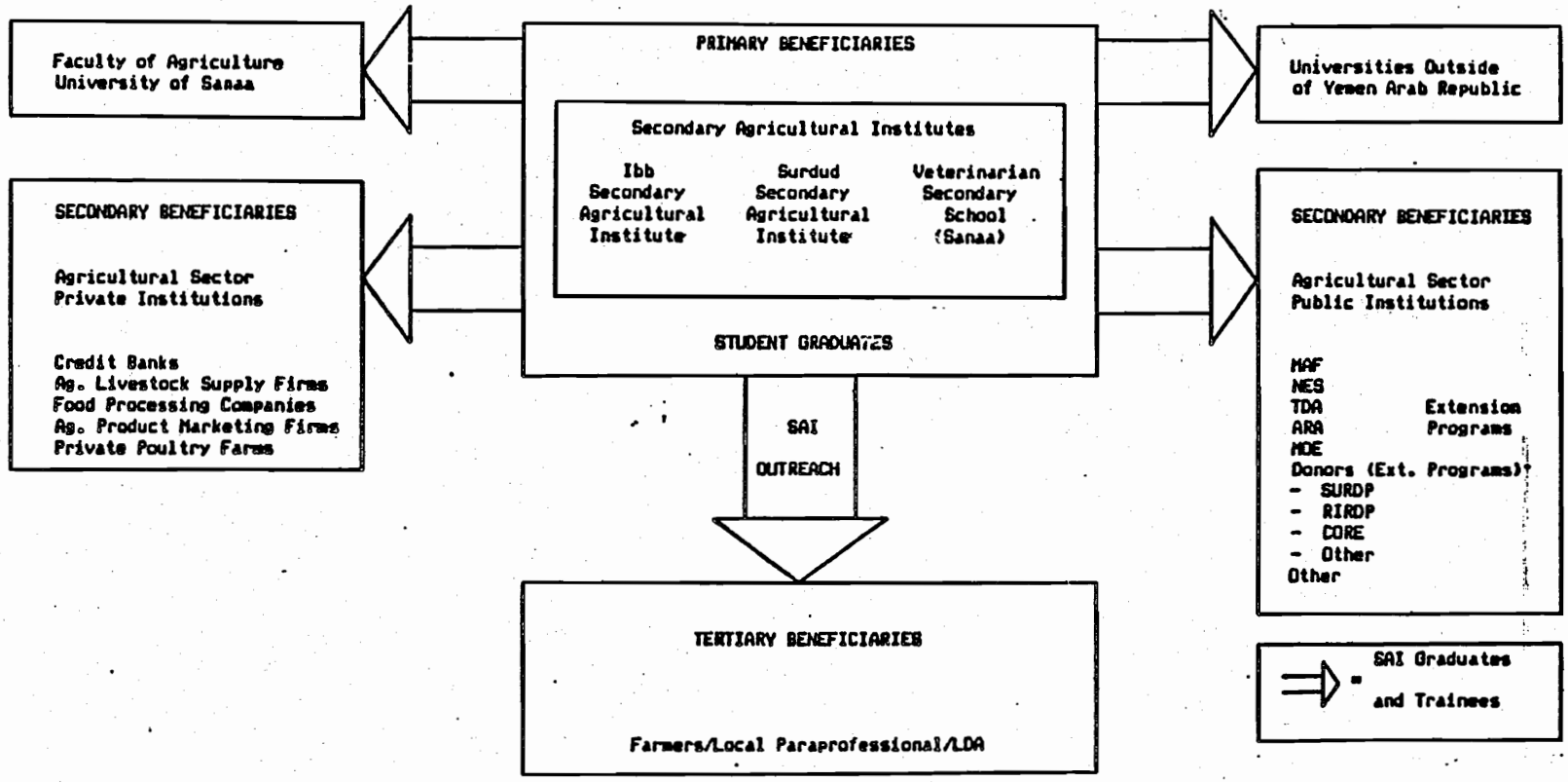
4. Beneficiary participation in project design can be achieved by asking Yemeni agricultural experts to comment on the SAE curriculum and its appropriateness. These experts should be permitted to revise the curriculum where necessary and to write sections of it in areas in which they have expertise.

5. SAI service users such as students, graduates, and farmers benefiting from outreach services could be asked to evaluate the quality and appropriateness of their training/information transfer on a regular basis. This kind of feedback can become a valuable method of establishing user participation in project design and implementation. It can also help the project to monitor its own progress and activities.

Figure D-1 shows a schematic representation of the beneficiary network which the Subproject should impact upon.

FIGURE - D

BENEFICIARIES OF THE SECONDARY AGRICULTURAL INSTITUTIONS IN THE YEMEN ARAB REPUBLIC



V. CONCLUSIONS

The Subproject is designed to meet important social and economic needs of lower and middle income classes in the YAR, and is compatible with the sociocultural environment in the country. The project will provide a needed institutional capacity to train Yemenis as mid-level agriculturalists, to contribute directly to public and private sector manpower needs, and to respond to the demand for agricultural sector support services.

A major objective of the Subproject is to "Yemenize" the curriculum. This involves training of Yemeni nationals to staff the schools and a revision of curriculum content to ensure that it is relevant in the Yemeni context. These objectives are consistent with YARG policy to reduce reliance on expatriate teaching staff, and with concerns for establishing a knowledge base that will lead directly to increases in agricultural sector productivity.

SAE opportunities for Yemeni women are limited. It is unrealistic in the short run to expect that women will be accommodated at the existing SAIs. Justifications for separate SAE programs for women are strong, but the feasibility of establishing women's SAE programs has not been demonstrated. In view of prevailing attitudes, both in and out of government, this cannot be considered a high priority for donor or YARG investment at the present time.

Efforts to link the SAE system with agricultural extension will be encouraged under the Subproject. While the SAIs will not compete directly with MAF extension efforts, this linkage is a positive step to meet this critical need in the sector.

The potential spread effects of the Subproject and its focus on a large socially important beneficiary clientele must be viewed positively.

It may be concluded that the Subproject design meets the major criteria for social soundness, and there are no negative social impacts which are likely to be encountered as a result of implementation.

ANNEX E

Manpower Analysis

INDEX TO ANNEX E

	Page
Manpower Issues	E-1
A. Type of Training Required	E-2
B. Availability of Employment Opportunities	E-5
1. Public and Semi-Public Sector Demands	E-5
2. Private Sector Demands	E-6
C. Student Enrollment at the SAIs	E-11
D. Conclusions	E-14

MANPOWER ISSUES

It is widely recognized that the YAR does not have sufficient manpower resources to effectively carry out the wide range of programs necessary to achieve development objectives. This is not at all surprising, since the country began its move toward modern nationhood only about two decades ago from a state of isolation characterized by mass illiteracy and a labor force that was poorly qualified in modern methods, albeit with a well-earned reputation for hard work and an aggressive entrepreneurial tradition. There is general agreement, both amongst senior YARG officials and informed development practicioners, that manpower development is a problem of major dimensions and should be accorded a high priority both for donor assistance and the YARG's own development budget. The YARG's priority budget allocations to the education sector over recent years are ample recognition of the government's concern in this regard, and their willingness to respond.

The 1981 World Bank study Manpower Development in the Yemen Arab Republic analyzed several general occupational level categories requiring varying levels of training. Six skills/training level categories were identified, ranging from those requiring no formal education at all, to those requiring a university degree. Rough estimates were made of the shortfall (needs minus availability) in each category for 1980, and projections were made for 1985. The following table, adapted from the World Bank report, indicates the various shortfall levels for each category, based on their projections to 1985.

TABLE E-1
Estimated Shortfall of Trained Yemeni
by Training Level Category - 1985

		Estimated Shortfall of Trained Personnel
A.	Professional occupations requiring university degree	3,800
B.	Sub-professional occupations requiring secondary diploma plus additional training or experience	10,800
C.	Skilled and intermediate office and administrative occupations requiring some secondary school education	58,300
D.	Skilled and intermediate occupations requiring combination of general and vocational/technical education	52,500
E.	Semi-skilled occupations requiring functional literacy and limited skills training	93,200
F.	Unskilled occupations requiring no special education	(191,000) (surplus)

86

The ISAI Subproject would directly contribute to the needs for personnel identified in category D, and would also add to the pool of candidates who with further education and training would be available to meet requirements included under B and A.

It should be noted that the shortfall numbers indicated above are for the YAR as a whole, and the estimates reflect the situation for all economic sectors -- not just agriculture. While the foregoing evidence is representative of the general trained manpower shortage, it is particularly important with respect to the agriculture sector, both in absolute terms and in relationship to requirements. Shortages of skilled and semi-skilled agricultural workers, as well as science-based professionals and sub-professional technical staff, are prevalent in both the private and public sectors. There are no empirical estimates of the shortfall which are particularly applicable to the agriculture sector, but even if agriculture represents only one-tenth of the shortfall which has been projected, the problem still is of major proportions.

Efforts to resolve these shortages are being undertaken by various donor groups which provide assistance for agricultural training programs directed at several different target groups. Many of these programs are of a short-term nature (from a few weeks to a year in duration) and while important in terms of addressing specific skill level objectives, they do not meet needs for a flow of entrants into the agricultural services work force who have a suitable knowledge base upon which the sector as a whole can depend for its modernization and contribution to the nation-building process.

The SAE Subproject is designed to meet this need -- to train Yemeni citizens for service in public and private sector enterprises which will support the growth and development of agriculture as a whole.

The central manpower issues to be addressed in the context of the ISAI Subproject which is proposed are as follows:

- -- Will the Subproject produce the type of graduates which meet the long-run needs of the Sector?
- -- Will there be sufficient employment opportunities over the long run to absorb the flow of graduates from the SAE system, and thus justify the investment that is contemplated under this Subproject?
- -- Will there be sufficient students who are qualified and motivated to seek and undergo SAE training such as is being planned, and thus maximize utilization of the investment which is being made?

These are discussed in turn below.

A. <u>Type of Training Required</u>

The Subproject is designed to produce secondary school graduates who will be technically qualified and motivated to contribute to the long-run needs of the agricultural sector. Special

attention is given to the SAI's curriculum content, to insure that it is relevant, that it is practical in meeting those needs, and that it is broad enough to prepare graduates for a wide range of employment opportunities in agriculture. There is little need for specialization at the secondary school level, but there are special needs for graduates with training in agricultural economics, farm mechanics, food processing, and poultry and dairy production. The proposed curriculum is designed to meet those needs.

Subjects offered in the curriculum at the ISAI and the SSAI will include: agronomy, including introductory information about field crop varieties, basic plant physiology and growth habits, and crop production practices; horticulture, with emphasis on both fruit tree and vegetable production, plant propagation and cultural practices; crop protection, to include identification and control of plant diseases, insect pests, weeds, and methods to maintain crop yield levels and quality; animal production, livestock management (including poultry), nutrition and husbandry; agricultural engineering, with emphasis on farm layout and structures, irrigation, machinery and energy requirements, and development of mechanical skills; agricultural extension and communication skills; agricultural economics, especially emphasizing the importance of basic record keeping and marketing; and food technology, including dairy processing, storage requirements, and product safety awareness.

The SVS curriculum is specific to the animal sciences. Instruction is offered in the following areas:

> Anatomy and Histology, Physiology, Parasitology, Bacteria and Viruses, Poultry Diseases, Dairy and Meat Examination, Veterinary Medicine, Principles of Surgery, Biochemistry, Animal Breeding, Animal Policy, Animal Nutrition, Vocational Health, Pathology and Lab Tests, Dairy and Meat Processing, Pasture Management, Feed and Feed Manufacturing.

As is noted, the agriculture curriculum range is a broad one, and will be appropriate to the student level toward which it is offered. Emphasis will be on practical application of learned knowledge, and the student will be required to demonstrate his competence to perform certain tasks which are relevant to potential employment needs. Upon successful completion of the curriculum, graduates should be well prepared to undertake a wide variety of employment responsibilities requiring job entry level skills. Experience and practice will develop those skills as the employee matures and takes his place in the agricultural manpower pool of the YAR.

Graduates of the first three ISAI classes total 113: 48 in 1982, 29 in 1983, and 36 in 1984. The 19 highest ranking graduates are currently enrolled in BS programs in Egypt: nine from the first graduating class, six from the second class and four from the third. Of the remaining graduates of the first class, 37 (or 77%) are employed in the public sector, primarily as extension agents. A survey of those graduates was conducted in the summer of 1984, at which time most graduates had been on the job some eight to ten months. Interviews were conducted both with graduates and their employers. In almost all cases, the graduates were employed in public sector jobs. Some were in the National Extension Service,

98

and some were working with various regional organizations (TDA, SURDP). In almost all cases, the graduates were performing some extension type function requiring some direct contact with farmers. Similarly, 20 (or 69%) of the graduates from the second (1983) class are employed as MAF extension agents, while the employment status of three graduates is unknown. Of the third (1984) graduating class, 32 are serving military obligations.

Interviews were conducted both with graduates and their employers. All of those interviewed perceived ISAI to be a beneficial organization, and urged that its program be continued. Most employers were well pleased with the training which their employees had received. It was noted that the ISAI graduates were better prepared for their work than employees who had completed the nine or eleven month extension training courses which had been offered to MAF employees.

ISAI graduates were described as having a good background in basic agricultural knowledge, being industrious and with good work habits, and were eager to be successful in their jobs.

The major concerns were that ISAI training should have a more practical orientation, and that graduates had aspirations for further education and supervisory positions. This latter concern suggests positive attitudinal preparation, and denotes confidence on the part of the graduates that they have the background and ability to take on more responsible assignments.

The concern about more practical application and experience in "doing" is well placed, and the design team has proposed the competency based approach in which students must demonstrate their mastery of skills and techniques. However, the general subject matter covered was deemed to be relevant and useful by employers and graduates alike. Further results of this survey may be found in Annex K.

A subsequent survey of selected private sector employers was conducted in August 1984. The ISAI curriculum was described to them, and they were asked to comment or to make suggestions as to how it might be improved. The representatives of the several firms contacted indicated that they felt the proposed subject matter was probably appropriate for the various schools, but also emphasized the need to have graduates who had practical skills which could be applied on the job. They indicated that every employee would have to gain experience in various aspects of their respective firms, but the firms desired employees who had practical skills that would be applicable in their jobs. Many employers indicated that they had job vacancies for which students who completed the ISAI curriculum would probably qualify. While they did not yet have a chance to observe first-hand the quality of the SAI graduates, there was a favorable impression of the curriculum and a willingness to cooperate in its evaluation. Several employers responded favorably to the suggestion that they cooperate with the SAIs in developing practical experiences through summer internship programs for SAI enrollees.

This suggests a positive view of the relevancy and appropriateness of the curriculum from the standpoint of private sector employees.

B. Availability of Employment Opportunities

The team has considered long-range employment opportunities for SAI graduates to determine if there will be sufficient demand for their services to justify extending the Subproject. Both primary and secondary data sources were used in the preparation of this assessment.

Primary data were collected in Yemen during August 1984 through personal interviews which were conducted with managers of private, semi-private and public sector agri-businesses and organizations. Information on the current and future job opportunities, salary scales and benefits offered in each sector were obtained.

Secondary sources provided additional information. In particular, data on projected manpower demands for agricultural occupations in the public and mixed sectors were obtained from secondary sources.

1. Public and Semi-Public Sector Demands

The current and projected supply and demand situation for agricultural manpower at all skill levels is summarized in the 1982 YAR Agricultural Sector Assessment. This work is based on data available in official YARG/CPO projections.

At the subprofessional level, occupations relevant to agricultural development are those of laboratory technicians and veterinary assistants. Public sector demand in 1982 was 129 and 24 for laboratory technicians and veterinary assistants, respectively. The projected demand for agricultural mechanics was 99. Based on these projections, the estimated future demand for skilled manual workers in agriculture totals 3384 by 1992, at the end of the subproject (see Table E-2).

The annual projected need is for about 250 mid-level technical personnel per year over the period 1982 - 1992. The total projected output of the ISAI and the SSAI is 649, although it is predicted that some graduates will go on to university education, and will not enter the labor market until several years later. It is projected that the veterinary school will produce a total of 191 veterinary assistants by 1992. The total supply of graduates is therefore 840 (see Table E-7).

When the projected outputs of the agricultural vocational schools are compared with the projected demands in the public sector, the estimates signify a deficit of 2547 in the supply of agricultural graduates.

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TABLE E-2
Demand for Secondary Agricultural School Graduates 1/

Demand Category	'81	'82	'83	'84	'85	'86	'87	'88	'89	'90	'91	'92	TOTALS
	Year												
Agricultural Technicians (MAF)	84	129	129	129	129	130	130	130	130	130	130	130	1509
Livestock Technicians (MAF)	0	24	24	24	24	25	25	25	25	25	25	25	270
Mechanics (MAF, OYDA, SEED ATH., Etc.)	510	99	99	99	99	100	100	100	100	100	100	100	1605
TOTALS	594	252	252	252	252	255	255	255	255	255	255	255	3387

1/ Based on MAF/CPO projections

Sources: 1981-85 ASA of 1982, Table V-2; and CPO, 1982
1986-92: Design Team Estimates

It should be noted that public sector demand for agricultural technicians and veterinary assistants was projected based on MAF needs. In addition to this ministry however, additional government organizations have and will continue to have manpower demands for skilled agricultural technicians. The agricultural cooperative organizations will need skilled personnel to staff their administrative positions and their marketing positions. Local governments have begun to invest their tax monies in development projects. For example, in Hodeidah, the local government authority built a pastry company. For those projects related to agriculture and food processing, there will be demands for skilled personnel to staff the projects. Finally, Yemen has been importing fruit trees and other agricultural products. If imports continue, they will need agriculturists in their customs department in order to apply quality control standards to imported products.

2. Private Sector Demands

There is also a growing demand for secondary agricultural graduates in the private sector in Yemen. In the past, the demand was relatively small in comparison to the demand in the public sector. In the last four to five years however, this trend has changed. Now, as a result of the rapidly growing private agri-industrial sector in Yemen, there are many new job opportunities for SAI graduates. This conclusion is supported by the data collected by the design team.

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The greatest number of jobs being created are related to the rapidly expanding food technology industry. Examples of specific food-related industries include: biscuit and candy companies, dairy product processing companies, soft drinks and fruit juice companies, fruit and vegetable canning companies and oil processing companies.

The poultry industry is the second largest agri-industry in Yemen. In 1982-1984, this industry has grown dramatically. Dairy production has been expanding too, although not as rapidly as the poultry industry in the YAR.

Agricultural production is becoming modernized and mechanized in Yemen. Consequently, farm machinery, fertilizers, herbicides, pesticides, seed and trees, are being imported by private sector firms. Jobs related to importation of these goods and maintenance of farm machinery are becoming available as more imports are brought into the country.

Finally, related to all these areas is a need for skilled manpower to supervise production and processing activities, to market the goods produced by the agri-industrial sector in Yemen and to handle other commercial aspects of the industry.

Based on the survey of nine private agri-industries in Yemen, it was possible to identify specific jobs or tasks that companies needed to have done by skilled men and women with secondary school education. Table E-3 provides a summary listing of these employment opportunities and the types of agri-business firms that require these skills. The jobs listed are based on current assessed needs of the companies visited. In other words, if qualified candidates were available there would be employment opportunities for them in the private agri-business sector. This partial survey of agribusiness firms indicated that about 150 current vacancies existed for qualified employees. It may be assumed that this greatly underestimates total private sector demand for graduates, because of the relatively small sample size (the total number of agribusinesses in Yemen exceeds 100).

All the companies visited had plans to diversify, in addition to expanding their on-going production. Therefore, it is expected that the employment opportunities for skilled technicians will continue to grow.

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92

TABLE E-3

Employment Opportunities for Secondary Agricultural Graduates in the Agri-Business Sector in The Yemen Arab Republic

AGRI-BUSINESSES NEEDING PERSONNEL

Job Title	Responsibilities	Food Technology	Poultry/ Livestock	Trade/ Cooperative
Supervisor	production	x	x	x
	marketing	x	x	x
	administration	x	x	x
	quality control	x	x	x
Commercial Representative	marketing	x	x	x
	sales	x	x	x
	accounting	x	x	x
	credit advisor	x	x	x
	import control	x	x	x
Trainer	personnel training	x	x	x
Laboratory Assistant	product testing	x		
	product development	x		
	quality control	x		
Veterinary Assistants	inoculations		x	
	testing for diseases		x	
	diagnosis		x	
	treatment		x	
Extension Agent	short courses		x	x
	demonstration		x	x
	monitor/advise		x	x

Source: Design Team Interviews, August 1984.

Future manpower needs can be assessed too, but only very roughly. Among the sample of private companies, the minimum annual growth in business was projected at twenty percent. If one assumes that growth in the number of personnel parallels overall business growth, this means that numbers of employees will increase by twenty percent on an annual basis. Thus, demand projections for jobs can be projected over the life of the project (1985-92). Using the demand figure of 179 as a 1985 base, employment demand in 1992 among the sample group was estimated. By 1992, there will be an estimated 1407 additional jobs available. Again, since this is based on the sample only, the total figure for Yemen will be much larger. These are included in the projections made in Table E-4 below. Data on the total number of businesses in Yemen is being prepared by the Ministry of Economy and Industry. When these

figures are available, it will be possible to make a demand projection for the entire country. The sample data was included in order to provide an estimate of the demand trends for skilled agricultural technicians in the private sector agri-businesses.

For the government and the semi-government agencies surveyed, the demand was 590 and 117 respectively, making the total public demand for secondary agricultural graduates (in 1992) 707 (see Table E-4).

TABLE E-4

Demand for Secondary Agricultural School Graduates
(Based on Sample)

	1984 Employees (Technicians)	'85	'86	'87	'88	'89	'90	'91	'92	TOTAL
Government Agencies	217	197	41	46	50	55	61	67	73	590
Semi-Government Agencies	55	32	9	10	11	12	13	14	16	117
Private Companies	287	179	95	114	137	164	197	237	284	1407
TOTALS	599	408	145	170	198	231	271	318	373	2114

Assumed: 10% growth rate for government and semi-government agencies
20% growth rate for private companes

Using the sample survey only, the total estimated demand by private and public businesses and agencies is 2114. When the projected outputs of the agricultural schools are compared with these demand figures, the estimates indicate a deficit of 1274 agricultural graduates (supply estimates are derived from Table E-7 below). Projected demand for secondary agricultural graduates is far greater than the projected supply, based on sample results.

The companies surveyed were concerned about the lack of skilled manpower in Yemen. Without exception, they wanted to improve the quality and upgrade the competence of their work forces at all levels. At the skilled technical level, they will be able to hire SAI graduates as they become available. In order to keep their staff up-to-date, they are providing training for them.

All the companies have some arrangement for in-service training. This is usually short-term training courses or lectures.

One company sent a group of employees to Holland and Denmark to receive training. Six of the companies have planned, or proposed to build, specialized training facilities. The most elaborate plan was to set up a training institute for personnel development and growth in all phases of production. The plan is in the feasibility stage now, under the direction of a British/Indian consulting team.

Another approach was to expand laboratory space in order to accomodate training needs of the company. Another company is planning to set up a training program for secondary students. The students would be selected according to academic ability. They would work with experienced technicians in order to learn basic laboratory skills related to food processing. This company was quite enthusiastic to learn about the SAIs as a potential source of recruitees. Furthermore, all but two of the companies said they would be willing to have SAI students work for them during the summer as trainees. The minimum number was 57, while the maximum number of trainees that these companies could manage during a summer totaled 79. They would pay them minimum wages of YR 1000 - YR 1680 per month and provide them with transportation, training and, in some cases, housing and food.

Government and semi-government organizations also were willing to have students work for them during the summer months. The organizations visited indicated that they could accomodate approximately 75 students. Five public organizations would pay them salaries arranging from YR 1000 to YR 1500 per month while two were not willing to pay them any salary. It appears that the private and the government sectors in Yemen are both capable and willing to help improve the quality and training of Yemeni manpower.

Average starting salaries paid by private sector agri-businesses to agricultural technicians with secondary school education ranged from YR 2113 per month without work experience, to YR 3438 with some experience. In all cases, there was a three-month trial period. After this time they would be released from their job or retained with a salary upgrade. Bonuses are given at frequent intervals in order to encourage worker productivity. The bonuses come in the form of cash payments ranging from YR 100 to YR 1000 with an average payment of approximately YR 775.

The typical benefit package offered by the private companies interviewed included: a cash bonus of one month's salary for Ramadan, one month annual leave, two weeks sick leave, health insurance (medical and hospitalization) and transportation. In addition, four companies provided free meals or food at cost and three provided life insurance, severance pay and housing. These benefits are considered attractive in comparison to public sector employment, and compare favorably to the non-agricultural wage scale in the YAR business sector.

It is concluded that the prospects for graduates of the SAE system, at least in the near term, are very attractive, and there should be no difficulty in ensuring that graduates are employed in positions which will utilize their training productively.

C. Student Enrollment at the SAIs

It is expected that the main source of students for the SAIs will be directly from the preparatory schools. Additional students may be recruited through donor projects and from government ministries. These would likely be somewhat older than the preparatory school graduates, and some may already have had significant work experience, but as a general rule preparatory schools will be the main recruiting grounds for entrants at the secondary level.

Preparatory school enrollments are increasing in Yemen as the YARG's school building program progresses. Likewise, the number of graduates of the preparatory system is increasing. Table E-5 shows the growth pattern for recent years.

TABLE E-5
Preparatory School Enrollment and Graduates

Year	Students Enrolled	Percent of Change from Previous Year	Students Graduated	Percent of Change from Previous Year
1980-81	25,037	--	5,628	--
1981-82	32,168	28	6,093	8
1982-83	43,302	33	7,372	19
1983-84	56,557	40	9,000 *	22

*Estimated by the Design Team

With rapidly growing preparatory school enrollments and the increase in graduates, the need for secondary schools is also increasing. Currently, there are about 130 secondary schools including the SAIs. Enrollment growth is shown in Table E-6.

TABLE E-6
Secondary School Enrollment and Graduates

Year	Students Enrolled	Percent of Change from Previous Year	Students Graduated
1980-81	9,797	--	2,164
1981-82	11,831	21	2,367
1982-83	11,984	1	3,337
1983-84	15,778	32	3,500*

*Estimated by the Design Team

While the data is not conclusive, it is noted that secondary school enrollment is increasing at about the same rate as graduates from preparatory schools, and while lag factors affect the actual progression, the data suggests that about half of the preparatory school graduates avail of secondary school opportunities. In a developing country such as the YAR, one would expect that this ratio might be higher.

This expectation is borne out by a survey of preparatory school students in the Ibb area (See Annex L). Of a sample of approximately 1,000 students, only 7 indicated that they did not plan to go on to secondary school. Thus, it is apparent that student interest in secondary education opportunities is high; and notwithstanding academic qualifications for acceptance into secondary schools, the pool of potential enrollees who aspire to continue in the secondary system is sufficiently large.

It is noted that preparatory student interest in secondary agricultural education is also high. The survey of preparatory students referred to above attempted to assess the preferences of students in terms of the type of secondary school they wished to attend. The survey found that most students preferred to attend a general secondary school, but that the SAIs ranked high in their preference ordering.

Thus, from the point of view of student availability and student interest, SAI enrollments should be at or near functional capacity. It is noted, however, that to date, all three SAIs have had insufficient numbers of students seeking enrollment in their programs. The design capacity for each of the schools was 180. However, the functional capacities are significantly lower: 150 for the ISAI, 150 for the SSAI, and 160 for the SVS. Current enrollment in the Ibb School is 65% of functional capacity. SSAI has 55% of its projected enrollment, while the SVS has only 24%.

Student attrition has been an important factor in decreasing the total number of students enrolled in the institutes. Data on the ISAI shows that the percent of total student dropouts was 12.7% in 1979-80, 28.2% in 1980-81, 8.1% in 1981-82, and 30.4% in 1982-83. The largest attrition rate occurred among first year students. Of the 36 students who dropped out, 30 did so during their first year.

Interview data with ISAI staff and MOE officials indicated one possible reason for the high dropout rate in the first year was that the media advertisements and announcements used to recruit students were misleading. The ads gave recruits the impression that many more university scholarships were available to ISAI graduates than were actually the case. Students enrolled expecting to be able to continue their post-secondary education after graduation. The realization that scholarships were available only for a few top students was the major reason for the high dropout rate in the first three months of attendance at the ISAI (see Annex K for additional discussion).

Inadequate recruitment also has contributed to low student enrollment and retention in the three SAIs. Recruitment procedures need to be intensified.

Career guidance would facilitate both recruitment and retention of SAI students. If potential students were advised about the job opportunities that are available in the public and private sectors, the salary ranges and benefits offered, they would be more inclined to initiate secondary studies. Work-study programs could be arranged with organizations or scholarship funds. This would give students additional training and experience that, in turn, would help them secure employment once they finished their schooling. Private companies and some government organizations visited by the Design Team have already set up such programs.

SAIs might be able to recruit additional students if the military obligation for male students was waived upon their graduation, on the condition that they work as agricultural extension agents or technicians for an equivalent amount of time.

Until changes take place in the labor market, in the incentive structure, in recruitment approaches, and in student attitudes, innovative approaches must be adopted in order to recruit a sufficient number of students to: 1) fully utilize the available secondary agricultural schools in Yemen; and 2) produce sufficient numbers of graduates to satisfy the demand in the public and private sectors.

The total number of graduates expected by the end of the project (1985-92) is projected to be 697: 277 from the ISAI; 229 from the SSAI; and 191 from the SVS (see Table E-7). These projections are based on annual enrollments of 50, 45, and 40 respectively at the SAIs, with an anticipated dropout rate of 20% in each case.

TABLE E-7
Student Enrollment and Number of Graduates per SAI, 1980-92

Year	New Student Enrollment				Students Graduating			
	ISAI	SSAI	SVS	TOTAL	ISAI	SSAI	SVS	TOTAL
79-80	53	0	0	53	0	0	0	0
80-81	30	0	0	30	0	0	0	0
81-82	40	32	0	72	48	0	0	48
82-83	37	24	7	68	29	0	0	29
83-84	35	18	17	70	36	30	0	66
84-85*	24	20	14	58	30	19	6	55
85-86*	50	45	40	135	28	14	14	56
86-87*	50	45	40	135	19	16	11	46
87-88*	50	45	40	135	40	36	32	108
88-89*	50	45	40	135	40	36	32	108
89-90*	50	45	40	135	40	36	32	108
90-91*	50	45	40	135	40	36	32	108
91-92*	50	45	40	135	40	36	32	108
TOTAL*	569	409	318	1296	390	259	191	840

* Enrollment figures after 1984 are based on previous enrollments and on the maximum capacities of the three SAIs: i.e. ISAI, 150; SSAI, 150; and SVS, 160. Student graduating figures were based on a 20% dropout rate of the first year's enrollment.

D. Conclusions

Numerical estimates of the flow of preparatory school graduates and the results of a recent survey of their aspirations and interests indicate that student availability for SAI enrollment is high. The project design recognizes the need to undertake a more active recruitment effort to capitalize on this interest, and to attract well qualified students. Opportunities for further education will, in part, affect SAE System recruitment. The establishment of the FOA at the University of Sana'a must be viewed as a positive incentive in this respect. An active information program must be directed at preparatory school graduates and their parents, to make them aware of the availability of the SAIs as an educational option, and the long run employment prospects which can be anticipated at graduation and beyond.

Based on sample results alone, the total estimated demand for graduates by private and public sectors is 2,114 through 1992. The projected total supply of graduates from the three SAIs is only 697, implying an excess demand for qualified graduates of about 1,417.

ANNEX F

Administrative Capability of the YARG

INDEX TO ANNEX F

Page

I. Statement of Purpose---------- F-1

II. Subproject Administrative Elements---------- F-1

A. Organization---------- F-1
1. Legal Status---------- F-1
2. Financial Status---------- F-1
3. Pattern of Organization---------- F-3

B. Management---------- F-3
1. Delegation of Authority---------- F-3
2. Experience and Capability of Managers---------- F-3

C. Staffing---------- F-4

D. Institutional Linkages---------- F-4

E. Implications of the Analysis and Recommendations for the Implementation Plan---------- F-5

F. Ability to Operate the Institution Upon Subproject Completion---------- F-7

I. STATEMENT OF PURPOSE

The major purposes of this analysis are (a) to assess the capability of the YARG (in general) and the MOE (more specifically) to provide the appropriate administrative support for the subproject and (b) to determine if the proposed implementation plan is workable within the context of the administrative support which is anticipated. In this analysis, the MOE is considered to be the implementing agency.

II. SUBPROJECT ADMINISTRATIVE ELEMENTS

A. Organization

1. Legal Status

The MOE is a public institution which is responsible for all K-12 public education in the YAR. In this role, the MOE is responsible for the employment of teachers, the recruitment of students, the development of the curriculum and the administration and financing of all public schools. The MOE, however must receive approval of the Central Planning Organization (CPO) before employing foreign teachers and staff. The CPO also has the responsibility of signing all foreign contracts including those involving educational programs and activities in Yemen.

Other than the YARG-AID Project Agreement, the subproject design does not anticipate any requirement for host country contracting or subcontracting.

2. Financial Status

Based on fiscal policies established by a Supreme Council for the YARG budget, the Ministry of Finance (MOF) provides a written set of guidelines that all government entities must follow in developing their respective annual operating budgets. The MOE provides the information to all departments and divisions through its Department of Finance. When the Director of Agricultural Education receives this information, he meets individually with each school director to prepare a budget for each SAI. Once these individual school budgets are developed, they are integrated into an overall budget for SAE in the YAR. This budget is forwarded through the appropriate channels to the MOF for review, revision and ultimate approval. When the MOE budget is approved by the MOF, the MOE then has the authority and responsibility to disburse and utilize these monies.

One problem that has been encountered in the past is timely release of funds to the SAI directors. The origin of this problem is not totally clear, since several entities within the MOE and the MOF are involved. Therefore, active involvement of the CPO and the subproject team leader, and their Yemeni counterparts and contacts is necessary to ensure the timely and orderly flow of funds to the SAIs. Notwithstanding the potential for delays, this problem is not seen as a serious constraint to implementation of the subproject.

102

3. Pattern of Organization

Figure F-1 provides an overview of the organization and administrative structure of the MOE as it relates to the SAIs. The organizational structure is hierarchial in nature with policy being established at the Ministerial level. Often procedural decisions are likewise made at the Deputy Minister and Minister levels. Information regarding various issues and problems flow upward to the decision makers and subsequently, decisions are communicated in a reciprocal manner. Once decisions have been made the school directors have considerable authority in the implementation of these decisions.

The support and cooperation that a school director receives often vary with the individuals who are serving as directors and as their supervisors. In general, cooperation has been reasonably good among the Yemen administration in the MOE and the Yemeni school directors. As staff become trained and more familiar with their respective duties and responsibilities, it is anticipated that cooperation and cohesiveness toward a common goal will be enhanced.

B. Management

1. Delegation of Authority

As indicated previously, the organizational structure is hierarchical and reasonably effective. The Ministry itself has considerable authority once its budget is approved. However, within the Ministry, limited authority is delegated to lower level managers. As a result, the Director of Agricultural Education does not have management control over the budget for his department, but rather, substantive budget decisions regarding the agricultural education program are made at the Deputy Minister or Minister level.

2. Experience and Capability of Managers

Administrative and management capabilities of those responsible for the SAE program have improved over the initial five years of this subproject. A major problem has been the frequent changes of personnel in key administrative positions which results in the lack of continuity of the secondary agricultural schools' programs and administration. Notwithstanding these personnel changes, the succession of administrators have been familiar with general governmental procedures and requirements, and project administration has not suffered seriously as a result.

Five years ago, when the ISAI subproject was initiated, Yemen did not have any SAIs. Thus, the administrators in the MOE and the current directors of the three SAIs do not have a long history of administrative experience in their respective positions. Nevertheless, they are receptive to new ideas and suggestions. One of the emphases of the subproject training programs will be to provide long- and short-term administrative and management training for selected administrative and management staff.

The expatriate ISAI Subproject Team Leader also has to work

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103

closely with his Yemeni counterpart in a congenial relationship. This has improved management and administration of the ISAI.

It is expected that when the Yemeni staff who have been trained in administration return to the MOE, they will assume key leadership roles in the Yemeni SAE system, thus providing expertise, experience, and continuity to the programs at the three SAIs and in the MOE.

Managerial capacity within the Ministry is adequate to support the proposed subproject and will not be a constraint to effective implementation of the subproject.

C. Staffing

As indicated earlier, turnover of staff, particularly the administrative staff at the institutes, has been an unavoidable problem. Since one of the objectives of this subproject is to train staff and administrators for the three SAIs, a new or interim school director is designated whenever the existing director is sent to the U.S. for long-term training. A related problem is the time required for a school director to achieve the minimum English language capacity necessary for long-term training in the U.S. Generally, he does not have sufficient time to successfully accomplish his usual duties and to successfully pursue English language study. This problem will be eased when the school directors complete their graduate level training and return home to assume their responsibilities as SAI directors again.

The MOE has designated one person responsible for secondary agricultural education programs at the national level. He spends nearly all his time on administrative and financial matters, leaving inadequate time available for the educational dimensions of his program area. He needs additional staff to assist in the areas of in-service training for SAI staff and administration, curriculum and instructional materials development, supervision and evaluation of administrators and staff at their respective institutes, and the development of long- and short-term plans for SAE programs in Yemen. It is proposed in the design that additional Yemeni staff be provided and trained to assist with these aspects of the program.

D. Institutional Linkages

The majority of the intra-ministry (between Director of Agricultural Science and the three SAI directors) and inter-ministry (between the MAF and the MOE and other relevant agencies) communication has been on an unstructured, informal basis. The one exception has been the National Agricultural Education Policy Committee which was appointed in the early stage of the ISAI Subproject. This committee is comprised of key administrators from the MOE, the MAF, the CPO and representatives from other key agencies. The purpose of this committee has been mainly to consider general guidelines and policies for the administration and operation of the SAIs and the SAE system. Since the Committee has not met for more than a year, it would seem appropriate to re-evaluate the purpose and responsibilities of this group. One reason for the committee's inactivity is that there is no systematic or coordinated means to provide

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recommendations or ideas upon which the committee could take action. Therefore, it is recommended that an Agricultural Education Coordination Committee be comprised of the three SAI Directors, the Director of Extension/MAF, and one or more representatives from relevant public and private sector agencies. The Director of Agricultural Education, the Director of Vocational Education, and the expatriate ISAI Team Leader should serve as ex-officio members on the committee. Some of the areas which would be discussed and coordinated by the committee would be:

1. Recruitment, placement and retention of professional staff.

2. Collection of current information regarding the manpower needs and future job opportunities for SAI graduates.

3. Recruitment of students.

4. Acquisition of financial and programs support of the in-service and outreach programs.

5. Recommended policies, programs, and/or guidelines which should be forwarded to the National Agricultural Education Policy Committee for review and action.

A viable Agricultural Education coordination committee, therefore, could serve two major functions:

1. To assist in the coordination of the operational and functional dimensions of the SAE program among those individuals who need to support and contribute to the overall program activities.

2. Provide feedback to the National Agricultural Education Policy Committee regarding policies and guidelines needed for the development and implementation of a sound agricultural education system for the YAR.

Another action which could be taken to enhance communication and coordination at the local school level is the development of a local advisory committee at each SAI. This committee could provide the school director with progressive support and excellent feedback from the community regarding the relevance and acceptability of the SAI in classroom and outreach programs. The committee should include representatives from the public and private agricultural sector. The chairperson of the local advisory committee could serve as a member of the Agricultural Education Coordination Committee.

E. Implications of the Analysis and Recommendations for the Implementation Plan

Although significant improvement has been achieved during five years of the ISAI subproject, there is much more to be accomplished if a viable secondary agricultural education system is to be established as a result of this further effort.

Some of the major implications for the proposed extension of the subproject are as follows:

1. The Directorate of Agricultural Education in the MOE needs to assume a more active leadership role in development and management of the SAE system. This would include such actions as:

a. Develop and maintain a system for the recruitment, placement and retention of professional staff.

b. Develop and maintain a comprehensive student recruitment system.

c. Collect and maintain current information on manpower needs and future job opportunities for SAI graduates.

d. Develop and implement in-service training programs for SAI professional and administrative staff.

e. Reactivate the National Agricultural Education Policy Committee. Assure that the membership of the committee includes representation from those entities in both private and public sectors interested in agricultural education.

f. Establish an Agricultural Education Coordination Committee which could assist in overall operation of the SAE program and provide a forum for addressing common problems. Membership of this committee would include the three SAI Directors, Director of Extension from the MAF, and representatives from relevant public and private agencies interested in the SAE program. The Director of Agricultural Education, Director of Vocational Education, and the ISAI Team Leader would serve as ex-officio members of this committee.

2. The MOE needs to augment the Directorate of Agricultural Education by assigning additional qualifed professional and administrative staff, and by making available adequate operating funds to carry out these functions.

3. The SAI Directors should develop local advisory committees to provide a local network of support and a feedback system involving both the private and public sector.

4. The MOE should continue to improve their budgeting process and give specific attention to timely release of funds to operational units. Where funds are approved and allocated, more decision responsibility and timely budget authority needs to be delegated to the local school directors for the implementation of their school's programs.

The subproject provides funds for training administrators and selected agricultural professionals at each of the SAIs and in the Directorate of Agricultural Education. This training will focus on the specific activities outlined in paragraph F.1 above.

F. Ability to Operate the Institution Upon Subproject Completion

The key to the success of this subproject is the identification, training and placement of an adequate number of administrators and teachers in the three SAIs and MOE. If assurances can be obtained from the YARG for this particular activity, then the objective of establishing an institution which can be operated by indigenous staff can become a reality.

ANNEX G

Technical Analysis

INDEX TO ANNEX G

		Page
I.	AGRICULTURAL EDUCATION IN THE YAR	G-1
	A. Current Status	G-1
	B. Projected Needs	G-1
II.	STAFFING OF PROGRAMS	G-4
	A. Recruitment of Teacher Candidates for SAE	G-4
	B. Training and Placement of SAE Teaching Staff	G-4
	C. Support Personnel	G-14
III.	STUDENT RECRUITMENT, RETENTION AND PLACEMENT	G-14
	A. Recruitment Policies and Incentives	G-14
	B. Retention	G-15
	C. Placement	G-16
IV.	CURRICULUM	G-16
	A. General Approach	G-16
	B. Content	G-16
	C. Relevance	G-17
	D. Balance of Theory and Practice	G-18
	E. Effect of School Calendar on Curriculum	G-19
	F. Practica	G-19
	G. Relationships with YARG Education System	G-21
	H. Conclusions and Recommendations	G-22
V.	OUTREACH PROGRAM	G-25
	A. Previous Outreach Accomplishments	G-25
	B. Outreach Program Components	G-31
	C. Staff Requirements and Other Inputs	G-32
VI.	INSTITUTIONAL FACILITIES	G-32
	A. Classrooms, Laboratories, Offices and Shops	G-32
	B. Instructional Farms	G-33
	C. Equipment and Supplies	G-33
	D. Library Resources	G-34
	E. Development of Teaching Materials and Resources	G-34
	F. Student Housing	G-34
	G. Vehicles and Equipment	G-34

I. AGRICULTURAL EDUCATION IN THE YAR

A. Current Status

1. Secondary Agricultural Institutes

Long-term training in agriculture in Yemen is conducted at three secondary agricultural institutes. The secondary agricultural institutes satisfy MOE requirements for secondary certificates and provide training in technical agriculture. The basic purpose of the agricultural institutes is to train extension workers and other technicians. The course of study is three years and requires students to be involved in summer practicums in the field. Enrollments for 1984 were as follows:

a. ISAI - 104
b. SSAI - 79
c. SVS - 30

2. Short-Term Agricultural Training

Short-term training programs of less than one year duration are offered by various government agencies and through donor projects. Most of the short-term courses are directed toward extension training.

B. Projected Needs

1. Training Needs

The Pragma evaluation (1984) identified agricultural training needs beyond that provided by the three secondary agricultural institutes. The Pragma Report defined three levels of agricultural education needed for development of Yemen agriculture.

a. Vocational level

To direct manual labor and supervise field work. This includes personnel who receive 4-5 years of education beyond elementary school. Some specialized formal instruction in agricultural subjects is assumed, and may be obtained through long-term or short-term courses.

b. Technical level

Capable of supervising agricultural work in the field and carrying out instructions of professional, administrative and research officers. This category of personnel will require 2-3 years of agricultural training beyond the preparatory school, such as is provided by the SAIs.

c. Professional level

Includes university graduates from the BS level to the PhD level. This level of personnel is needed for planning, design, and supervision of agricultural programs on a regional or national level.

10

2. Curriculum Needs

The curriculum needs of Yemen agricultural education are highly diversified. The traditional animal science, crop science, soil science and agricultural mechanics courses are most appropriate to Yemen agriculture. Training in extension methods is needed by all levels of agricultural staff. Additional specialized instruction in areas such as food technology, entomology, plant pathology and beekeeping is needed.

All curriculum must be strengthened in the applications of theory. Technicians in the public and private agricultural sectors must be able to show farmers how improved practices are set in place at the farm level. Effective dissemination of agricultural knowledge will require a firm grasp of both theoretical knowledge and practical skills.

3. Proposed Delivery System

The three existing secondary agricultural institutes cannot meet the full range of future needs for agricultural education in Yemen. When the proposed FOA becomes a reality, the need for an expanded intermediate level of training will emerge. A vocational/technical institute for agricultural education will be needed to train technicians to a greater degree of specialization than is being provided in the present system. This type of institute might be structured as an extension of the secondary school or as the beginning years of university training. It might provide both credit classes and vocational certificate programs. Graduates of a vocational/technical institute could opt to enter the work force or pursue university training, depending upon their grades and career goals.

Figure G-1 is a suggested diagrammatic model for a total program in agricultural education in the YAR. This model has been discussed with representatives of the MOE on several occasions (in connection with this project design effort as well as in conjunction with the FOA subproject). While not yet formally adopted as an element of MOE long-range planning, the concept is generally accepted by senior Ministry officials and may be expected to serve as the major framework for the YARG's efforts to supply the trained manpower requirements for the agricultural sector over the next few decades. Although this model may be several years from reality, it provides a basis for development of individual segments of agricultural education. The model allows students to leave the training program at many points, or they can reenter the educational system after periods of work.

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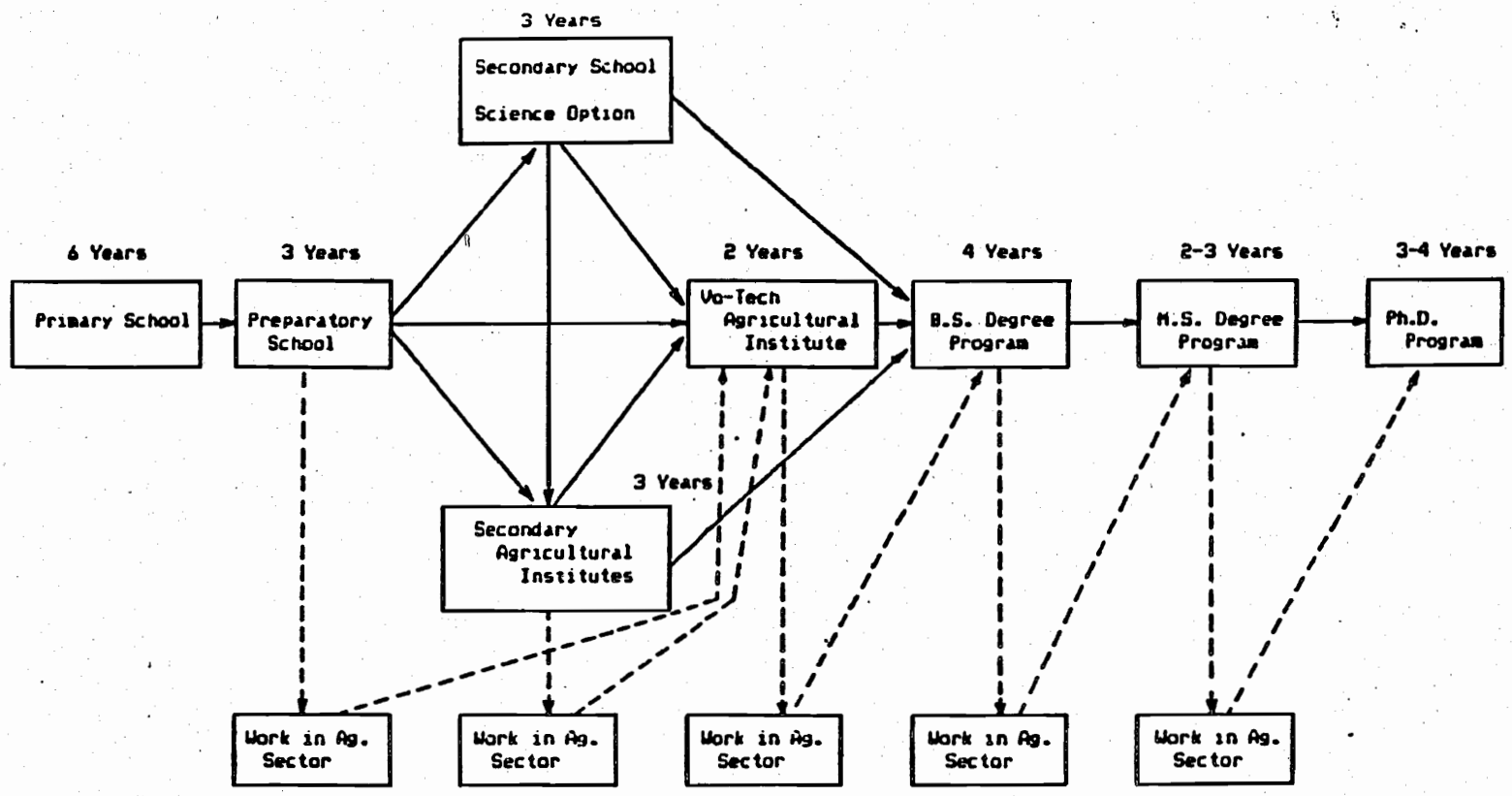
FIGURE
G-1

PROPOSED DELIVERY SYSTEM FOR AGRICULTURAL EDUCATION IN THE YAR



Lines of advancement through educational system

Lines of Exit and Re-Entry between work/school

112

II. STAFFING OF PROGRAMS

A. Recruitment of Teacher Candidates for SAE

A projected output for the first five-year phase of the ISAI Subproject was to recruit and provide MS training for 30 prospective Yemeni staff. One of the major reasons this objective was not achieved is the lack of a sufficient number of qualified teacher candidate counterparts for assignment with the Subproject. The MOE will need to place a higher priority on the recruitment of potential staff for each of the three SAIs. Once potential staff members are identified, a determination needs to be made as to their admissibility to long term training programs in a US university and their ability to learn English. A positive response to these two criteria should be obtained before they are identified as potential candidates for US based training. Unfortunately, this type of screening and evaluation did not occur under the first phase of the ISAI Subproject before Yemeni staff were designated as teacher candidate counterparts.

Although a tentative decision regarding the admissibility of potential Yemeni counterparts can be done in-country, the ultimate decision must be made by the university where the trainees plan to pursue their long term study. Thus, to the extent possible, provisional approval should be obtained before prospective teacher candidates are designated and assigned to the Subproject.

B. Training and Placement of SAI Teaching Staff

1. Staff Training

Staff training is required for academic degrees and, because major degree training will occur in the US, in English language.

a. Long-Term Degree Training

The ultimate long-term training objective of this project is to train at least one Yemeni for each technical agricultural position within the SAIs, and a school director and a farm manager for each of the three SAIs. In addition, a number of additional staff should be trained to assume leadership positions in agricultural education in the MOE and to serve as replacements for staff who are or will be trained for one of the aforementioned positions, but for some reason do not continue in their assigned position through or beyond the end of the project. This latter group should be scheduled for training toward the end of the subproject at which time future needs will be determined.

Long term degree training programs in the United States will include regular course work and as many practical, non-academic experiences that time will allow. Students will be provided with an opportunity to spend considerable time with their agricultural education counterparts in the US. They will also be exposed to agricultural extension agents and learn how the extension system functions in the US. Lastly, they will be provided with an

opportunity to examine the organization, administative, financing and operation of vocational and technical agricultural education systems in the US in order to allow comparison to the situation in Yemen.

The ISAI Subproject, when designed in 1979, contemplated that 30 Yemeni participants would receive training to the MS level. This target clearly was too optimistic. Five participants have completed MS degrees to date and are currently teaching at the ISAI; four currently are in training in the US and are expected to complete their programs in 1985; four are pursuing MS degrees in agricultural education in Egypt (with specially-designed and intensive summer training in the US); and five more have been identified as potential candidates for further training.

Some BS holders may be brought to the teacher competency level by programs emphasizing mainly teaching methods and pedagogical skills and the award of a teaching certificate rather than a degree. Those participants who have not yet completed the Bachelors degree or who may not yet have matriculated at a university will need programs targeted at the SAE teaching requirements noted above. Such training requirements may be accommodated in a carefully tailored BS degree program in US universities.

The option of utilizing universities in the Middle East in the future as a source of trained SAE teachers is not considered a viable one. While some Arabic medium universities do have creditable programs in agricultural sciences, they do not have suitable programs in agricultural education. Students sent to those universities would have to enroll in a technical subject matter area, and would not learn teaching skills which are required to meet and maintain the standards of the SAI. Many of the best Middle East universities teach their classes in English. Thus, the student would still have to learn English prior to being enrolled, and the requirement would be much the same as for US universities. If students, by attending an Arabic university, are not required to learn English, then they would not be able to assess the wealth of technical knowledge in their field, which exists mainly in English. Moreover, the philosophy and outlook among teachers trained in those universities does not recognize nor encompass the "hands-on" approach and the demonstrated competency based curriculum which is so important to developing SAI graduates with the necessary skill levels to function as trained agriculturalists.

From the point of view of this project, it probably is more cost-effective to train BS holders for a MS or certificate program, than to begin with a secondary school graduate and provide training through a BS program in the US. They already have gained considerable knowledge of technical agriculture elsewhere. The former can usually be accomplished in one to three years; the latter will, in most cases, require at least four and one-half years to reach the skill and competency level which the project contemplates. Thus, the project design provides for training to the MS or certificate level for some participants and to the BS level for others.

What is important in all cases is that the participant's knowledge of technical agriculture be at an acceptable level, that pedagogical skills have been taught, that the trainee has mastered and experienced proven teaching methods and techniques, and that the "hands-on" approach be inculcated into the participant's philosophy and outlook with respect to teaching methodology.

Table G-1 summarizes the long-term training requirements which are proposed.

TABLE G-1

Proposed Long Term Degree Training
By Institute and Specialization

Specialization	ISAI	SSAI	SVS	Total for the Three SAIs
Extension	1	1		2
Agricultural Economics	1	1		2
Soils/Crops		1		1
Entomology	1	1		2
Horticulture	1	1		2
Farm Mechanics		1		1
Institute Administrator	1	1		2
Animal Production	2	1	2	5
Food Processing/ Dairy Processing	1	1	1	3
Animal Health			1	1
Veterinarian			1	1
Substitutes	2	4	2	8
Farm managers	1	1	1	3
TOTAL	11	14	8	33

b. ESL Training

Recently, the government has decided to discontinue ESL training at the ISAI. All present and future counterparts will be moved to Sanaa where they, along with trainees for the SVS, will pursue ESL training at the Yemeni American Language Institute (YALI) with the goal of scoring 500 in the Test of English as a Foreign Language (TOEFL). Trainees will be periodically evaluated by YALI instructors to determine progress. If progress is unsatisfactory by established standards, the trainees will be withdrawn from the ESL program and no longer considered for training under the SAES Subproject.

Current procedures for providing ESL training at SSAI for counterparts specify that, once assigned, the Yemeni counterpart be involved in the Institute's instructional program as well as undertake ESL training 2-4 hours per day. Usually ESL

115

training is scheduled in the afternoon with an American teacher provided under ISAI Subproject funding.

There are currently seven potential candidates who are receiving ESL training under the ISAI Subproject. This program will be continued for another two years under the subproject amendment. Thus, the services of the ESL instructor will be continued until the Surdud counterpart staff are released to pursue ESL training at YALI.

2. Staffing Plans

One of the main activities of this subproject is to train Yemenis in the US and establish them in faculty positions to replace expatriate staff as rapidly as possible. Training plans have been developed to expedite "Yemenization" of staff. Success of the training and staffing plans will be highly dependent on:

a. Recruitment and appointment of qualified counterparts to be trained for available positions. This is the responsibility of the YARG.

b. Development of ESL skills to meet the required TOEFL level of 500 that will enable them to enter training in the US according to the planned timetable.

c. Placement of returned graduates into positions for which they have been trained.

Accomplishment of staffing according to the plan is dependent on training schedules being met. Timeliness at all stages of the training path is critical to the placement of staff in the institutes in accordance with the project implementation plan.

An overlap period is provided for so that new staff will work with expatriate staff for a one- to two-month period. This will allow the new staff member time for adjustment in the new job role and to benefit from the expatriates' experience. The overlap period provides continuity in the delivery of the instructional program and reduces the problems of leadership changes in the school. Substitute staff training is proposed in order to replace staff that leave their assigned jobs because of fall-out, upward mobility, reassignment by the MOE, or other attrition which may be expected to occur.

Tables G-2, G-3 and G-4 show planned staffing by project year for each of the SAIs.

TABLE G-2

Staffing Plan - Ibb Secondary Agricultural Institute

Position	85-86	86-87	87-88	88-89	89-90	90-91
Extension*[1]	Expat-riate Staff	--X-- US Trained Yemeni Staff----------				
			--X-- Replacement - US Trained Staff			
Agricultural Economics*[1]	--X-- US Trained Yemeni Staff----------					
			--X-- Replacement - US Trained Staff			
Soils/Crops*[2]	--X-- US Trained Yemeni Staff----------					
Entomology	Expat-riate Staff	--X-- US Trained Yemeni Staff----------				
Horticulture	Expat-riate Staff			--X-- US Trained Yemeni Staff		
Farm Manager (BS Level Training)	--US Staff----------					US Trained Yemeni Staff
Farm Mechanics	--X-- US Trained Yemeni Staff----------					
School Director*[1]	--X-- US Trained Yemeni Staff----------					
			--X-- Replacement - US Trained Staff			
Animal Production[2]	Expat-triate Staff					
			--X-- Replacement - US Trained Yemeni Staff			
Food Processing/ Dairy Processing	Expat-riate Staff			--X-- US Trained Yemeni Staff		
Substitutes[2]			--X--Substitutes in Training			--X--US Trained Yemeni Staff

* US Trained Staff Already In Position

Superscript in parentheses notes number of positions for which teacher candidates will have to be trained through the duration of the Subproject.

117

TABLE G-3

Staffing Plan - Surdud Secondary Agricultural Institute

Position	85-86	86-87	87-88	88-89	89-90	90-91
Extension*	----------YARG STAFF----------X					US Trained Yemeni Staff
Agricultural Economics	----------YARG STAFF----------X					US Trained Yemeni Staff
Soils/Crops	----------YARG STAFF----------X					US Trained Yemeni Staff
Entomology	----------YARG STAFF----------X					US Trained Yemeni Staff
Horticulture	----------YARG STAFF----------X					US Trained Yemeni Staff
Farm Manager*	----------YARG STAFF----------X					US Trained Yemeni Staff
Farm Mechanics	----------YARG STAFF----------X					US Trained Yemeni Staff
School Director	----------YARG STAFF----------X					US Trained Yemeni Staff
Animal Production	----------YARG STAFF----------X					US Trained Yemeni Staff
Food Processing/ Dairy Processing*	----------YARG STAFF----------X					US Trained Yemeni Staff

* Position is not filled at present

118

TABLE G-4

Staffing Plan - Sanaa Veterinary School

Position	85-86	86-87	87-88	88-89	89-90	90-91
Animal Production	--------YARG STAFF					X US Trained Yemeni Staff
Food Processing/ Dairy Processing*	--------YARG STAFF					X US Trained Yemeni Staff
Animal Health	--------YARG STAFF					X US Trained Yemeni Staff
Veterinary Science	--------YARG STAFF					X US Trained Yemeni Staff
Farm Manager*	--------YARG STAFF					X US Trained Yemeni Staff

* Position is not filled at present

3. Projected Staff Workload

Implementation of the Subproject according to the design will require approximately 28 person years of long-term technical assistance in country. Most of the staff now assigned under the ISAI Subproject will be continued through the subproject extension, but then will be phased out as they are gradually replaced by returning Yemeni participants. The Outreach Program Coordinator will also be phased out in the early stages of the ISAI Subproject follow-on as will, as noted above, the ESL Instructor at Surdud. Midway during the Subproject extension, an Agricultural Education Advisor will be assigned at Surdud to assist in supervision and adjustment of returned participants who will be assigned to the SSAI. The Team Leader is expected to provide similar assistance at the SVS, and the possibility of his being posted to Sanaa at that time could be considered.

Table G-5 indicates the long-term, in-country expatriate technical assistance positions which are proposed under the Subproject.

TABLE G-5

Expatriate Technical Assistance Staffing

Position	Location	Duration of Assignment	Person Years
US Hire Staff:		Year	
Team Leader	Ibb	1-6	6
Farm Manager	Ibb	1-6	6
ESL Instructor	Surdud	1-2	1.75
Outreach Program Coordinator	Ibb	1-2	1.75
Agric. Education Advisor	Surdud	4-5	2
TCP Teaching Staff:			
Horticulture Instructor	Ibb	1-4	3.5
Extension Education	Ibb	1-2	2
Food/Dairy Processing	Ibb	1-4	3.5
Animal Science	Ibb	1-2	1.6
Total			28

The projected faculty workload is designed to reflect a forty hour work week. Within the forty hour week, faculty are expected to deliver instruction, work with students on practical applications and be involved in outreach activities. Percentages of time devoted to teaching, practicums, and outreach activities will vary by program area. In projecting workloads for faculty, consideration was given to increasing the allocation of administrative, planning and preparation time. Faculty need to prepare lesson plans, develop curriculum, evaluate student progress and keep records. Fifteen percent allocation of time for these activities is proposed. Another area that needs expansion is extension activities. Each faculty member, including the SAI directors, is expected to spend thirty percent of their time in outreach activities. These elements of teacher performance need to be improved through careful attention to understanding position requirements, and through job orientation and performance evaluations. New job descriptions will be developed to define the scope of work and job responsibilities of instructors in each program area. Performance evaluations will be based on the fulfillment of their respective job descriptions.

Projected faculty workloads for the ISAI and the SSAI by program area are shown in Table G-6. Table G-7 provides similar projections for the SVS.

TABLE G-6

Projected Faculty Workloads During Life of Subproject
Ibb and Surdud Secondary Agricultural Institutes

	Percentages of Time Allocated			
Program Area	Administration, Planning, and Instructional Preparation	Theoretical Instruction	Practicum Instruction	Outreach Activities
Extension	15	35	20	30
Agric. Economics	15	35	20	30
Soils/Crops	15	35	20	30
Entomology	15	30	25	30
Horticulture	15	25	30	30
Farm Manager	15	5	50	30
Animal Production	15	25	30	30
Food Processing/ Dairy Processing	15	15	40	30
Farm Mechanics	15	20	35	30
School Director	70			30

TABLE G-7

Projected Faculty Workloads During Life of Subproject
Sanaa Veterinary School

	Percentages of Time Allocated			
Program Area	Administration, Planning, and Instructional Preparation	Theoretical Instruction	Practicum Instruction	Outreach Activities
Animal Production	15	25	30	30
Food Processing/ Dairy Processing	15	15	40	30
Animal Health	15	30	25	30
Veterinarian	15	30	25	30
Farm Manager	15	5	50	30

4. Staff Development

A planned program of staff development needs to be implemented. In-service and other professional growth activities will be made available in a sequential fashion to meet the needs of the instructional program. Staff development activities will include instructors, counterparts and administrators, and are designed to enhance the capacity to implement curriculum changes proposed in this paper. In-service training must include the following topics:

a. Curriculum development based on task inventory of Yemen agriculture. This in-service training will be undertaken for the purpose of moving staff from a theoretical teaching mode toward more application or competency-based instruction.

b. Evaluation of student performance that includes concepts, methodologies, criteria for evaluating practicums. The purpose of this in-service training is to improve the quality of practical training.

c. Utilization of instructional farms for practicums and responsibility assignments for students. The purpose of this in-service training is to emphasize and expand the use of the instructional farm for practical experience.

d. Organization and operation of a local agricultural advisory committee. The purpose of this type of in-service training is to promote the advisory committee as a means of bringing greater relevance to the curriculum.

e. Development of practicum training plans for coordination of in-school instruction, experience on the instructional farm, and summer practicum assignments. The purpose of this training is to improve the quality of practical training and validate the importance of application of theoretical knowledge.

f. Career development and career guidance techniques for the instructor. The instructional staff should receive in-service training on how to deliver career information to students, and how to assist students in career planning, job search techniques, and self-assessment of their interests and aptitudes.

g. Technical training of staff through TDY content-specialists will be scheduled throughout the life of the subproject. Some staff development activities may be conducted in the US for specific target instructor groups.

h. An agricultural education workshop at the lead university for six weeks is designed for Yemeni staff who do not have agricultural education training and for Yemeni students in long-term training programs in the US.

i. Organization and administration of an agricultural education system. This in-service training would involve a study and observation tour of several institutions, and a workshop for MOE and MAF officials.

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127

j. Orientation visit to US and appropriate training for MOE and MAF administrators.

C. Support Personnel

The MOE provides support personnel for each of the schools. These are financed from their annual operating budgets and represent the YARG contribution to the project. Technicians, laborers, secretaries, and other support staff are part of this contribution. Table G-8 shows the numbers of support staff for each school. Workload projections are based on full enrollments at the schools.

TABLE G-8

Yemeni Staff by School at Maximum Enrollment

Position	Ibb	Surdud	Sanaa	TOTAL
Technicians	7	7	4	18
Laborers and Other Support Staff	30	30	20	80
Accounting Staff	2	2	2	6
Total Staff	39	39	26	104

III. STUDENT RECRUITMENT, RETENTION AND PLACEMENT

A. Recruitment Policies and Incentives

The current method of recruitment of students for the SAIs is primarily through advertisements on television. Limited personal visitations by ISAI staff have been made to preparatory and secondary schools. The personal visits to explain the programs offered by agricultural institutes to potential students appear to be the most effective method of recruitment. Many students find out about the programs through word-of-mouth advertising by friends, relatives and agricultural institute students.

1. Requirements for admission to an agricultural institute are:

a. Student has a general preparatory certificate.
b. Is between 15-30 years of age at the first year of entry to the SAI.
c. Has a certificate of proper conduct.
d. Has a certificate of physical and mental fitness.
e. Passes an interview with a committee appointed by the Institute Director.
f. Demonstrates a desire to do agricultural work.

2. The incentives for students to attend agricultural institutes are:

123

a. 300 YR monthly
b. 400 YR clothing allowance (one time)
c. 50 YR transportation allowance at the beginning and 50 YR at the end of the school year.
d. Free housing and meals.
e. Free books.
f. Scholarships for university study for top graduates of institutes.
g. Employment with the MAF upon graduation.

A recent study of preparatory school students conducted by ISAI Subproject staff concludes that students have high aspirations which are not always realistic (see Annex L). Most students aspire to advance through the educational system through the college level. This is to be expected. Career choices favor medicine, engineering and the military. Without adequate information and knowledge of employment opportunities in the sector, agriculture is generally accorded a low priority. However, after presenting students with additional information about careers in agriculture and opportunities for SAE training, interest in agricultural careers increased. One must be careful not to conclude too much from this; however, it does suggest that recruitment to the SAE system can be influenced through an informational program directed toward preparatory school students. The study further indicates that parents are the primary motivators in students' decisions with respect to secondary education preferences. Thus, informational programs should be directed to parents as well.

Admissions requirements to SAIs are not at all restrictive and incentives are deemed sufficient to attract interested students. It is believed that recruitment to the SAIs can be increased to near capacity through a well conceived informational program directed at students, parents, and private agri-businesses. The project design provides for such programs to ensure that more complete and efficent use will be made of the physical facilities and other capacities at the SAIs.

B. Retention

The dropout rate at the ISAI for the 1983-84 school year was 30% as compared to 8% in 1980, 18% in 1981, and 8% in 1982. The impact of the dropout rate has been masked by mid-year recruitment of students which leaves the beginning and ending enrollments somewhat constant. The loss in students has a restrictive effect on the overall growth of the SAIs. Retention rates must be improved if the maximum enrollment goal is to be achieved. Since the dropout occurs during the first few weeks following initial enrollment, one might suspect that students coming to the SAIs are poorly informed about the programs and withdraw on their own accord.

A well-planned recruitment effort will be initiated to provide potential students with realistic information about the institutes so that their expectations are compatible with the school activities. A recruitment program must include a pre-registration tour of the facilities and housing.

C. Placement

Three classes of students have graduated from the ISAI to date. A follow-up study has been conducted on these graduates. This study concludes that placement opportunities in the MAF are much greater than available graduates. Placement will not be a problem for several years because of the expanding needs for extension workers, potential absorption by the private sector, and other attrition. By the time the MAF needs are met, the agricultural development of the YAR should be well advanced and will generate additional requirements for technical manpower in the private sector (see Annex E). Clearly, the full needs potential for agricultural training will not be achieved in the next several decades and placement opportunities will remain strong throughout the period of development and growth of the agricultural sector.

IV. CURRICULUM

The curriculum of the three SAIs has been reviewed, as have background information and evaluations, and a cross-section of MOE officials, secondary agricultural staff and employers of the graduates have been interviewed. A prevailing criticism of the existing agricultural curriculum is its lack of practical training. (Pragma 1984, Annex L.)

A. General Approach

Practical training is a generic term that must be further defined before making a curriculum analysis. The expatriate instructors include demonstrations and discussions as practical instruction. Employers of the graduates are more interested in the ability of students to perform specific tasks and make decisions at the farm level. For the purpose of this analysis, practical training means "hands-on" instruction in which the student performs the task. This "hands-on" definition goes far beyond mere student observations of task performance or group discussions of practical applications and implies a "learn by doing" approach.

The lack of practical training may be the result of many factors such as curriculum content, relevance, instructional time allocation or lack of instructor competence or experience in practical applications. These factors were examined in relationship to the total curriculum at the three SAIs.

B. Content

The ISAI and the SSAI share a common curriculum although Surdud has not implemented programs in all areas of concentration. Eight areas of concentration are specified. Instruction in some of these areas is provided in each of the three years required to graduate. For other subject areas, only one or two years are required. Table G-9 summarizes the requirements which are applicable to the SAIs at Ibb and Surdud.

125

TABLE G-9

Curricula at the Ibb and Surdud Institutes

Area of Concentration	Years of Training
Agronomy	3
Horticulture	2
Crop Protection	1
Animal Production	3
Agricultural Engineering	3
Ag. Extension & Rural Sociology	3
Agricultural Economics	1
Food Technology	3

The SVS curriculum is specific to the animal sciences. Instruction is offered in the following areas:

Anatomy and Histology, Physiology, Parasitology, Bacteria and Viruses, Poultry Diseases, Dairy and Meat Examination, Veterinary Medicine, Principles of Surgery, Biochemistry, Animal Breeding, Animal Policy, Animal Nutrition, Vocational Health, Pathology and Lab Tests, Dairy and Meat Processing, Pasture Management, Feed and Feed Manufacturing.

A completed written curriculum from the ISAI was analyzed and used as a basis for conclusions about the curriculum at Ibb and Surdud. Oral interviews were also conducted with the directors of the three SAIs. Site tours of classroom, laboratory and instructional farms were conducted at the three institutes. The following observations on curriculum are applicable to all three training sites:

The food technology curriculum should be developed to reflect both commercial and home use techniques. The present curriculum is directed mainly at dairy product processing; i.e., milk and ice cream. Future curriculum development should include fruit and vegetable processing and food preservation techniques; i.e., canning, juice making, freezing, smoking, etc. Meat processing methods should also be included in a general curriculum; i.e., cutting, wrapping, curing, and freezing. The present food technology curriculum is too specialized for secondary students. Although commercial applications of food technology can be justified by private sector demands, the typical extension agent needs skills that can be disseminated to local farmers. The food technology curriculum should be subjected to close scrutiny by curriculum design specialists before other programs are set in place.

C. Relevance

The curriculum reflects the agriculture of other Arab countries, primarily Egypt. Expatriate staff relate to the farming methods of their home countries and sites of their university

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training. The instructors at the ISAI are making an effort to "Yemenize" the curriculum through the development of their own textbooks to fit local agriculture.

Relevance of curriculum will continue to be a problem as long as instructors continue to rely on the textbook approach in teaching. Modularized instruction is recommended as a means for increasing the relevance of curriculum. Modules of instruction can be reviewed, revised and adapted to local conditions with greater ease than textbook change. The project staff should review available secondary curriculum modules from Oklahoma, Texas and Oregon (as examples) with the thought of adopting and adapting selected modules of instruction. Many of the units on animal science, agricultural mechanics and agricultural business are readily adaptable to other settings. The material is well illustrated, is geared toward secondary school reading levels, and would be easy to translate.

D. Balance of Theory and Practice

The current curriculum is targeted at a 50/50 balance of theory and practice. Considerably less practical instruction is actually being delivered to students in the form of "hands-on" experience. Several factors have been identified as constraints to practical training. These include the following:

1. Time Allocation for Class Periods

The time allocated for practical instruction is insufficient. The standard one-hour class period does not allow time for student involvement in extension activities and instructional farm operations. A two or three hour block of time is needed for practicums during the weekly class schedule. A more flexible scheduling system will allow students to become involved in practicums in a meaningful way.

2. Diminishing Total Instructional Time

The lack of total instructional time was cited as a reason for not delivering practical instruction. The standard secondary requirements for Arabic language, general sciences, religious studies and mathematics consume a large portion of the instructional day. The MOE conducts a rigid testing program to determine student mastery of theoretical knowledge. This often forces instructors to teach to tests so that students can pass the requirements for completion. The heavy emphasis on theoretical testing robs time from practical training and establishes student attitudes that downgrade the importance of "hands-on" learning.

Absenteeism reduces the total instructional time. Students go on vacation and return a week late or miss classes for a multitude of reasons. When students return to their classes, the pressure is on them to catch up on theory needed to pass examinations. There does not seem to be a code of discipline or penalty that covers absenteeism. A substantial amount of instructional time is lost through poor attendance.

Other losses of instructional time occur for such activities as political training. A crop protection class lost more than one-half of its class time in 1984 because students were pulled out to participate in political training. This type of instructional loss is beyond the control of the instructor.

3. Definition of Practical Training

The definition of practical training is misleading and may be responsible for some of the criticisms of the curriculum. Expatriate staff have shown 52% practical application in their written curriculum plans. Upon close examination, one finds that much of the 52% is discussion and demonstration activities. In the US, practical training means "hands-on" involvement of the student. Middle East training institutions consider "showing a student" as practical training. The inability of graduates to apply of theoretical knowledge at the farm level is due to the lack of "hands-on" training. The meaning of practical training must be clearly defined for expatriate instructors, counterparts, students and administrators. A "doing to learn" philosophy will be established so the graduates can apply theoretical knowledge upon completion of their programs.

4. Instructor Incompetence in Skill Applications

Some instructors are lacking in either "skill" or "will" to provide hands-on training. A planned, sequential approach to staff development is required for changing the teaching style of instructors. In-service training will be provided to help instructors bridge the gap between theoretical knowledge and practical applications of that knowledge.

5. Instructional Planning

The instructional plan must be more closely linked with the activities of the instructional farm. Student activities on the farm should be clearly identified in the curriculum. Much of the on-going work of farm operation can be utilized in meeting instructional goals. The farm manager will become a full partner in the instructional process. In cases where the regular instructor is lacking in a "hands-on" skill, the farm manager will be used to instruct the class.

6. Reliance on Summer Practica to Meet Requirements

Summer practica have been designed to provide students with practical skills. This approach is commendable and should be continued. However, some instructors use the summer practicum as an excuse for not giving practical instruction during the school year. Practica must be delivered as a continuum of learning if student behavior is to be altered. The student must receive practical experiences throughout the school year and during the summer practica. Strategies will be developed to avoid having the summer practica used as an escape hatch for instructors.

E. Effect of School Calendar on Curriculum

The SAIs are organized on a semester basis. The two semesters are approximately 16 weeks in length. With examinations and interim vacations, the instructional time is reduced to 13 weeks per semester. Summer practica must be planned in advance and schedules must be carefully coordinated to assure completion.

F. Practica

1. Vacation Practica

Vacation practica are a part of the field experience of students in the agricultural institute. The school instructional farm is the practicum site for first year students. The practicum assignments are of one month duration and include field trips to local farms and businesses. Second year students are assigned to MAF stations and private agribusiness farms throughout the YAR. Consideration should be given to placing third year students with selected extension agents and private industry firms that can serve as a good role models for the graduates. This will help instill a desire to continue in extension work if the experience is a positive one.

2. Training Plans

The practicum experience can be greatly improved by the use of training plans that define specific experiences the student is to receive at the practicum site. The training plan coordinates in-school instruction with work site experiences. Training plan formats are available from most state Departments of Education in the US. The cooperative work experience approach to training plan development is most appropriate for developing practica for Yemeni students.

3. Expanded Use of Instructional Farms

The use of the instructional farm as a teaching laboratory must be expanded. Students should be performing much of the farm work during their period of residence at the school. Assignments should be made to rotate students through all jobs and responsibilities of farm operation. Such assignments will extend beyond the school day. The Ministry of Education needs to be supportive of student assignments and clarify their responsibility at the time of recruitment into the school.

4. Skills Performance Record

A skills performance record is proposed as a vehicle for delivery of practical and "hands-on" instruction. The skill record defines the skills to be learned and levels of proficiency required. It is used as a progress record for skill development. The list of required skills is compiled from a task inventory based on interviews with Yemeni farmers and validated by an advisory committee of local agriculturalists. The skills record can become the goal for practical training. As students complete skills, the

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instructor dates and initials the level of proficiency on the skills record. Upon completion of a training program, the record is given to the student. It can become a valuable placement document for showing employers what the student can do. The skills card can be established as part of the completion requirements of the agricultural institutes. The minimum levels of performance should be established by a local advisory committee and staff and must be supported by the MOE.

G. Relationships with the YARG Educational System

1. Relationships with Elementary/Preparatory Schools

The SAIs must retain a close relationship with preparatory schools for recruitment purposes. The preparatory system is the primary source of students for the secondary science option schools and the SAIs. A planned program of recruitment must be ongoing if the student quota is to be met by the SAIs. The recruitment effort must include personal visits to preparatory schools to explain the agricultural programs to students. The preparatory school as a source of students is explained in detail in Annexes D and L.

2. Relationships with Other Secondary Schools

Students can move from regular secondary programs to the SAIs. The general requirements for secondary school completion are also met at the SAIs. In Annex D, it is suggested that students are not likely to enter the SAIs from regular secondary schools. Nevertheless, the secondary school should be viewed as a limited source of students and relationships should be maintained that will allow recruitment to take place. The MOE has established the general requirements for both secondary schools and SAIs. A comparison of those general requirements is shown in Table G-10.

TABLE G-10
Comparison of General Requirements in Secondary Agricultural Institutes and Secondary (Science Option) Schools

	Agricultural Institute (Years of Study)	Secondary School (Years of Study)
Islamic Education	3	3
Arabic Language	3	3
National Education	1	1
Physical Education	3	3
English Language	3	3
Mathematics	2	3
Biology	1	3
Mechanics and Statics		1
Chemistry	2	3
Physics		3
TOTAL UNITS	18	26

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3. Relationship to the Proposed Faculty of Agriculture

The curriculum of the SAIs corresponds to the courses in the proposed FOA. The first year of the FOA program will be delivered through the Faculty of Science (FOS) at the UOS. The entry requirements for the FOA are the same as those at the FOS. Graduates from an agricultural institute are eligible for admission if they have exam scores of 60 percent or above. Students from the SAIs achieving this level should be well prepared to enter the FOA program.

A comparison of the curriculum for the ISAI, the SSAI and the FOA shows areas of concentration matched with courses to be provided by the FOA. Table G-11 shows that comparison.

The curriculum at the SVS is highly specific to the animal sciences. The relationship of the SVS curriculum to that proposed in the FOA is shown in Table G-12.

H. Conclusions and Recommendations

1. Advisory Committee

The curriculum is lacking in relevance. Local advisory committees of Yemeni agriculturists should be organized and utilized in reviewing, revising and updating curriculum. The advisory committee should provide direction for all curriculum areas including outreach activities.

TABLE G-11

Curriculum Comparison For
Agricultural School/Faculty of Agriculture
(Ibb and Surdud)

Curriculum Units for the Secondary Agricultural Institutes at Ibb and Surdud	Courses Proposed for the Faculty of Agriculture
Agronomy (3 Years)	Plant Science, Soil Science, Plant Growth / Soil Fertility, Plant Breeding / Cereal - Forage - Crop Production
Horticulture (2 Years)	Plant Propagation, Fruit and Vegetable Production
Crop Protection (1 Year)	Entomology, Plant Pathology
Animal Production (3 Years)	Animal Science, Poultry Science, Feeds and Feeding, Animal and Poultry Improvement, Animal Production, Poultry Production
Agricultural Engineering (3 Years)	Plan Surveying, Farm Machinery, Irrigation and Drainage
Agricultural Extension and Rural Sociology (3 Years)	Statistics, Extension Methods, Rural Sociology, Fiscal and Personnel Management
Agricultural Economics (1 Year)	Farm Management, Agricultural Marketing, Agricultural Business Management, Advanced Farm Management, Agricultural Policy
Food Technology (1 year)	Microbiology in Food Technology, Food Processing / Human Nutrition, Food Quality Evaluation / Quality Control Systems
Animal Production (3 Years)	Pasture / Range Resources, Pasture / Range Analysis, Pasture / Range Management

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TABLE G-12

Relationship of Agricultural Secondary Curriculum to Proposed FOA Curriculum (Sanaa Veterinary School)

Veterinary School	Faculty of Agriculture
Mathematics (3 Years)	Mathematics (4 credits)
Biology	Botany (4 credits)
Anatomy and Histology	Zoology (4 credits)
Physiology	
Parasitology	
Bacteria and Viruses	
Poultry Diseases	
Dairy and Meat Examination	
Veterinary Medicine	
Principles of Surgery	
Bio-Chemistry	Chemistry (8 credits)
Animal Breeding	
Animal Policy	
Animal Nutrition	
Vocational Health	
Pathology and Lab Tests	Physics (4 credits)
Dairy and Meat Processing	
Pasture Management	
Feed and Feed Manufacturing	

2. Irrelevant Content

A substantial amount of content is relevant to university level students but is not necessarily needed at the secondary level of training. Irrelevant content should be screened out so that more time can be devoted to basic concepts and practical applications.

3. Instructional Time

The instructional time available is impacted by general requirements, testing, absenteeism and political training. Care must be exercised in adding new components to the program. New subject matter options should be either infused into existing curriculum or offered as short courses beyond the regular schedule.

4. Staff In-Service Training

Instructors need help in handling competency-based curriculum and in combining theory and practice within an instructional program. In-service training should be provided in curriculum revision, evaluation of student performance in practicums, use of instructional farms and advisory committee use.

5. Skills Performance Evaluation

The emphasis on theory is magnified by the MOE testing program and to the exclusion of needed practical training. If practical training is to be in balance with theoretical training, an emphasis must be placed on the evaluation of skills performance. A skills performance record should be established as a completion requirement and used to evaluate student progress in skill development.

6. Curriculum Revision

The curriculum is departmentalized in the image of a College of Agriculture. This prevents the delivery of the curriculum in a general agriculture framework that relates all segments of the curriculum to the individual's needs. Curriculum should be revised (not developed) in a format of program goals, course goals, instructional activities and resources. Gaps and overlaps can be eliminated and the curriculum can be managed and directed for the benefit of students.

7. Attitude Development

The curriculum does not include goals for developing positive attitudes toward learning, work and people. The curriculum should include specific learning strategies for development of human relations skills, communications skills and leadership skills.

V. OUTREACH PROGRAM

A. Previous Outreach Accomplishments

The ISAI faculty has already been actively engaged in outreach efforts. During the 1980-82 school years 17 major outreach events were held, attended by 348 people. These are identified and briefly described in Table G-13. Participants in the program included extension agents, supervisors, administrators and farmers. In the school year 1982-83, nine major events were held, attended by 190 people (see Table G-14). Again, the participants were mostly extension workers, but two of the nine events were designed specifically for women. During the 1983-84 school year, 11 major outreach events were held, attended by 135 participants (see Table G-15). Again, the participants were mainly extension professionals, but almost half of the programs were specifically designed for women. The increased attention given to programs for women, and the receptivity and acceptance of this approach, demonstrate the importance of continuing efforts to reach women agricultural producers through outreach programs. However, attitudinal constraints which are a reality in the Yemen social context suggest that these efforts will have to move carefully and deliberately in response to opportunities which may arise.

TABLE G-13

Outreach Programs Conducted by the ISAI (1980-82)

Location	Number & Type of Participants	Subject Matter Areas	Comments
1. Hodeidah	40 extension workers	Plant relationships to fertilizers. Preparation of compost piles.	Participants also visited the ISAI for counsel. Program was pre-planned with participation of ISAI staff.
2. ISAI	35 extension workers	Rural development and extension audio-visual use in extension animal program evaluation.	Program was pre-planned with ISAI staff.
3. ISAI	17 SURDP home economists	Beekeeping	Taught by Dr. Jaycox -TDY from NMSU.
	35 Ibb extension workers		
	30 Central Research Station extension trainees		
4. ISAI	13 SURDP home extension workers and 4 supervisors	Human nutrition, food preparation, food processing, sanitation, refrigeration, juice preparation, making and preserving tomato paste, fermenting milk products.	Short course was planned by ISAI and SURDP staff.
5. ISAI	24 extension workers	Extension program evaluation techniques.	Course was planned by ISAI and SURDP staff. Participants developed evaluation instruments.
6. ISAI	32 Taiz Research Station Personnel	Field day to the ISAI farm and school --all subject matter departments involved	Organized by Taiz research personnel

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TABLE G-13 (Continued)
Outreach Programs Conducted by the ISAI (1980-82)

Location	Number & Type of Participants	Subject Matter Areas	Comments
7. ISAI	24 Taiz Research Station personnel	Field day to the ISAI farm and school --all subject matter departments involved.	Organized by Taiz research personnel.
8. ISAI	22 Tihama extension workers	Field day to the ISAI farm and school --all subject matter departments involved.	Organized by Tihama and ISAI personnel.
9. Abu-Adel Farm, Ibb	1 local farmer, 2 ISAI teachers and 2 ISAI students	Preplanting fertilization	Organized by local farmers and ISAI personnel
10. El-Sahoul Area	2 local farmers, 2 ISAI extension teachers and 2 ISAI students.	Two new variety potato demonstration plots	Organized by 2 local farmers, ISAI extension teacher and ISAI student.
11. El-Sahoul Area	1 local farmer, 2 ISAI teachers and 2 ISAI students	Vegetable demonstration plots (2)	Objective was to encourage vegetable production instead of Qat.
12. Abu Adel Farm	12 local farmers.	Corn fertilization field day	Organized by ISAI personnel
13. El-Sahoul Potato Plots	33 local farmers	Potato harvest field day	Organized by demo. plot farmers and ISAI personnel
14. Hodeidah	3 Tihama extension workers.	Consultations on preparation and functional literacy materials, areas of extension training and soils.	Organized by ISAI Agronomy and Extension teachers
15. ISAI	4 Tihama extension workers.	Extension activities and program contents for Adult Education Center of Zabid	Organized by the ISAI Extension teacher

TABLE G-13 (Continued)
Outreach Programs Conducted by the ISAI (1980-82)

Location	Number & Type of Participants	Subject Matter Areas	Comments
16. Rada	5 extension workers.	Consultations - Training areas for extension and other field staff workers and contents of extension programs	Organized by the ISAI Team Leader and Extension teacher
17. SURDP	Sporadic visits during time period	Extension training areas, home economist training areas, extension evaluation methods and extension program method consultations	Organized by Extension teacher
TOTALS:			
17	348*		

* Total numbers not complete.

TABLE G-14

Outreach Programs Conducted by the ISAI (1982-83)

Location	Number of Participants	Subject Matter Areas	Comments
1. ISAI	17 from development workshops all over Yemen	Rural development	Planned and executed by the ISAI extension teacher and UNESCO and Natl. Inst. of Public Adm. Personnel
2. Natl. Inst. of Public Adm., Taiz	12 SURDP home economics extension workers	Role of women in agricultural development, role of women in community development, functional literacy for women, selection and training for female local leaders, basic principles of adult education activities for women.	Lectures by ISAI extension teachers
3. ISAI	8 Ibb and Taiz (SURDP) extension workers	Two-day soils training course.	Organized by the ISAI Agronomy teacher
4. ISAI	36 extension workers	Poultry broiler and layer management and production	Organized by CID and ISAI personnel. Taught by Dave Francis & Paul Heidloff.
5. ISAI	20 Ibb and Taiz extension workers	General discussion about all departments at the ISAI. Visits to farms and lab.	Planned and sponsored by the Taiz Ag. Res. Station and ISAI personnel.
6. ISAI	20 Taiz extension workers	General refresher course.	Planned and executed by extension officials and the ISAI extension teacher
7. ISAI	21 SURDP women extension workers	Poultry training course.	Planned and executed by SURDP & the ISAI Animal Husbandry teacher
8. ISAI	19 SVS students and staff	General visit	Planned by the MOE.
9. ISAI	34 extension trainees, 3 supervisors	Animal Science, Agronomy, Beekeeping and Horticulture	Organized by SURDP officials
TOTALS 9	190**		

* During this period, there were also 12 consultations by the staff to SURDP and the Radah Rural Development Project, 3 off-campus demonstration plots, and 5 off-farm field days.

** Numbers not complete.

138

TABLE H-15

Outreach Programs Conducted by ISAI (1983-84)

Dates	Number of Participants	Subject Matter Areas	Target Audience
Feb. 1984, 6 days	9	Beekeeping	Women - Ibb Extension home economists
March 1984, 6 days	9	Food Technology	Women - Ibb Extension home economists
Jan. & Feb. 1984, 1 day	1	General Extension Home Economists	Women - Taiz
July 1984, 5 days	18	Horticulture	Women - Ibb and Taiz Extension Home Economists
Dec. 1983, 3 days	2	Beekeeping	Men - Rada Extension supervisors
Feb. 1984, 2 days	9	Soils and Crops	Men - Ibb Extension workers
March 1984, 1 day	60	Poultry Management	Men - Extension agents & poultry producers
May 1984, 2 days	12	Beekeeping	Men - Extension agents & village producers
Nov. 1983, through March 1984	3	Two potato demonstration plots	The ISAI Horticulture teacher, the ISAI extension teacher & 1 local teacher
Nov. 1983 through March 1984	3	One vegetable demonstration plot	The ISAI Horticulture teacher, the ISAI extension teacher & 1 local farmer
Various periods	6	Consultation visits by the Extension and Horticulture teachers	SURDUP and Ag. Research Station Taiz
TOTALS 11	135		

The preceding demonstrates the opportunities which are available to develop and strengthen an effective extension orientation and outlook among students at the SAIs. The proposed subprojects will continue to emphasize the outreach approach at the ISAI and will encourage the adoption of similar program activities at the SSAI and the SVS when appropriate.

B. Outreach Program Components

The objective of the proposed outreach program is to develop and have in place an effective extension training capacity at the ISAI for those who plan to pursue extension careers and to reach rural women, currently excluded from enrolling in the SAIs. It should be pointed out that it is not planned that the ISAI hire regular extension professionals who compete with the extension program of the MAF already in place. Rather, its entire program should be in keeping with one of the basic missions of the ISAI and the other SAIs, which is to train extension personnel.

Proposed outreach programs at the ISAI should focus on three areas:

1. Teacher education; i.e., to train trainers.

2. Extend programs to local people and with them, help solve their problems. This effort is to be used mainly in a laboratory-like situation as a teaching device for SAI students and counterparts, but will have the added benefit of direct and positive accomplishments for the Yemeni participants.

3. Summer internships. The best way for students to learn is through experience. Students and counterparts therefore should be involved and held accountable for developing and implementing SAI on-and-off-campus field days, demonstrations, tours, short courses, individual contacts, program planning, and mass media efforts with local people under the direction of SAI teachers. Again, this should be used primarily as a teaching device and will need to be coordinated with local extension organizations.

Each student should have at least one opportunity to work closely with a selected successful extension agent in a summer intern program. During this internship, the student should be responsible and held accountable for developing and implementing a selected extension activity as part of their internship assignments. This work would of course be under the direct supervision of the Yemeni extension agent with guidance and coordination being provided by the SAI instructor.

Implementation of this outreach training component of the curriculum will require cooperation between the MOE and the MAF's NES staff. The ADSP, which has its major working arrangements with the MAF, facilitates such cooperation between the two ministries. The interest and support in the MAF for agricultural education bodes well for strengthening these relationships.

C. Staff Requirements and Other Inputs

To accomplish the above objective, the following staff adjustments and other inputs will be required:

1. Responsibility for extension outreach coordination needs to be assigned to one of the present teachers at the ISAI.

2. An extension outreach coordinator for women's programs is also needed. This person will be the director of the broader women's education program which is being established at the ISAI and which will continue under this subproject extension.

3. The technical expertise in subject matter fields, e.g., agronomy, horticulture, etc., will be provided by the existing staff. Provisions for their involvement will be handled by allocating a portion of their individual time budgets to this outreach activity. This will be specified in their individual job descriptions.

4. Additional secretarial assistance must be provided.

5. Additional office space, office equipment and provisions for expendable supplies is required.

6. Funding support for travel and per diem while away from station must also be provided.

VI. INSTITUTIONAL FACILITIES

Facilities of the three SAIs were designed to accomodate 180 students in each location. Student enrollments have not yet reached design capacity. In general, the facilities are adequate to accomodate requirements under the proposed curriculum. Some modifications may need to be made in the facilities during the life of the project extension but no major requirements for physical facilities are contemplated.

A. Classrooms, Laboratories, Offices and Shops

The agricultural mechanics shop at the ISAI must be modified to provide additional instructional space. Farm equipment storage needs to be relocated. Modifications of the agricultural mechanics shop have been provided for under the FY 1985 Work Plan and are expected to be completed when this project extension begins.

There is a need for additional office space. This need can be accommodated when the new food technology building is finished during the coming year and other existing space is released.

Facilities at the SSAI and the SVS are now underutilized and are expected to be adequate for several years. Some modifications, however, to existing structures may be necessary to improve efficiency and utilize space.

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Funds are provided in the subproject budget to cover anticipated expenditures which are likely to be required over the life of the project.

B. Instructional Farms

Instructional farms of the three schools are of the following sizes:

ISAI	6 hectares
SSAI	17 hectares
SVS	3 hectares

The six-hectare farm at the ISAI is inadequate to support the full range of instructional programs which are proposed. The existing farm is on level wadi land and does not include terrace land for instructional purposes. Additional land is needed to provide students with terrace farming instruction. MOE action is currently underway to obtain an additional eight hectares, including some 3-4 hectares of terraced land, for the instructional farm.

The 17-hectare instructional farm at the SSAI is adequate in terms of size for the proposed curriculum. However, instructional use of the farm should be upgraded during the next five years. Facilities and equipment at the farm are adequate for livestock and crop production instruction but some upgrading and modification will be required as the farm is used more intensively.

The SVS instructional farm is too small for an expanded instructional program. The facilities are excellent but there is not enough land for growing livestock feed. The SVS farm is surrounded by commercial and residental properties that will prohibit future expansion of school lands. Because of land limitations, the institute utilizes nearby commerial dairies and poultry farms as instructional sites. These are provided under cooperative agreements with private owners who perceive advantages from their association with the school.

C. Equipment and Supplies

The three SAIs have adequate equipment for handling livestock and crop production. Some equipment replacement will be needed in the next five years as tractors and implements wear out. Specialized equipment such as forage processing equipment and rototillers may be required to fully address the needs of the small-scale farmer. These will be identified more specifically as project implentation proceeds.

Equipment should be upgraded for both practical and laboratory instruction in the three institutes during the next five years. Such upgrading efforts will be directed toward improved relevance of instruction.

The food technology program at the ISAI should be in place by mid-1985. Some upgrading will be required to bring the equipment into line with needs. The equipment for the food technology program was originally provided by the World Bank. It is

mostly dairy processing equipment for commercial scale operations. Equipment for fruit and vegetable processing, meat processing and home food preservation should be included in the laboratory. Future purchases of equipment should be of smaller scale and reflect the needs of the small landholders and women. This will serve to balance the food technology curriculum between small and commercial scale applications.

D. Library Resources

The ISAI is currently developing a learning resource center that will contain audio-visual equipment, materials and equipment for developing instructional aids, an Arabic library, professional library and a microfilm library. The resource center will become operative during the current subproject plan year. Continuous updating of library resources will be maintained over the next five years. Once the learning resource center at the ISAI is fully functional, efforts will be directed toward establishment of learning resource centers at the SSAI and the SVS.

E. Development of Teaching Materials and Resources

Instructors at the ISAI are currently developing textbooks and teaching materials for their subject areas. The textbooks are written in Arabic and adapted to Yemen-style agriculture. Textbooks for four subject areas are near completion and others are under development. When published, these textbooks will be provided to the SSAI and the SVS for use in their instructional programs.

Many types of teaching materials and resources will be retained in the learning resource centers. A central location for learning resources will further motivate staff to develop additional teaching materials. As these materials are developed, they may be exchanged and adapted for use by the other institutes.

F. Student Housing

Student housing will be adequate until enrollment capacity is reached. It is unlikely that housing will become a problem during the life of the proposed subproject.

G. Vehicles and Equipment

Project vehicles and other items of instructional equipment have been provided previously under the original ISAI Subproject. These will continue to be utilized through the proposed period of subproject extension but replacement and perhaps addition of vehicles and other items will be required. An illustrative list of commodity inputs is found in Annex H, Table H-5.

Estimates of budget requirements to maintain and upgrade institutional facilities and to support establishment of the new activities proposed above are also presented in Annex H.

ANNEX H

Financial Analysis

I. INTRODUCTION

The aim of this annex is fourfold: (a) review the budgeting and expenditure pattern for the existing ISAI subproject from FY 1980 through FY 1985; (b) present the detailed budgets for the six and one half years duration of the proposed subproject; (c) discuss the recurring cost implications of the subproject; and (d) perform a financial analysis of the proposed subproject as suggested in AID Handbook, Appendix 3-C. A final section contains a summary of findings and also addresses recommendations for establishing an improved budgeting and financial management plan for the operation of the proposed SAE system.

II. FINANCIAL MANAGEMENT OF THE EXISTING ISAI SUBPROJECT

In the process of constructing budgets for the proposed subproject extension, a review of the past budgets and work plans for the existing ISAI Subproject was conducted. The original ISAI Subproject (as amended) was budgeted as follows:

AID FX	$8.8 million
AID Local Currency	$2.6 million
Total	$11.4 million

The ISAI Subproject Paper (SPP) indicated that the recurring costs to the YARG would be $2.9 million during the life of the project and $700,000 annually thereafter. The overall performance of the subproject and financial implications are documented in the ADSP Evaluation of November 1983. In brief, project expenditures were not made at the rate originally anticipated. Delays in locating qualified participant trainees were major elements in the delay, although other factors could also have contributed to the problem. In any event, a ten month extension of the subproject (to July 31, 1985) was granted without an additional allocation of funds.

A. Annual Budgeting and Expenditure of the AID FX Funds

Table I-1 is a compilation of AID FX annual expenditures gathered from USAID expenditure records and annual workplans for the period January 1, 1980 through the end of 1985. The extension of time has resolved some of the problems in accomplishing the participant training component.

Technical assistance expenditures have more nearly matched expected figures in the SPP and in budgets in the annual workplans. The expatriate staff at ISAI has been retained with virtually no turnover or unfilled vacancies. The use of liberal salaries and bonuses has been a key factor in delivering the technical assistance (teaching to students and conducting outreach activities). It is expected that upon the return of counterparts to the ISAI, the technical assistance will be extended to in-service teacher training. Technical assistance in the form of maintaining an operational instructional farm has also been reflected by on-schedule disbursements of funds.

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145

TABLE H-1

Budget and Expenditures, ISAI, FX Funds, 1980-85

US $ Thousands

	Actual Expenditures Through FY 84	Projected Expenditures FY 85	TOTAL
DIRECT COSTS			
1. Salaries, On Campus & TDY	449	143	592
2. Salaries, Off Campus	1,574	474	2,048
3. Fringe Benefits	306	185	491
4. Allowances	119	65	184
5. Travel, Transp. & Freight	552	142	664
6. Expend. Equip. & Materials	125	87	212
7. Non-Expendable Equipment and Materials	936	93	1,029
8. Training	402	319	721
9. Other Direct Costs	481	9	490
TOTAL DIRECT COSTS	4,914	1,517	6,431
INDIRECT COSTS	1,414	369	1,783
TOTAL FX COSTS	6,328	1,885	8,213

TABLE H-2

Budget and Expenditures, ISAI, Local Currency Funds, 1980-85

US $ Thousands

	Expenditures Through FY 84	Projected Expenditures FY 85	TOTAL
DIRECT COSTS			
1. Salaries and Wages	582	322	904
2. Operations	-0-	148	148
3. Travel and Per Diem	166	76	242
4. Training	-0-	33	33
5. Expend. Equip. and Materials	126	94	220
6. Non-Expend. Equipment and Materials	71	39	110
7. Other Direct Costs	754*	10	764
TOTAL LOCAL CURRENCY COSTS	1,699	719	2,418

*Included special funds for construction at Ibb.

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146

In the commodities category, however, it appears that the SPP budget projected a rate of expenditures greater than what has been realized. Disregarding the large ($770,000) expenditure for 9 mobile homes and transportation thereof, it is estimated that about $150,000 has been expended on non-expendable equipment and material through December, 1984. It was anticipated that $96,913 would be expended in FY 1984 alone and the $93,200 would be expended in FY 1985. Even with expected normal replacement of worn-out equipment, it appears that the ongoing ISAI project could expend considerable funds on equipment in the period through July 31, 1985. This has implications for commodity needs in the proposed subproject.

B. Annual Budgeting and Expenditures of AID Local Currency Funds

The original SPP did not correctly anticipate the cost of outreach programs conducted as a part of the technical assistance. This has added significantly to the cost of in-country travel and per diem as well as the costs of training programs outside the regular ISAI curricula. Operating costs (particularly fuel for transportation) have been higher than expected. On the other hand, expenditures on non-expendable equipment and materials has been only two-thirds of that anticipated. In both categories, FX and Local Currency, there has been some hesitation about the acquisition of commercially-sized farm and food processing equipment. There is, in addition, some equipment left over from the World Bank's First Education Project. Table H-2 is a summary of AID Local Currency budgets and expenditures by category.

C. Annual Budget and Expenditures of YARG Local Currency Funds

The collaborative assistance mode for operating the ISAI appears to be most neglected in the area of financial management. Over time, the Yemeni directors of the ISAI have become accustomed to operating certain aspects of the facility (building furnishings, repairs, workers salaries, basic subject teacher's salaries, animal feed, fertilizers, pesticides) without much consultation with the US advisors. The annual planning, budgeting, and disbursement process at ISAI and the MOE is not well-defined. The directors of the three secondary agricultural institutes are in principle expected to submit annual statements of needs to the MOE Director of Agricultural Education who in turn prepares a financial needs statements for the three SAIs. In practice, the statements are not submitted on time or they are held up in a series of individual reviews in the MOE. In recent years, the fiscal year (same as calendar year in the YARG) begins without a clear indication of what funds will be forthcoming. School directors normally expect to draw funds from the MOE at the beginning of each quarter. Without a budget to work from, the directors submit a "needs statement" for the quarter already beginning. Typically, however, the needs statement is disregarded and each director is disbursed funds based more or less upon the accounting of the expenditures of the previous quarter or the quarter of the preceding year. The ISAI, the SSAI, and the SVS are often compared with other secondary schools operated by the MOE.

The budgets for the latter schools drop significantly during the summer, prompting senior administrators at the MOE to sometimes restrict the levels of the SAI budgets at the same time.

Representative YARG Local Currency Budgets for 1983 and 1984 are presented in Table H-3 below. The SPP budget for YARG Local Currency also reflects actual expenditures at the three institutes in 1984. Table H-3 shows amounts for salaries and operational expenses disbursed from July 1983 through June 1984. These figures are reported to be from one-half to two-thirds of the amounts requested in that period.

D. Parallel Donor Expenditures at the ISAI, the SSAI and the SVSS

The World Bank/IDA has funded several education projects in Yemen. From 1974 to 1979, the First Education Project expended $904,000 for the ISAI civil works and $281,000 for furnishings. Implementation of the SSAI and the SVS facilities is covered under the Third Education Project for which audit data are not yet available. The latter project is due to expire in July 1987. It continues to pay the salaries of three expatriate instructors at the SSAI and one at the SVS. In addition, the SSAI and the SVS are eligible to expend an additional amount of roughly $50,000 on equipment under the Third Education Project.

TABLE H-3
YARG Expenditures for the SAE System, 1983-84
US $ Thousands

	1983		1984		
	Jul-Sep	Oct-Dec	Jan-Mar	Apr-Jun	TOTAL
A. ISAI					
1. Salaries & Wages	254	255	310	237	1057
2. Expenses	129	119	86	115	449
Total	383	374	396	352	1506
B. SSAI					
1. Salaries and Wages	217	236	286	223	1249
2. Expenses	117	161	90	108	477
Total	334	397	376	331	1726
C. SVS					
1. Salaries and Wages	69	67	207	167	510
2. Expenses	3	51	67	70	192
Total	72	118	274	237	702
D. SAE System in the MOE					
1. Salaries and Wages	540	558	803	627	2816
2. Expenses	249	331	243	293	1118
Total	789	889	1046	920	3934

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148

III. PROPOSED SUBPROJECT FINANCING

This section addresses the organization of the subproject budget. The usual source of funds categories are employed: AID foreign exchange (FX), AID local currency (LC), and YARG local currency. The budgets are also organized to reflect the intended allocation of funds among the broad categories of technical assistance, commodities, and participant training. All figures provided in the budgets and in the following discussion are stated in 1985 dollars.

A. AID FX Budget

As indicated in Table H-4, the level of AID FX funds necessary to implement the subproject is approximately $12,895,000. A contingency factor of 5.0% is applied to all direct and indirect costs exclusive of participant training. The latter costs are assumed to include contingency and indirect cost components. The principal element of the AID FX budget is technical assistance (48%), followed by commodities (19%), and participant training (16%). Approximately two-thirds of the cost of technical assistance results in assistance actually being delivered in the YAR. About 80% of the commodities purchased under the AID FX budget will be deployed in the YAR. Allocation of the budget by location of program follows: home campus - 36%; ISAI - 24%; SSAI - 20%; SVS - 16%; and SAE general administration - 4%. Note that Table H-4 is the summary budget for the subproject. Summary and detailed budgets for the AID foreign exchange, AID local currency, and YARG local currency funds are attached at the end of this annex. All costs, including costs for participant training, have been increased to reflect an expected rate of price increase of 8% per year, compounded.

B. AID Local Currency Budget

Total amount of funds to be expended from AID local currency reserves is approximately $4,107,000 as shown in Table H-4. The budget reflects continued strong support of the facility and operations at the ISAI. The cost of providing ESL training for Yemeni counterparts is assigned to the AID LC budget. The budget reflects significant expenditures for travel by the subproject TL for coordination of programs at the three SAIs and within the MOE. A 5% contingency cost is applied to all direct costs. The resultant amounts are also inflated at a rate of 8% per year, compounded.

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TABLE H-4
IBB SECONDARY AGRICULTURAL INSTITUTE SUBPROJECT
SUMMARY BUDGET

YEAR	--1--	--2--	--3--	--4--	--5--	--6--	--7--	
	PROJECT YEAR (12 months) AUGUST 1 TO JULY 1						(3 mo.)	
	85-86	86-87	87-88	88-89	89-90	90-91	91-92	TOTAL
I. AID FX BUDGET								
A. Tech. Assistance & Commodities	1977907	1706464	1469108	1129826	798133	428310	8741	7518489
B. Contingency (5%)	98895	85323	73455	56491	39907	21416	437	375924
C. Participant Training	173800	479800	724600	541000	275800	153400	-0-	2348400
SUBTOTAL	2250602	2271587	2267163	1727317	1113840	603126	9178	10242813
Inflation (8.0%, cmpd.)	180048	377992	588809	621834	522756	353959	6551	2651949
TOTAL AID FX BUDGET	2430650	2649579	2855972	2349151	1636596	957085	15729	12894762
II. AID LOCAL CURRENCY BUDGET								
A. Tech. Assistance, Training, and Commodities	668675	624577	578842	448207	359417	294631	73643	3047992
B. Contingency (5%)	33436	31229	28942	22410	17971	14732	3682	152400
SUBTOTAL	702109	655806	607784	470617	377388	309363	77325	3200392
C. Inflation (8.0%, cmpd.)	56169	109126	157849	169652	177119	181557	55196	906668
TOTAL AID LOCAL CURRENCY BUDGET	758278	764932	765633	640269	554507	490920	132521	4107060
TOTAL AID FX + AID LC BUDGET	3188928	3414511	3621605	2989420	2191103	1448005	148250	17001822
III. YARG LOCAL CURRENCY BUDGET								
A. Total Recurring Costs	964600	1207000	1336700	1442000	1570200	1632767	567189	8720456
B. Inflation (8.0% cmpd.)	77168	200845	347157	519825	736939	958229	404873	3245036
TOTAL YARG LOCAL BUDGET	1041768	1407845	1683857	1961825	2307139	2590996	972062	11965492
TOTAL SUBPROJECT BUDGET	4230696	4822356	5305462	4951245	4498242	4039001	1120312	28967314

150

C. YARG Local Currency Budget

It is estimated that the YARG will contribute approximately $11,965,500 to the proposed subproject over the planned duration of six and one-quarter years.

The budget tables for the YARG's operation of the SAE system are provisional. Detailed long-run planning and budgeting for SAE in the YARG is not generally undertaken. Hence, the figures are drawn jointly from what funds are currently expended, from proposed budgets, and from the costs of operation of the SAE system as designed in this SPP. The salaries and wages section of the budget is drawn from representative personnel rosters for the schools. As indicated previously, total personnel expenditures at the schools are apparently a distinct line item in the general MOE accounting system. Total expenditures for salaries could be located, but planning documents or proposed detailed budgets could not. It is assumed that personnel in the YARG LC budget can be defined more accurately if better planning and management of the SAE system in the MOE can be established.

Actual and planned expenditures for non-salary items were obtained from the MOE. Annual planning for non-salary items is more detailed (perhaps 15 categories) and serves as the basis for the non-salary section of the YARG LC budget. As indicated previously, however, requests for non-salary items have seldom, if ever been granted in full. Total non-salary expenditures appear to be granted at one-half to two-thirds of the amount requested. This has naturally led to an overstating of needs in many categories (e.g., cattle feed, furnishings, and general equipment). In other categories (particularly student stipends and related support), the project figures are probably reflective of reality since student enrollment is more easily verified. In sum, the YARG LC budget was set at a level that is higher than the historical record for granting of salary and non-salary, and is lower (at least in 1985-1986) than the planned request. The annual budget is projected to increase in subsequent years due to: (1) recruitment of counterparts and planned return of counterparts; (2) the emphasis on appropriate upgrading of the schools' teaching and farming equipment and materials; and (3) an increasing share of costs . These increases form the basis of the discussion of recurring cost issues below.

IV. RECURRENT COST CONSIDERATIONS

This section addresses the arrangements by which the YARG should assume the cost of secondary agricultural education services (particularly features established by the proposed subproject extension) before or on the date of termination of AID funding. There are three sections below: (a) general issues; (b) recurring costs of the ISAI Subproject; and (c) strategies for securing commitments on recurrent costs from the YARG.

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151

A. General Issues

The subject of recurrent costs (in association with donor-assisted projects) has been addressed at length in a recent USAID Policy Paper. 1/ The paper discusses issues related to actual versus expected fulfillment of recurrent cost commitments. There are many technical measures which can be employed to assume that recurrent costs will be paid. Some are discussed below. One major recommendation for having recurrent costs met, however, is to take steps to ensure a non-declining demand for project outputs.

A great deal of the recurrent cost issue involves analysis of the state of fiscal affairs within host countries. With respect to economic conditions in the YAR, a great deal has been written about the capability of the YARG to address a growing recurrent cost commitment on a large number of externally-financed projects. 2/ The main findings in this literature are that the YAR has experienced a modest decline in its foreign exchange earnings (due principally to a drop in the level of remittances). At the same time there has been an increase in the propensity to consume imported goods and a decided increase in the demand for public services, particularly education, health and infrastructure. The YARG can also be considered an autonomous supplier of public services, attempting to consolidate the disparate political factions in the country. Defense accounts for 30% of YARG expenditures. The civil service, approximately 80,000 strong, is increasingly being used as a residual employer, at a cost of about YR 3 billion annually.

Education services constituted about 12 percent of the budget in 1983. The budget for education has grown steadily with most expenditures being allocated to basic education. A major component of the education budget is the salary and allowances for expatriate teachers in the basic education system.

The principal drawback to the YARG fiscal situation is an inadequate means of revenue collection. Approximately two-thirds of the revenues are collected as duties on imports and excise taxes on production. As foreign exchange earnings have declined, so have imports which has slowed the growth in YARG revenues. The YARG is

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1/ AID Bureau of Program and Policy Coordination, Recurrent Costs: Problems in Less Developed Countries, Washington, D.C., May, 1982.

2/ E.g., see: (a) Consortium for International Development, Faculty of Agriculture Subproject Paper, Appendix F--Economic and Budgetary Analysis, 1984; (b) Manarolla, Jerry A., Yemen Economic Report, AID, Near East Bureau, Washington, DC, February, 1984, 31 p.; (c) Khenissi, Slaheddire, "Aide Memoire", World Bank, Washington, DC, April, 1984, 14 p.; (d) Saqqaf, Abdul Aziz Y., "YAR Government Budget Planning, Implementation, and Trends", Report prepared for USAID/Y, Sanaa, YAR, June 1984, 52 p.; (e) IBRD, Yemen Arab Republic, 2nd Five Year Plan, Public Investment Program Review, Washington, DC, December 16, 1983, 100 p.; (f) IBRD, Yemen Arab Republic: Special Study of Education, Administration and Finance, Washington, D.C., August 31, 1982.

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157

continuing to allocate significant sums to capital expenditure (40% of total expenditures in 1982, somewhat down from previous years). In 1982 total revenue amounted to YR 3.9 billion. In that year, recurrent expenditures exceeded revenue for the first time. In 1983, the gap between recurrent expenditures and revenue grew to YR 1.3 billion, an alarming development.

The YARG has survived its growing deficit by (1) rationalizing that capital expenditures should be considered as investments with positive net returns in the future (hopefully, net of recurrent operation and maintenance costs); and (2) by external borrowing and receipt of grants. The overall debt service of the YARG is not great, but incurring debt in world credit markets today could reverse that situation. One course of collateral that the YARG will no doubt employ in seeking financial resources is its prospective oil field reserves in the Marib Governorate. This bit of good news should be tempered with some caution: spending financial credits on the promise of oil finds have often affected LDCs adversely (e.g., Mexico).

The prospects for YARG being able to bear the recurrent costs of donor-assisted projects must be concluded as worsening in the near term, and then strengthening in the long term.

B. Recurrent Cost Issues Relevant to the ISAI Subproject

The proposed ISAI Subproject extension must be considered somewhat different from the more typical donor-assisted project. The principal infrastructure of the three SAIs is in place. The system has been operated by the YARG for five years, admittedly with some areas of deficiency. The YARG has approved a budget request for YR 6.4 million to operate the schools during the calendar year 1985. At these levels, the YARG is spending YR 18,000 to YR 20,000 per student enrollee annually for this specialized education. This cost per student could be compared with the cost per student of general secondary education in YAR which is estimated to be YR 6,000 to YR 9,000 depending on location. A strong case must be made that the recurrent costs for SAE must be borne. This issue is examined by type of assistance and implications for recurring costs borne by the YARG.

1. Participant Training

It is anticipated that of the 39 participant trainees selected, the SAE system will retain 31 Yemeni MS or certificate degree-holders at the end of the project. The other trainees could potentially join other agencies in the YARG. Recurrent costs associated with these personnel are not relevant to the SAE system.

It is expected that all 31 or more participants will join the SAE school system as planned. The 1985 MOE budget contains an incentive allowance of YR 20,400 per year per counterpart.

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Another element of recurrent costs relevant to participant training would be the willingness of the YARG to educate persons to replace SAI teachers leaving the system. The bearing of this type of cost may, however, have to wait upon establishment and development of the FOA at the UOS.

2. Technical Assistance

The technical assistance components of the proposed subproject extension are significant and warrant consideration as items that should be the basis of recurrent costs borne by the YARG. Briefly, the important technical assistance components are:

a. Farm Managerial Skills (pursuant to each instructional farm).

This technical assistance complements BS-level participant training. The YARG should recognize the importance of continuing in-service training of other managers. The Yemeni farm manager should receive instructor status and salary. At issue is the continued efficient operation of the instructional farms.

b. Continuing Improvements in SAE System Management.

During the proposed subproject, the SAE management should be enhanced. The YARG should, among other things, allocate resources for in-service training and specialized training abroad.

c. Maintenance of Improved Teaching.

At the expiration of the AID-financed technical assistance, a standard of teaching and improved curriculum should be established. The YARG should allocate resources in the form of in-service training, and demonstrations to encourage maintenance of this talent.

d. Maintenance of Outreach Programs.

This activity is currently underfunded in the SAIs. The YARG should examine the benefits of the program and agree to bear the costs of transportation, per diem, vehicles and fuel as well as release time for conducting outreach.

e. Maintenance of Library Resources Program.

Considerable effort will be devoted to establishing functional libraries at each school. The YARG should consider appointment of staff librarians at the rank of Instructor and bear appropriate salaries.

3. Commodities

The commodities component of the subproject offers opportunities for securing recurrent cost arrangements with the

YARG. The three commodity groups discussed here are most likely to have some potential for replenishment and replacement.

a. Farm Equipment.

The equipment supplied by the World Bank at the time the SAIs were established is generally acknowledged to be inappropriate to Yemen agriculture. It is therefore proposed that the subproject begin a concerted effort to furnish appropriate technology packages at each school. Table H-5 contains representative lists of equipment which would be supplied in the technology packages. These equipment lists form the basis of non-expendable equipment and materials budget line items. Some of the packages would be dedicated to instructional use and some for outreach. The implication for recurrent cost issues in the project is that the appropriate technology packages be cost-shared with the YARG. The nature of proposed cost-sharing arrangements are discussed in the following section.

b. Teaching Equipment for Returned Counterparts.

Although the proposed subproject extension is projected to leave a complement of teaching equipment in place in each school, there will no doubt be a need to replenish/replace such equipment at or near the end of the subproject. Returning counterparts should be allowed discretion in choice of equipment, but more importantly, the YARG should commit resources to its acquisition. This commitment is reflected in the YARG budget.

c. Books and Printed Materials

Complementary to securing a commitment to staff each school with a library resource specialist, is the commitment to secure appropriate books and printed materials. The proposed subproject extension will establish a working library and a precedent for preparing durable printed materials for disposition to students. Sustained success of the school libraries will depend significantly on the YARG's commitment (as shown in the YARG budget) to augment, replenish, and replace materials as needed.

C. <u>Representative Strategies for Securing Recurring Cost Commitments</u>

As indicated previously, the most effective strategy for ensuring that the YARG agrees to important recurrent cost components is likely to be establishing an effective demand for graduates of the SAE system. This will involve the MOE, the MAF, private-sector agri-businesses, US staff, other expatriate staff, and returned counterparts working together to ensure appropriate placement of graduates.

More direct strategies include: (a) cost-sharing; and (b) YARG procurement/USAID reimbursement. These strategies apply only during the project life and thus may be only applicable to commodities. The two arrangements both feature a high AID share of costs initially with an increasing Yemeni share over time.

105

TABLE H-5

Representative Equipment to be Included
in Technology Packages Cost-Shared with YARG

Year 1:

ISAI	SSAI	SVS
Grain drills	Grain drills	Feed grinders
Forage header	Pro concrete mixer	Poultry brooders
Pro concrete mixer	Garden rototillers	Poultry feeders
28 lister		Incubator
Leveling blade		
Pickup truck		
Wood shop saws		
Wood shop sanders		
Shop welders		
Garden rototillers		

ESTIMATED RETAIL COST: $146,000

Year 2:

ISAI	SSAI	SVS
2-row planter	28 lister	Leveling blade
Tandem disk	Brush clippers	3/4 ton pickups
Brush clipper	3/4 ton pickup	PTO manure spreader
Spring tooth harrow	Smokers	Irrigation pumps
28 plows	Food dehydrators	
Smokers	Meat saws	
Food dehydrators		
Meat saws		

ESTIMATED RETAIL COST: $113,800

Year 3:

ISAI	SSAI	SVS
Forage wagon	Tandem disk	28 plows
35-40 hp tractor	Forage wagon	Milking machine
Field sprayer	10-18 hp garden tractors	
2 ton truck	Garden tractor implements	
10-18 hp garden tractors	Forage harvestor	
Garden tractor implements	Milking machine	
Forage harvestor		
8-12 hp hand tractors		
Irrigation pump		
Milking machine		

ESTIMATED RETAIL COST: $ 254,000

156

Implementing these strategies for commodity procurement would ideally result in collaborative purchase of equipment being made available on a timely basis. One disadvantage of the strategy is that the commodity share in the total subproject budget is relatively low. Thus it may seem like an unnecessarily complex covenant to secure a recurrent cost commitment.

V. FINANCIAL ANALYSIS OF THE SUBPROJECT

The objective of the financial analysis in project design is to document efficiency in the use of financial resources. In a revenue-producing project, the analysis is aimed at determination of a condition of profit maximization. Such an analysis generally addresses private sector enterprises. In non-revenue producing projects, the need for a financial analysis is less obvious, since many of the same issues (and ways of addressing them) occur in the determination of an economic analysis. AID Handbook 3, Appendix 3C, does, however, recommend the use of least cost analysis to determine efficient states of production (or efficient states of providing public services). The main assumption used in developing the analysis in this subproject paper is that AID and YARG jointly act in the manner of private operators of an SAE system over a finite planning horizon. The objective is the minimization of costs per graduate of the three SAIs.

A. Costs of the ISAI Subproject Strategy and Alternative Staffing Strategy

Six options were considered to train the 33 core SAI teachers (11 at the ISAI, 14 at the SSAI, and 8 at the SVS). The expected costs of these scenarios are summarized below in Table H-6. Training option 2 (all BS degrees from the US) is the most expensive, and the most time consuming for project implementation. Option 3 can be considered, but may not guarantee the quality of teachers desired under the project. Option 4, including nine teachers trained at the UOS (at zero nominal cost - unknown opportunity cost) is possible only if the proposed AID-funded Faculty of Agriculture Project is approved, and if a faculty member is selected and trained on schedule to begin agricultural secondary BS programs in 1988. Option 5, with one year certificate training for 22 teachers in the US, may also be considered, but may not appeal to participant trainees. Option 6 was selected for inclusion in the detailed AID budget (see Tables H-8, H-9, H-10 and H-11 below).

If it is assumed that USAID and the YARG operate the SAE system over a planning horizon of 20 years, then it is possible to derive total costs. It is assumed that the SAIs will reach full enrollment (135) within a few years and will be graduating at least 108 Yemeni agriculturalists per year by the end of the life of the subproject. It is assumed that full enrollment will result from Yemenization of the staff, more appropriate curricula, ambitious recruitment, and effective job placement. If this level of enrollment can be sustained, it is reasonable to expect 2,071 graduates at the end of the planning horizon (see Annex G, Table G-7 for planned sequence of graduates).

TABLE H-6

Cost Comparisons of Six Options
for Training SAI Teachers Under the ISAI Subproject

Training Option	US Costs	Middle East Costs	TOTAL COSTS
1. All MS degrees from the US	1428	-0-	1428
2. All BS degrees from the US	2693	-0-	2693
3. All BS degrees from the ME, plus 1 year study in the US	673	1320	1993
4. 16 MS in the US, plus 8 BS in the US, plus 9 BS at UOS (after 1990)	1306	-0-	1306
5. 11 MS in the US, plus 22 certificate only (1 yr in US)	898	-0-	898
6. 22 MS in the US, plus 11 BS in the US	1795	-0-	1795

NOTE: (a) Total of 33 teachers: 11 ISAI, 14 SSAI, and 8 SVS.
(b) Average costs per student per year of academic training in the US = $20,400; and in the Middle East = $10,000.
(c) Duration of BS study = 4 years.
(d) Duration of MS study = 2 years.

Table H-7 below summarizes the results of the least-cost analysis of the ISAI Subproject extension. Three of the six alternatives considered in Table H-6 for training the teachers are incorporated in the full financial analysis in Table H-7: training all 33 teachers with MS degrees in the US (see column 4); all BS degrees in the US (the high cost assumption -- see column 6); and 22 MS and 11 BS degrees in the US (see column 8). Total costs of the project, with the YARG contribution for the three alternatives, are provided in columns 5, 7, and 9. Costs for years 1 through 7 are derived from the detailed subproject budget. Costs for years 8 through 20 reflect the willingness of the YARG to sustain the SAE at an effective level.

As an alternative strategy, it is assumed that the YARG (with external assistance) could procure the services of 20 Arabic-speaking third-country professionals (TCPs) per year to staff the SAE system. It is further assumed that the YARG could direct hire this staff at no less than $72,500 per year per individual, including housing, all allowances, and transportation. A further assumption is that the TCP is less effective in recruitment, placement, and retention of enrollees. The SAE system may only achieve a graduation rate of 85 per year with this strategy.

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B. Comparison of Alternatives and Conclusions

For the values given in Table H-7, the analysis suggests that the USAID and YARG SAE system has a lower total cost than the expatriate hire alternative. The cost per graduate ("unit cost") would be decidedly lower for the USAID and YARG alternative (due to the lower total cost and the higher numbers of graduates).

This analysis is a cursory attempt to analyze (in a financial sense) costs of the subproject. It is by no means an economic analysis of an SAE system. The latter should address broader social profitability issues inherent in the choice of a system including targeted beneficiaries, subsidies within the YAR, as well as a host of issues related to true resource costs.

VI. CONCLUSIONS

The basic financial data for both the existing subproject and the proposed subproject extension are presented in this annex. Unavoidable delays in program prevented the original project from expending funds on schedule. In addition, some functional areas showed higher than expected expenditure rates. The subproject extension incorporates features designed to overcome both of these problems. The annex also examines the existing YARG support of the SAE system. It is concluded that the support is deficient in many areas, but at least there is an established and operational budgeting procedure and a disbursement of funds record. It is expected that with the introduction of better financial management techniques, beginning with the continuing refinement of the budgets contained herein, better budgeting and disbursement performance will emerge. This improvement is relevant to the issue of recurrent costs for the proposed subproject extension. The fiscal status of the YARG was shown to be warranting some concern with annual expenditures for recurrent costs outstripping total revenues by YR 1.3 billion in 1983. On the other hand there is hope that the educational sector will continue to be a growth area in the YARG budget and a strong commitment to the SAE system will emerge.

With the YARG currently allocating an estimated YR 1.1 million per year towards SAE, it is believed that this level should be raised to around YAR 2.0 million per year with the new subproject in place and be prepared to increase this amount to YR 3.0 million when AID assistance is ended. There are several areas which were identified as being especially important to sustain in terms of recurrent cost commitments. Some of these areas are covered in the proposed list of covenants.

Given these levels of proposed costs for the proposed subproject, it was determined that some analysis of efficiency in the continuing subproject should be undertaken. To this end, a least cost analysis of the proposed financing plan was performed. An alternative means of program delivery was devised -- YARG hire of an entirely TCP staff for the SAE system considered over a planning horizon of 20 years. The analysis indicates that the proposed subproject extension would exhibit lower costs than the alternative means of program delivery.

TABLE H-7

RESULTS OF FINANCIAL (LEAST COST) ANALYSIS OF IMPLEMENTING THE PROPOSED SAE SYSTEM

(US $ - Millions)

		3 USAID - YARG ALTERNATIVES							100% TCP EXPATRIATE-HIRE ALTERNATIVES			
			All MS-US		All BS-US		2/3 MS &				YARG Adm.	
Year	No. of Graduates	YARG Costs	USAID Costs	TOTAL 3 + 4	USAID Costs	TOTAL 3 + 6	1/3 BS Costs	TOTAL 3 + 8	No. of Graduates	Expatriate Costs	& Oper. Costs	TOTAL
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1	55	1.1	3.0	4.1	3.2	4.3	3.2	4.3	40	1.45	1.1	2.55
2	72	1.4	3.2	4.6	3.4	4.8	3.4	4.8	45	1.45	1.4	1.85
3	108	1.7	3.3	5.0	3.7	5.4	3.6	5.3	50	1.45	1.7	3.15
4	108	2.0	2.8	4.8	3.8	5.8	2.9	4.9	55	1.45	2.0	3.45
5	108	2.3	2.2	4.5	2.7	5.0	2.2	4.5	60	1.45	2.3	3.75
6	108	2.6	1.5	4.1	1.7	4.3	1.4	4.0	65	1.45	2.6	4.05
7	108	2.7	0.2	2.9	0.2	2.9	0.1	2.8	70	1.45	2.7	4.15
8	108	2.7	0	2.7	0	2.7	0	2.7	75	1.45	2.7	4.15
9	108	2.8	0	2.8	0	2.8	0	2.8	80	1.45	2.8	4.25
10	108	2.9	0	2.9	0	2.9	0	2.9	85	1.45	2.9	4.35
11	108	3.0	0	3.0	0	3.0	0	3.0	85	1.45	3.0	4.45
12	108	3.0	0	3.0	0	3.0	0	3.0	85	1.45	3.0	4.45
13	108	3.0	0	3.0	0	3.0	0	3.0	85	1.45	3.0	4.45
14	108	3.0	0	3.0	0	3.0	0	3.0	85	1.45	3.0	4.45
15	108	3.0	0	3.0	0	3.0	0	3.0	85	1.45	3.0	4.45
16	108	3.0	0	3.0	0	3.0	0	3.0	85	1.45	3.0	4.45
17	108	3.0	0	3.0	0	3.0	0	3.0	85	1.45	3.0	4.45
18	108	3.0	0	3.0	0	3.0	0	3.0	85	1.45	3.0	4.45
19	108	3.0	0	3.0	0	3.0	0	3.0	85	1.45	3.0	4.45
20	108	3.0	0	3.0	0	3.0	0	3.0	85	1.45	3.0	4.45
TOTAL	2071	52.2	16.2	68.4	18.7	70.9	16.8	69.0	1475	29.00	52.2	81.20
Average Cost/Graduate:				.033		.034		.033				.055

160

TABLE H-8
IBB SECONDARY AGRICULTURAL INSTITUTE SUBPROJECT
AID Dollar Budget (Summary)

YEAR	--1--	--2--	--3--	--4--	--5--	--6--	--7--	
	PROJECT YEAR (12 months) AUGUST 1 TO JULY 31							
	85-86	86-87	87-88	88-89	89-90	90-91	91-92	TOTAL
I. SALARIES, WAGES, FRINGE	598616	555993	427260	419022	279398	185424	7149	2472762
II. INDIRECT COSTS	244501	222669	190292	170153	120677	71252	1692	1021236
III. ALLOWANCES	65404	44392	32355	47655	43655	25355	-0-	258816
IV. TRAVEL, PER DIEM, TRANSP.	385386	321210	310801	195196	125003	61079	-0-	1398675
V. EXPEND. EQUIP. & MATERIALS	133000	133000	133000	103000	93000	39000	-0-	634000
VI. NON-EXPEND. EQUIP. & MATERIALS	541000	419200	365400	184800	126400	46200	-0-	1683000
VII. OTHER DIRECT COSTS	10000	10000	10000	10000	10000	-0-	-0-	50000
VIII. SUBTOTAL (DIRECT & INDIRECT)	1977907	1706464	1469108	1129826	798133	428310	8741	7578489
IX. CONTINGENCY (5.0%)	98895	85323	73455	56491	39907	21416	437	375924
SUBTOTAL	2076802	1791787	1542563	1186317	838040	449726	9179	7894413
X. PARTICIPANT TRAINING	173800	479800	724600	541000	275800	153400	-0-	2348400
SUBTOTAL	2250602	2271587	2267163	1727317	1113840	603126	9178	10242813
XI. INFLATION (8.0% cmpd.)	180048	377992	588809	621834	522756	353959	6551	2651949
TOTAL AID FX BUDGET	2430650	2649579	2855972	2349151	1636596	957085	15729	12894762

TABLE H-9
IBB SECONDARY AGRICULTURAL INSTITUTE SUBPROJECT
AID Dollar Budget (in 1985 $)

YEAR			--1--	--2--	--3--	--4--	--5--	--6--	--7--	
BUDGET ITEM	Unit Cost		85-86	86-87	87-88	88-89	89-90	90-91	91-92	TOTAL
I. SALARIES, WAGES, FRINGE										
A. On-Campus/Home Office										
1. Campus Coordinator	56500	p/y	0.5	0.5	0.5	0.5	0.32	0.25	0.04	2.61
		$	28250	28250	28250	28250	18080	14125	2260	147465
2. Admin. Assistant	21187	p/y	0.8	0.8	0.8	0.8	0.46	0.35	0.06	4.07
		$	16950	16950	16950	16950	9746	7415	1271	86232
3. Secretary	12667	p/y	1	1	1	1	1	1	0.17	6.17
		$	12667	12667	12667	12667	12667	12667	2153	78155
4. Bookkeeper	13213	p/y	1	1	1	1	1	1	0	6
		$	13213	13213	13213	13213	13213	13213	0	79278
5. At-Large Prof. Staff	3500	p/m	4	4	4	4	4	4	0	24
		$	14000	14000	14000	14000	14000	14000	0	84000
TOTAL HOME OFFICE		$	85080	85080	85080	85080	67706	61420	5684	475130
B. TDY Svcs from Home Office										
1. CIP Director or CC	180	day	20	20	20	20	20	20	0	120
		$	3600	3600	3600	3600	3600	3600	0	21600
2. Subj. Matter Specialists	180	day	210	210	210	158	75	0	0	863
		$	37800	37800	37800	28440	13500	0	0	155340
3. Evaluation & Study Teams	180	day	30	30	150	150	0	0	0	360
		$	5400	5400	27000	27000	0	0	0	64800
TOTAL TDY SALARIES		$	46800	46800	68400	59040	17100	3600	0	241740
TOTAL HOME OFC. SAL. & WAGES		$	131880	131880	153480	144120	84806	65020	5684	716870

152

TABLE H-9, Continued
IBB SECONDARY AGRICULTURAL INSTITUTE SUBPROJECT
AID Dollar Budget (in 1985 $)

YEAR			--1--	--2--	--3--	--4--	--5--	--6--	--7--	
BUDGET ITEM	Unit Cost		85-86	86-87	87-88	88-89	89-90	90-91	91-92	TOTAL
C. Off Campus/ISAI										
1. US Hire										
a. Team Leader	51600	p/y	1	1	1	1	1	1	0	6
		$	51600	51600	51600	51600	51600	51600	0	309600
b. Farm Manager	32915	p/y	1	1	1	1	1	1	0	6
		$	32915	32915	32915	32915	32915	32915	0	197490
c. Outrch Prog. Coord.	30000	p/y	1	0.75	-	0	0	0	0	1.75
		$	30000	22500	0	0	0	0	0	52500
TOTAL OFF CAMPUS/ISAI/US		$	114515	107015	84515	84515	84515	84515	0	559590
2. TCP										
a. Horticulture	52548	p/y	1	1	1	0.5	0	0	0	3.5
		$	52548	52548	52548	26274	0	0	0	183918
b. Extension Educ.	53169	p/y	1	1	0	0	0	0	0	2
		$	53169	53169	0	0	0	0	0	106338
c. Food/Dairy Proc.	53169	p/y	1	1	1	0.5	0	0	0	3.5
		$	53169	53169	53169	26585	0	0	0	186092
d. Animal Science	45660	p/y	1	0.58	0	0	0	0	0	1.58
		$	45660	26483	0	0	0	0	0	72143
TOTAL OFF CAMPUS/ISAI/TCP		$	204546	185369	105717	52859	0	0	0	548491
TOTAL OFF CAMPUS ISAI		$	319061	292384	190232	137374	84515	84515	0	1108081
D. Off Campus/SSAI/US										
1. ESL Instructor	30164	p/y	1	0.75	0	0	0	0	0	1.75
		$	30164	22623	0	0	0	0	0	52787
2. Agr. Education Spec.	56000	p/y	0	0	0	1	1	0	0	2
		$	0	0	0	56000	56000	0	0	112000
TOTAL OFF CAMPUS/SSAI/US		$	30164	22623	0	56000	56000	0	0	164787
TOTAL OFF CAMPUS/US		$	144679	129638	84515	140515	140515	84515	0	724377
TOTAL OFF CAMPUS/TCP		$	204546	185369	105717	52859	0	0	0	548491

TABLE H-9, Continued

IBB SECONDARY AGRICULTURAL INSTITUTE SUBPROJECT

AID Dollar Budget (in 1985 $)

YEAR			--1--	--2--	--3--	--4--	--5--	--6--	--7--	
BUDGET ITEM	Unit Cost		85-86	86-87	87-88	88-89	89-90	90-91	91-92	TOTAL
E. Fringe Benefits										
1. On Campus (24.0%)		$	31651	31651	36835	34589	20353	15605	1364	172048
2. Off Campus/US (24.0%)		$	34723	31113	20284	33724	33724	20284	0	173852
3. Off Campus/TCP (25.0%)		$	51137	46342	26429	13215	0	0	0	137123
TOTAL FRINGE BENEFITS		$	117511	109106	83548	81528	54077	35889	1364	483023
TOTAL SALARIES, WAGES & FRINGE		$	598616	555993	427260	419022	279398	185424	7049	2472762
II. INDIRECT COSTS (note 1)										
A. On & Off Campus (24.0%)		$	244501	222669	190292	170153	120677	71252	1692	1021236
TOTAL INDIRECT COSTS		$	244501	222669	190292	170153	120677	71252	1692	1021236
III. ALLOWANCES										
A. Post Differential (25.0%)										
(for off campus US)		$	36170	32410	21129	35129	35129	21129	0	181096
B. Sunday Pay (5.0%)										
(for off campus US)		$	7234	6482	4226	7026	7026	4226	0	36220
C. Move In/TCP	4000	fam	1	0	0	0	0	0	0	1
		$	4000	0	0	0	0	0	0	4000
D. Move Out/TCP	4000	fam	3	1	1	1	0	0	0	6
		$	12000	4000	4000	4000	0	0	0	24000
E. Storage, US & TCP	1500	fam	4	1	2	1	1	0	0	9
		$	6000	1500	3000	1500	1500	0	0	13500
TOTAL ALLOWANCES		$	65404	44392	32355	47655	43655	25355	0	259816

164

TABLE H-9, Continued

IBB SECONDARY AGRICULTURAL INSTITUTE SUBPROJECT

AID Dollar Budget (in 1985 $)

YEAR			--1--	--2--	--3--	--4--	--5--	--6--	--7--	
BUDGET ITEM	Unit Cost		85-86	86-87	87-88	88-89	89-90	90-91	91-92	TOTAL
IV. TRAVEL AND TRANSPORTATION										
A. Per Diem										
1. Domestic										
a. Subproject Director	80	day	30	30	30	30	30	30	0	180
		$	2400	2400	2400	2400	2400	2400	0	14400
b. CIP Director	80	day	20	20	20	20	20	20	0	120
		$	1600	1600	1600	1600	1600	1600	0	9600
c. Admin. Assistant	80	day	15	0	15	0	15	15	0	60
		$	1200	0	1200	0	1200	1200	0	4800
d. Eval. & Study Team	80	day	5	5	25	25	0	0	0	60
		$	400	400	2000	2000	0	0	0	4800
TOTAL DOMESTIC PER DIEM		$	5600	4400	7200	6000	5200	5200	0	33600
2. International										
a. Suproject Director		day	30	30	30	30	30	30	0	180
b. CIP Director		day	30	30	30	30	30	30	0	180
c. Admin. Assistant		day	15	0	15	0	15	15	0	60
d. Subject Matter Spec.		day	210	210	210	158	75	210	0	1073
e. Eval. & Study Team		day	30	30	150	150	0	0	0	360
f. TOTAL DAYS		day	315	300	435	368	150	285	0	1853
g. Days @ High Rate	91	day	100	100	120	80	80	120	0	600
		$	9100	9100	10920	7280	7280	10920	0	54600
h. Days @ Low Rate	45.75	day	215	200	315	288	70	165	0	1253
		$	9836	9150	14411	13176	3203	7549	0	57325
TOTAL INTERNATIONAL PER DIEM		$	18936	18150	25331	20456	10483	18469	0	111925
TOTAL PER DIEM		$	24536	22550	32531	26456	15683	23669	0	145425

165

TABLE H-9, Continued

IBB SECONDARY AGRICULTURAL INSTITUTE SUBPROJECT

AID Dollar Budget (in 1985 $)

YEAR			--1--	--2--	--3--	--4--	--5--	--6--	--7--	
BUDGET ITEM	Unit Cost		85-86	86-87	87-88	88-89	89-90	90-91	91-92	TOTAL
B. Travel										
1. Domestic										
a. Subproject Director	500	trip	4	4	4	4	4	4	0	24
		$	2000	2000	2000	2000	2000	2000	0	12000
b. CIP Director	500	trip	2	2	2	2	2	0	0	10
		$	1000	1000	1000	1000	1000	0	0	5000
c. Admin. Assistant	500	trip	2	0	2	0	2	2	0	8
		$	1000	0	1000	0	1000	1000	0	4000
d. At-Large Prof. Staff	500	trip	2	2	2	2	2	0	0	10
		$	1000	1000	1000	1000	1000	0	0	5000
e. Recruiting	500	trip	2	2	2	2	2	0	0	10
		$	1000	1000	1000	1000	1000	0	0	5000
f. Language Training	500	trip	2	2	2	2	2	0	0	10
		$	1000	1000	1000	1000	1000	0	0	5000
g. Eval. & Study Team	500	trip	1	1	5	5	0	0	0	12
		$	500	500	2500	2500	0	0	0	6000
TOTAL DOMESTIC TRAVEL		$	7500	8500	9500	8500	7000	3000	0	42000
2. International Travel										
a. Subproject Director	3000	trip	3	2	3	2	3	1	0	14
		$	9000	6000	9000	6000	9000	3000	0	42000
b. CIP Director	3000	trip	1	1	1	1	1	1	0	6
		$	3000	3000	3000	3000	3000	3000	0	18000
c. Admin. Assistant	3000	trip	1	0	1	0	1	1	0	4
		$	3000	0	3000	0	3000	3000	0	12000
d. Subj. Matter Spec.	3000	trip	7	7	7	3	2	0	0	26
		$	21000	21000	21000	9000	6000	0	0	78000
e. Eval. & Study Team	3000	trip	1	1	5	5	0	0	0	12
		$	3000	3000	15000	15000	0	0	0	36000
TOTAL INTERNATIONAL TRAVEL		$	39000	33000	51000	33000	21000	9000	0	186000
TOTAL TRAVEL		$	46500	39500	60500	41500	28000	12000	0	228000

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166

TABLE H-9, Continued

IBB SECONDARY AGRICULTURAL INSTITUTE SUBPROJECT

AID Dollar Budget (in 1985 $)

YEAR			--1--	--2--	--3--	--4--	--5--	--6--	--7--	
BUDGET ITEM	Unit Cost		85-86	86-87	87-88	88-89	89-90	90-91	91-92	TOTAL
C. Transportation & Freight										
1. Shipping (.55 non-exp)		$	297550	230560	200970	101640	69520	25410	0	925650
2. Air Freight		$	5000	5000	5000	2000	0	0	0	17000
3. Move In Allow., US	11800	fam	1	2	1	2	1	0	0	7
		$	11800	23600	11800	23600	11800	0	0	82600
TOTAL TRANSPORTATION & FREIGHT		$	314360	259160	217770	127240	81320	25410	0	1025250
TOTAL PER DIEM, TRAVEL, TRANSP.		$	385386	321210	310801	195196	125003	61079	0	1398675
V. EXPENDABLE EQUIPMENT & MATERIALS										
A. On Campus										
1. Communications		$	37500	37500	37500	30000	25000	20000	0	187500
2. Materials & Supplies		$	5000	5000	5000	5000	5000	5000	0	30000
3. Printing		$	3000	3000	3000	3000	3000	3000	0	18000
TOTAL ON-CAMPUS EXP. EQUIP. & MAT.		$	45500	45500	45500	38000	33000	28000	0	235500
B. Off Campus										
1. Vehicles & Equip. Parts		$	33000	33000	33000	33000	33000	0	0	165000
2. Office Supplies		$	24500	24500	24500	12000	12000	6000	0	103500
3. Teaching Materials		$	30000	30000	30000	20000	15000	5000	0	130000
TOTAL OFF-CAMPUS EXP. EQUIP. & MAT.		$	87500	87500	87500	65000	60000	11000	0	398500
TOTAL EXPENDABLE EQUIP. & MATERIALS		$	133000	133000	133000	103000	93000	39000	0	634000

BEST AVAILABLE COPY

TABLE H-9, Continued

IBB SECONDARY AGRICULTURAL INSTITUTE SUBPROJECT

AID Dollar Budget (in 1985 $)

YEAR		--1--	--2--	--3--	--4--	--5--	--6--	--7--	
BUDGET ITEM	Unit Cost	85-86	86-87	87-88	88-89	89-90	90-91	91-92	TOTAL
V. NON-EXPENDABLE EQUIPMENT & SUPPLIES									
A. On Campus	$	0	0	0	0	0	0	0	0
B. Off Campus									
1. Teaching Materials	$	50000	40000	30000	20000	10000	5000	0	155000
2. Library Resources	$	84000	67200	50400	33600	16800	8400	0	260400
3. Teaching Equipment	$	95000	76000	57000	38000	19000	9500	0	294500
4. Office Equipment	$	47000	37600	28200	18800	9400	4700	0	145700
5. Farming Equipment	$	248000	198400	148800	74400	37200	18600	0	725400
6. Vehicles	$	17000	0	51000	0	34000	0	0	102000
TOTAL NON-EXPENDABLE EQUIPMENT AND MATERIALS	$	541000	419200	365400	184800	126400	46200	0	1683000
VII. OTHER DIRECT COSTS									
A. Arabic Language Training	$	10000	10000	10000	10000	10000	0	0	50000
VIII. TOTAL DIRECT COSTS	$	1733406	1483795	1278816	959673	677456	357058	7049	6497253
SUBTOTAL (DIRECT COSTS + INDIRECT COSTS)	$	1977907	1706464	1469108	1129826	798133	428310	8741	7518489
IX. CONTIGENCY (5.0%)	$	98895	85323	73455	56491	39907	21416	437	375924

TABLE H-9, Continued

IBB SECONDARY AGRICULTURAL INSTITUTE SUBPROJECT

AID Dollar Budget (in 1985 $)

YEAR			--1--	--2--	--3--	--4--	--5--	--6--	--7--	
BUDGET ITEM	Unit Cost		85-86	86-87	87-88	88-89	89-90	90-91	91-92	TOTAL
X. PARTICIPANT TRAINING										
A. Long Term Teacher Training										
1. ISAI (7 MS + 5 BS)	20400	p/y	7	7	8	8	2	2	0	34
		$	142800	142800	163200	163200	40800	40800	0	693600
2. SSAI (9 MS + 6 BS)	20400	p/y	0	8	15	10	6	3	0	42
		$	0	163200	306000	204000	122400	61200	0	856800
3. SVS (6 MS + 3 BS)	20400	p/y	0	5	9	6	3	1	0	24
		$	0	102000	183600	122400	61200	20400	0	489600
4. MOE (3 MS)	20400	p/y	0	2	2	1	1	0	0	6
		$	0	40800	40800	20400	20400	0	0	122400
B. Non-Degree Training	3100	p.m	10	10	10	10	10	10	0	60 *
		$	31,000	31,000	31,000	31,000	31,000	31,000	0	186,000
TOTAL PARTICIPANT TRAINING		p/y	17	32	44	35	22	16	0	166
		$	173800	479600	724600	541000	275800	153400	0	2348400
SUBTOTAL (DIRECT COSTS + INDIRECT COSTS + CONTINGENCY + PARTICIPANT TRAINING		$	2250602	2271587	2267163	1727317	1113840	603126	9178	10242813
XI. INFLATION										
A. Inflation Rate & Factors (Rounded) - 0.08%			0.080	0.166	0.260	0.360	0.469	0.587	0.714	
B. Inflation Amount		$	180048	377992	588809	621834	522756	353959	6551	2651949
TOTAL AID FX BUDGET		$	2430650	2649579	2855972	2349151	1636596	957085	15729	12894762

TABLE H-10

IBB SECONDARY AGRICULTURAL INSTITUTE SUBPROJECT

AID Local Currency Budget (SUMMARY)

YEAR	--1--	--2--	--3--	--4--	--5--	--6--	--7--	
	PROJECT YEAR (12 months) AUGUST 1 TO JULY 31							
	85-86	86-87	87-88	88-89	89-90	90-91	91-92	TOTAL
I. SALARIES, WAGES, FRINGE	257535	254857	249162	186207	145257	103071	1446	1197535
II. OPERATIONS	119000	119000	119000	119000	119000	119000	39667	753667
III. TRAVEL, PER DIEM, TRANSP.	60060	60060	46160	35960	34160	30560	20530	287490
IV. TRAINING	20200	20200	20200	4000	4000	4000	2000	74600
V. EXPEND. EQUIP. & MATERIALS	67000	61500	54000	40000	27000	18000	7000	274500
VI. NON-EXPEND. EQUIP. & MATERIALS	60000	50000	40000	30000	20000	10000	3000	213000
VII. OTHER DIRECT COSTS	84880	58960	50320	33040	10000	10000	-0-	247200
VIII. TOTAL DIRECT COSTS	668675	624577	578842	448207	359417	294631	73643	3047992
IX. CONTINGENCY (5.0%)	33436	31229	28942	22410	12971	14732	3682	152400
SUBTOTAL	702109	655806	607784	470617	377388	309363	77325	3200392
X. INFLATION (8.0% cmpd.)	56169	109126	157849	169652	177119	181557	55196	906668
TOTAL AID LC BUDGET	758278	764932	765633	640269	554507	490920	132521	4107060

170

TABLE H-11
IBB SECONDARY AGRICULTURAL INSTITUTE SUBPROJECT
AID LOCAL CURRENCY BUDGET ($)

YEAR			--1--	--2--	--3--	--4--	--5--	--6--	--7--	
BUDGET ITEM	Unit Cost		85-86	86-87	87-88	88-89	89-90	90-91	91-92	TOTAL
I. SALARIES, WAGES, FRINGE										
A. US Personnel										
1. Library Specialist	28800	p/y	0.5	0.5	0.5	0	0	0	0	1.5
		$	14400	14400	14400	0	0	0	0	43200
2. Part-Time Help	70	day	60	60	60	60	60	60	0	360
			4200	4200	4200	4200	4200	4200	0	25200
TOTAL US SALARIES		$	18600	18600	18600	4200	4200	4200	0	68400
B. Yemen Personnel (ISAI Only)										
1. Secretary, Extension	13000	p/y	0.5	0.5	0.5	0	0	0	0	1.5
Program		$	6500	6500	6500	0	0	0	0	19500
2. Admin. Assistant	24200	p/y	1	1	1	1	1	1	0	6
		$	24200	24200	24200	24200	24200	24200	0	145200
3. Secretary	19452	p/y	1	1	1	1	1	1	0	6
		$	19452	19452	19452	19452	19452	19452	0	116712
4. Mechanic	18186	p/y	1	1	1	1	1	1	0	6
		$	18186	18186	18186	18186	18186	18186	0	109116
5. Drivers	16500	p/y	4	4	4	3	2	1	0	18
		$	66000	66000	66000	49500	33000	16500	0	297000
6. Laborers (Specialist)	10500	p/y	3	3	3	2	1	0	0	12
		$	31500	31500	31500	21000	10500	0	0	126000
7. Guards	7000	p/y	3	3	3	2	1	0	0	12
		$	21000	21000	21000	14000	7000	0	0	84000
8. Part-Time Help	20	day	250	200	150	100	50	0	0	750
		$	5000	4000	3000	2000	1000	0	0	15000
TOTAL YEMEN STAFF SALARIES		$	191838	190838	189838	148338	113338	78338	0	912528
TOTAL ALL SALARIES		$	210438	209438	208438	152538	117538	82538	0	980928

171

TABLE H-11, Continued

IBB SECONDARY AGRICULTURAL INSTITUTE SUBPROJECT

AID LOCAL CURRENCY BUDGET ($)

YEAR		--1--	--2--	--3--	--4--	--5--	--6--	--7--	
BUDGET ITEM	Unit Cost	85-86	86-87	87-88	88-89	89-90	90-91	91-92	TOTAL
C. Fringe Benefits									
1. Bonuses for Yemen Staff									
a. Severance Pay	$	16306	16221	16136	12609	9634	6659	0	77565
b. Ramadan Bonus	$	16306	16221	16136	12609	9634	6659	0	77565
2. COLA									
a. US Hire Sal. (FX Budget)	$	144843	129761	84515	84515	84515	72158	14457	614764
b. COLA (10.0%)	$	14484	12976	8452	8452	8452	7216	1446	61476
TOTAL FRINGE BENEFITS	$	47097	45419	40724	33669	27719	20533	1446	216606
TOTAL SALARIES, WAGES, FRINGE	$	257535	254857	249162	186207	145257	103071	1446	1197534
II. OPERATIONS (ISAI ONLY)									
A. Utilities for Trailers	$	20000	20000	20000	20000	20000	20000	6667	126667
B. Communications	$	14000	14000	14000	14000	14000	14000	4667	88667
C. Housing Maintenance	$	30000	30000	30000	30000	30000	30000	10000	190000
D. Operation of Vehicles	$	55000	55000	55000	55000	55000	55000	18333	348333
TOTAL OPERATIONS	$	119000	119000	119000	119000	119000	119000	39667	753667

172

TABLE H-11, Continued

IBB SECONDARY AGRICULTURAL INSTITUTE SUBPROJECT

AID LOCAL CURRENCY BUDGET ($)

YEAR			--1--	--2--	--3--	--4--	--5--	--6--	--7--	
BUDGET ITEM	Unit Cost		85-86	86-87	87-88	88-89	89-90	90-91	91-92	TOTAL
III. TRAVEL, PER DIEM, TRANSPORTATION										
A. Per Diem										
1. Domestic										
a. Team Leader	90	day	50	50	50	50	50	50	17	317
		$	4500	4500	4500	4500	4500	4500	1530	28530
b. TCPs/Teachers	90	day	50	50	40	30	20	0	0	190
		$	4500	4500	3600	2700	1800	0	0	17100
c. Farm Manager	90	day	12	12	12	12	12	12	0	72
		$	1080	1080	1080	1080	1080	1080	0	6480
d. Drivers	90	day	112	112	112	92	82	62	15	587
		$	10080	10080	10080	8280	7380	5580	1530	52110
TOTAL DOMESTIC PER DIEM		$	20160	20160	19260	16560	14760	11160	3060	104220
2. International										
Team Leader	90	day	10	10	10	10	10	10	3	63
		$	900	900	900	900	900	900	270	5670
TOTAL INTERNATIONAL PER DIEM		$	900	900	900	900	900	900	270	5670
TOTAL PER DIEM		$	21060	21060	21060	17460	15660	12060	3330	109890
B. Travel										
1. Domestic										
a. Team Leader	200	trips	5	5	5	5	5	5	2	32
		$	1000	1000	1000	1000	1000	1000	400	6400
TOTAL DOMESTIC TRAVEL		$	1000	1000	1000	1000	1000	1000	400	6400

173

TABLE H-11, Continued

IGB SECONDARY AGRICULTURAL INSTITUTE SUBPROJECT

AID LOCAL CURRENCY BUDGET ($)

YEAR			--1--	--2--	--3--	--4--	--5--	--6--	--7--	
BUDGET ITEM	Unit Cost		85-86	86-87	87-88	88-89	89-90	90-91	91-92	TOTAL
2. International										
a. Team Leader	2100	trips	1	1	1	1	1	1	0	6
		$	2100	2100	2100	2100	2100	2100	0	12600
b. R&R, US Personnel	2000	trips	8	8	4	4	4	4	1	33
		$	16000	16000	8000	8000	8000	8000	2000	66000
c. R&R, TCPs	500	trips	25	25	15	0	0	0	0	65
		$	12500	12500	7500	0	0	0	0	32500
TOTAL INTERNATIONAL TRAVEL		$	30600	30600	17600	10100	10100	10100	2000	111100
TOTAL TRAVEL		$	31600	31600	18600	11100	11100	11100	2400	117500
C. Transportation										
1. Move Out Allow., US	7400	fam	1	1	1	1	1	1	2	8
		$	7400	7400	7400	7400	7400	7400	14800	59200
TOTAL PER DIEM, TRAVEL, AND TRANSPORTATION		$	60060	60060	46160	35960	34160	30560	20530	287490
IV. TRAINING										
A. Training for MAF Extension & MOE Personnel	200	p/m	101	101	101	20	20	20	10	373
		$	20200	20200	20200	4000	4000	4000	2000	74600
TOTAL TRAINING		$	20200	20200	20200	4000	4000	4000	2000	74600

TABLE H-11, Continued

IBB SECONDARY AGRICULTURAL INSTITUTE SUBPROJECT

AID LOCAL CURRENCY BUDGET ($)

YEAR			--1--	--2--	--3--	--4--	--5--	--6--	--7--	
BUDGET ITEM	Unit Cost		85-86	86-87	87-88	88-89	89-90	90-91	91-92	TOTAL
V. EXPENDABLE EQUIPMENT & MATERIALS										
A. All Schools										
1. Mechanical Supplies		$	15000	14000	13000	11000	8000	5000	2000	68000
2. School & Office Supplies		$	25000	22500	20000	15000	10000	5000	2000	99500
3. Maintenance Supplies		$	17000	15000	12000	8000	4000	4000	2000	62000
4. Printing and Editing		$	5000	5000	5000	3000	3000	3000	0	24000
5. Films, Teaching Aids		$	5000	5000	4000	3000	2000	1000	1000	21000
TOTAL EXPENDABLE EQUIP. & MATER.		$	67000	61500	54000	40000	27000	18000	7000	274500
VI. NON-EXPENDABLE EQUIPMENT & MATERIALS										
A. All Schools		$	60000	50000	40000	30000	20000	10000	3000	213000
TOTAL NON-EXPEND. EQUIP. & MAT.		$	60000	50000	40000	30000	20000	10000	3000	213000
VII. OTHER DIRECT COSTS										
A. Arabic Language Training		$	10000	10000	10000	10000	10000	10000	0	60000
B. ESL Fees at YALI										
1. ISAI	480	p/m	24	30	12	12	0	0	0	78
		$	11520	14400	5760	5760	0	0	0	37440
2. SSAI	480	p/m	84	42	48	24	0	0	0	198
		$	40320	20160	23040	11520	0	0	0	95040
3. SVS	480	p/m	48	30	24	12	0	0	0	114
		$	23040	14400	11520	5760	0	0	0	54720
TOTAL ESL TRAINING		$	74880	48960	40320	23040	0	0	0	187200
TOTAL OTHER DIRECT COSTS		$	84880	58960	50320	33040	10000	10000	0	247200

175

TABLE H-11, Continued

IBB SECONDARY AGRICULTURAL INSTITUTE SUBPROJECT

AID LOCAL CURRENCY BUDGET ($)

YEAR			--1--	--2--	--3--	--4--	--5--	--6--	--7--	
BUDGET ITEM	Unit Cost		85-86	86-87	87-88	88-89	89-90	90-91	91-92	TOTAL
VIII. TOTAL DIRECT COSTS		$	668675	624577	578842	448207	359417	294631	73643	3047992
IX. CONTINGENCY	0.05	$	33436	31229	28942	22410	17971	14732	3682	152400
SUBTOTAL		$	702109	655806	607784	470617	377388	309363	77325	3200392
X. COST INFLATION										
A. Inflation Rate & Factors										
(Rounded) 0.08		F	0.080	0.166	0.260	0.360	0.469	0.587	0.714	
B. Inflation Amount		$	56169	109106	157849	169652	177119	181557	55196	906668
TOTAL AID LOCAL CURRENCY BUDGET		$	758278	764932	765633	640269	554507	490920	132521	4107060

176

ANNEX I

Initial Environmental Evaluation and Determination

ENVIRONMENTAL CONSIDERATIONS

The ISAI Subproject is directed primarily toward providing technical assistance, training, and commodity support to the secondary agricultural education system, with focus on relevant staff and organizations in the Ministry of Education; continuing support and assistance to the Ibb Secondary Agricultural Institute, the Surdud Secondary Agricultural Institute, and the Sanaa Veterinary School.

These schools are already well established in terms of their physical facilities, and the Subproject extension does not contemplate any new construction at any site. Each of the schools have demonstration farms which are used for instructional purposes, where students are provided the opportunity to gain practical farm experience on small plots. The demonstration farms are already well established and are integral elements of the established curriculum.

Except possibly for some internal modification of field arrangements to better illustrate soil and water conservation practices or to optimize use of land, and the addition of a small amount of land at the ISAI (about six to eight hectares), no major reorganization of the farms is planned, and no significant effects on the environment, either internally within the farm boundaries or external to the school facilities, are anticipated.

The approved curriculum at the SAIs includes training in plant protection methods. Demonstration and use of pesticides in the operation and management of the school farm and on student plots is the only curriculum activity with direct environmental concerns. Instructors responsible for those elements of the curriculum will receive training in pesticide use. (One returned participant trained under the ISAI Subproject already has special skills in this area.) Participant trainees who will have teaching responsibilities in plant protection and the three counterparts for the Yemeni farm manager positions will likewise be provided with appropriate training as part of their US degree programs. This will have a positive effect in that students at the SAIs will receive awareness training in pesticide use through the approved curriculum.

No Environmental Protection Agency (EPA) banned pesticide will be used at these institutes or recommended for use outside of the institutes during the life of the Subproject. When EPA-approved pesticides are used at the institutes, they will be in accordance with EPA and USDA guidelines. The use of these approved insecticides will be for the purpose of demonstrating proper management, for improving livestock forage protection, and for training personnel and students in effective and safe use of pesticides.

Thus, it is concluded that there will be no significant environmental effects which warrant further analysis or study. A negative environmental threshold determination is recommended.

The above recommendation has been discussed with the USAID Mission Environmental Officer, Mr. Robert Rose, who has assisted in arriving at the conclusions noted above, and has concurred in the recommendations.

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178

ANNEX J

Study on Involvement of Women in SAE Activities

Index to Annex J

		Page
	Preface	J-1
I.	Training Women in Agricultural Extension	J-2
	A. The Need for Training in Agriculture	J-2
	B. Previous ISAI Activities in Women's Extension Programs	J-2
	C. Possibilities for Expansion of Outreach Programs	J-3
	D. Possibilities for Expansion of Outreach Programs to Women Outside the Ibb-Taiz Region	J-5
	E. Utilizing Yemeni Expertise in Extension Training	J-5
II.	Secondary Agriculture Education for Women	J-5
	A. Possibilities of Establishing a Women's Secondary Agricultural Institute	J-5
	B. Adding a Women's Section to the ISAI or Another One of the SAIs	J-7
	C. Adding Agricultural Subjects to the Curriculum of Existing Women's Secondary Schools	J-8
	D. Extra-Curricular Activities in Existing Women's Secondary Schools	J-8
III.	References Cited	J-9

PREFACE

The need for educating women in agriculture is widely recognized in Yemen. Rural Yemenis, agricultural engineers, technicians, and extension agents are well aware of the important roles played by rural Yemeni women in agricultural and livestock care. 1/ At the same time, co-education at the secondary level is not permitted in the Yemen Arab Republic, thus placing limitations on secondary agriculture education for women in the country.

It is not currently possible to admit women to the Ibb Secondary Agriculture Institute (ISAI) as full-time students. This situation will not change unless national policy on co-education changes or the institutional structure of the ISAI is transformed. Nevertheless, there are many ways in which the ISAI can promote and participate in women's agriculture education -- ways that are both culturally acceptable and acceptable to policy makers in Sanaa.

These methods include using the ISAI facilities to train women agricultural extension agents, adding agricultural subjects to the curriculum and after school activities of existing women's secondary schools, adding a women's section to one of the secondary agriculture institutes, helping to establish a secondary agriculture institute for women, and cooperating with the National Institute of Public Administration in offering post-secondary courses in agricultural fields.

1/ It is estimated that women provide over 70% of the agricultural labor force in rural villages. For documentation of women's agricultural tasks, see Adra (1983), Myntti (1978, 1979), Tutwiler and Carapico (1981), and YAR Ministry of Agriculture and Fisheries (1981, 1984).

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I. TRAINING WOMEN IN AGRICULTURAL EXTENSION

A. The Need for Training in Agriculture

The training of women agriculture extension agents was listed as a priority in the recommendations of the meeting on agricultural extension held in Taiz, March 31-April 2, 1984. Because of its facilities and location, the ISAI is the ideal training center for women in agricultural extension. On several occasions the Southern Uplands Rural Development Project (SURDP) has requested short courses for their women extension agents, and they (as well as other projects) have sought the consulting services of ISAI professors to help in their women's programs. While the need for agricultural training for women extension agents is recognized, the various extension programs in Yemen do not have the facilities to fill this need by themselves.

In their short but active history, women's extension programs in Yemen have focused on literacy and home economics, including health, nutrition, infant feeding, and needlecrafts. On the whole, trainers have been home economists with little or no formal training in agriculture. While they have attempted to introduce agriculture into training programs, they have relied on summarizing the content of agricultural texts, or they have asked others to provide them with short tracts on agricultural topics. This information was then given to extension agents to read and transmit to rural women. This method has not been very effective, especially since most Yemeni home economics extension agents come from urban backgrounds with little personal experience in agriculture. Although there are significant exceptions to the pattern described above, 2/ it is clear that the ISAI has an important potential role to play.

In recognition of the need for qualified trainers of agricultural extension in women's programs, SURDP has asked the ISAI to oversee the agricultural training of their women extension agents. The Tihama Development Authority has appointed a woman agricultural engineer as well as a home economist to train women extension agents in Zabid; both trainers arrived in April 1984.

B. Previous ISAI Activities in Women's Extension Programs

The ISAI has been involved in women's extension ever since the program began. ISAI instructors helped to plan the first induction training course for women extension agents (a three-month course); and an ISAI instructor (Dr. Khairy Abo Saud) taught a class on extension methods to women extension agents. Since 1982, the ISAI has sponsored several short courses to home economics extension

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2/ Exceptions include: the women's extension program at RIRDP, where poultry, goat breeding, and home gardening projects have been set up in consultation with agricultural experts at the project; beekeeping and poultry programs for women that have been introduced in SURDP with the help of the ISAI; and the participation of a woman extension trainer from RIRDP in a short course on poultry offered at the ISAI.

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182

agents, through the efforts of Dr. Khairy Abo Saud. These included courses in beekeeping, poultry (on the use of an incubator), and food technology. Consulting services of several ISAI professors have been requested by the director of the home economics program at SURDP - Taiz, and by the director of the women's extension program at RIRDP. In 1982, the ISAI sponsored short-term training in beekeeping in the US for two women extension trainers. This project was arranged by Ms. Texas Swanjord, who accompanied the Yemeni trainees to the US.

Two short courses were scheduled for home economics extension workers of SURDP - Ibb and Taiz in summer 1984. The first of these was in horticulture and the second in poultry. Although these efforts are to be commended, ISAI outreach to women's extension should be expanded and formalized.

C. Possibilities for Expansion of Outreach Programs

ISAI outreach to women's extension can and should be expanded into a comprehensive program for training women agricultural extension agents. A full-time coordinator for this program should be appointed (See Coleman 1983 for a similar recommendation). Such a program is necessary to establish ISAI outreach to women and to ensure long-term impact of ISAI programs on women agriculturalists.

Trainees would be recruited from home economics extension programs and wives of agricultural extension agents. Women who are not now involved in extension may also enroll.

An expanded outreach program should:

1. Continue cooperation with established SURDP training programs. ISAI training should complement that offered by SURDP trainers.

2. Include Summer Courses

ISAI facilities are underutilized in the summer months when male students are on holiday. It would be possible to hold courses at the ISAI for women extension agents at this time. For example, two intensive three-week courses could be held in July and August. Subjects taught could include kitchen gardening, poultry, livestock care, silage-concept and advantages, beekeeping, maintenance of field crops (e.g., diagnosing and treating crop diseases, use of fertilizer, weeding, harvesting), and the use of tubewells and appropriate irrigation techniques, among others. These courses would be targeted at the eight women extension agents in Ibb, and opened to extension agents in Taiz who wish to enroll.

The following requirements would have to be met:

a. An official request for the course(s) from SURDP.

b. Availability of ISAI instructors to teach the courses. Expatriate instructors are committed to some teaching in

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the summer. Provision would have to be made to pay Yemeni instructors for summer teaching, since their contracts specify that they will have a holiday from the close of one academic year to the beginning of the next one.

c. Availability of the farm manager and the institute director.

d. Availability of a woman chaperone for the students.

e. Availability of agricultural plots for student use.

f. One of the local restaurants would need to be contracted to provide lunch for the students, or the school cafeteria could be used.

g. Dormitory space would not be needed, since it is highly unlikely that women extension agents would be permitted by their families to stay overnight at the ISAI. Transportation to and from the school could probably be provided by SURDP.

3. Reaching Rural Women Farmers

The major problem in training women extension agents is that cultural constraints do not permit them to work in areas that would require them to relocate. They are expected to work within daily commuting distance from their homes. Since most extant women extension agents are urban women, the issue of how to reach rural women farmers remains unresolved. Until a significant number of rural women are trained in extension, extension workers should be trained to locate and train women local leaders in livestock care and specified agricultural techniques. These leaders should be women in their 30's and 40's who have practical experience in agriculture and livestock care, have respect and credibility in their communities, and are relatively free of time constraints because their adult daughters or son's wives have taken over the most demanding agricultural and household tasks. These are the women who can benefit most from agricultural extension services and who are most likely to be emulated by other farmers. The need for training such local leaders was expressed repeatedly be officials of Yemen's extension network.

4. Sensitize Male ISAI Students to the Information Needs of Rural Women Farmers 3/

This can be done through a lecture or seminar on women's roles in agriculture, their problems, and ways to solve them. Alternately, a unit on women in agriculture could be incorporated into the extension curriculum.

3/ See Social Analysis (Annex D) for information on access of male extension agents to women farmers.

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Students who grew up on farms may already have access to this information. In contrast, students who grew up in towns (even small rural towns) are less likely to be aware of the extent of women's agricultural work because townswomen in Yemen do not normally participate in agricultural activity.

D. Possibilities for Expansion of Outreach Program to Women Outside the Ibb-Taiz Region

1. The training of women in agricultural extension at the ISAI can serve as a model for the establishment of similar programs attached to other SAIs.

2. Women can be included in the 8-month extension course for vaccinators that is now offered to men by the British Veterinary Services Project. Women vaccinators are likely to reach many more livestock than men because they can have access to homes where animals are kept.

E. Utilizing Yemeni Expertise in Extension Training

Five Yemeni women are currently studying agriculture at the BS level in the Arab Republic of Egypt. On their return, these women would ideally be recruited to train women extension agents in agriculture.

II. SECONDARY AGRICULTURE EDUCATION FOR WOMEN

Secondary agriculture education for women is feasible if conducted separately from that of men. This could be done through establishing separate institutions for women, separate sections for women at the ISAI or other secondary agriculture institutes (SAIs) and/or by instituting agricultural programs in existing women's secondary schools. The teaching of women by male faculty would need to be negotiated with the MOE, and the presence of a woman chaperone in class is recommended. The MOE is apparently willing to establish a women's section in agriculture education if it can be shown that at least ten students will enroll.

A. Possibilities of Establishing a Women's Secondary Agriculture Institute

1. An independent women's agriculture institute with its own campus and facilities could be established.

The need for a women's secondary agriculture institute is voiced most strongly by the heads of women's extension in Taiz and Rada' and by the male extension agents who do not have access to women. Both heads of sections know of women who would be willing to be trained in agriculture, and each would like to see an agriculture institute established in the nearest city to her project (i.e., Taiz for SURDP and Sanaa for RIRDP).

A women's secondary agriculture institute could be established on the model of the ISAI. The curriculum and text

developed for the ISAI would be used. The need for such a school has been expressed by several extension trainers. They recognize the important roles played by rural women in agriculture and the difficulty of access to women by male extension workers in many parts of the country; consequently they would like to see a training facility for women agricultural extension agents similar to that of the ISAI.

Officials at the MAF recommend that a women's SAI be established in a rural area. Apparently it is difficult to provide quality specialized secondary education in villages. However, it may be possible to establish a women's SAI in a smaller town that is more accessible to the rural population (e.g., Hajja).

Such a school may have more support in ministerial circles if it focuses on rural development and combines home economics with an agricultural program. The school might offer home economics and agriculture as separate areas of specialization. (General Secondary Education in Yemen offers two curricula -- one in science and the other in the arts.)

One problem encountered by existing vocational schools for women is high attrition during peak agricultural periods when women's labor is required at home. Special permissions would need to be sought from the MOE to schedule the school year around such peak periods. Another problem is the attrition of women after marriage. This problem has been alleviated in one home economics extension program (SURDP-Ibb) by requiring trainees to sign a contract for a two-year commitment. If a trainee withdraws from this program before the maturation of her contract she must pay a fine.

It was suggested by MAF officials that child care facilities be provided to women agricultural extension agents and technicians. Such provisions are likely to encourage recruitment among married women.

2. Utilizing the Facilities of Other Institutes

In order to ensure that there is a demand for women's SAI, small scale pilot programs can be established before plans are made to build a separate facility.

The Institute of Public Administration (IPA) in Taiz 4/ has offered to make its facilities available to ISAI to train women in agriculture. IPA's classes are held in the afternoons and evenings after working hours, leaving classrooms free during the day. IPA faculty could assist in the teaching of courses related to administration, management, and agricultural economics. If land for agricultural plots, storage, etc. can be procured nearby, this would be a viable potential site to establish a pilot school. As the demand for such an institute increases and the need for it is recognized, plans can be made to build a separate facility for women.

4/ The IPA has previously cooperated with the ISAI in offering a short course in the administration of development projects and institutes. NIPA officials have expressed interest in cooperating with projects that can be shown to have a positive impact on Yemen's development.

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3. A Women's Agricultural Institute Attached to an Existing Women's Secondary School

Alternately, a women's agricultural institute could be attached to an existing women's secondary school, provided there is sufficient space nearby to establish agricultural plots, store farm machinery, build labs, etc. The advantage of this option would be that the agricultural institute could use classroom space and other facilities of the school. It may also be easier for women to enroll at an agricultural institute that is perceived to be part of an established women's secondary school.

B. Adding a Women's Section to the ISAI or Another One of the Secondary Agricultural Institutes

This suggestion was made by several persons interviewed. Women would attend separate classes from men, possibly in alternate shifts. A women's program could be established at the ISAI on an experimental basis. If successful, it would serve as a model for the establishment of similar programs at Surdud Secondary Agriculture Institute or at the Sanaa Veterinary School.

Minimum requirements of such a project would be:

1. The building of separate facilities for women students, including a separate cafeteria or lounge. Although there may be a demand for women's dormitories in the future, it is not likely that women will be sent to secondary school as boarders in the next few years.

2. The establishing of agricultural plots for women, located at a distance from men's plots.

3. Provision for use of laboratory space in shifts.

4. Increasing the staff of the ISAI or the agriculture institute in question.

The objection was raised that separating men and women students in this way would be counterproductive because such separation would help to develop an unhealthy attraction between men and women students and cultivate the idea that members of the opposite sex are dangerous. This consideration needs to be weighed against the feasibility of alternative means of educating women in agriculture at the secondary level.

C. Adding Agricultural Subjects to the Curriculum of Existing Women's Secondary Schools

In addition (or as an alternative) to establishing separate facilities to educate women in agriculture, ISAI faculty can teach courses in applied agriculture to students enrolled in the science program at the Arwa School, the women's secondary school in Ibb. 5/

5/ The science curriculum currently includes botany, zoology, and math.

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The presence of male teachers at women's secondary schools may or may not be problematic in Yemen. The provision for a chaperone to remain in the classroom during classes taught by men will help to avoid potential objections.

Any change in the curriculum requires the previous approval of the MOE, and the MOE has not in the past been willing to approve curriculum changes that affect only a few schools in the system. An alternative project would be for ISAI faculty to cooperate with the MOE to design and add an applied agriculture component to the science curriculum of all secondary schools in the YAR. This agriculture component would emphasize hands on application of the contents of science classes. Where small plots of agricultural land are available near the schools, they can be cultivated by students. Where such plots are not available, planting boxes can be brought into the classroom for student use.

The need for such an addition to the curriculum is felt strongly by officials interviewed, not only for girls' secondary schools, but for all secondary schools in Yemen. Some persons interviewed suggested that applied agriculture become part of the curriculum from the first year of elementary school. It is felt that this is the only way to develop a public understanding of, and an appreciation for, agriculture in Yemen.

Currently some agricultural topics are taught in the schools, but these are judged insufficient by those interviewed. Moreover, students are not taught to make the connection between the content of their science courses and agricultural practices.

Such curriculum changes would need to be initiated by the MOE. ISAI staff could present this idea to Ministry officials and help in the planning and design of agriculture curricula.

D. Extra-curricular Activities in Existing Women's Secondary Schools

The ISAI can help establish agricultural clubs that women students can attend voluntarily after school hours. ISAI staff members can help to train secondary school teachers to supervise these clubs, and they can be available for consulting on particular issues.

These clubs could be established on the initiative of school staff and do notneed previous approval by the MOE, thus making more immediate applicability feasible.

The Arwa School in Ibb can be targeted for a pilot project. It is likely that other agricultural projects in Yemen will follow by establishing similar activities in the schools of their communities. (RIRDP has already expressed the desire to do this). Again, this will not only increase the impact of SAE on women, but it will help to raise popular awareness to the challenges involved in agricultural activity and the importance of agriculture to Yemen's development.

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ANNEX K

Survey of Appropriateness of ISAI Training

INDEX TO ANNEX K

		Page
	Preface	K-1
I.	Overall Approval of ISAI	K-2
II.	Major Problems with ISAI Training	K-2
	A. Graduates are Unable to Apply Their Theoretical Knowledge to Solving the Problems of Local Farmers	K-2
	B. Graduates Wish to Continue Their Education and are not Content with Extension Work	K-7
	C. Graduates All Want to be Supervisors	K-8
III.	Other Criticisms	K-8
	A. Poor Preparation in English and Mathematics	K-8
	B. Poor Dormitory and Cafeteria Conditions	K-8
IV.	Reasons for Absenteeism	K-8
V.	Encouraging Recruitment in Secondary Agriculture Education	K-9
	A. Encouraging Recruitment in SAE in General	K-9
	B. Specific Constraints Associated with the SSAI and the SVS	K-10
VI.	Criticisms Related to the Training of Counterparts	K-10
	A. English Proficiency	K-10
	B. Access to Agricultural Machinery	K-11
VII.	Refresher Courses and Feedback	K-11
VIII.	New Initiatives	K-11
	A. Introduce Practical Agriculture into Elementary and Preparatory School Curriculum	K-11
	B. Establish a Post-Secondary Agriculture Training Program	K-11
IX.	Bibliography	K-13

PREFACE

This report is the first of three documents prepared for the use of the extension design team for the Ibb Secondary Agriculture Institute (ISAI) Subproject.

It contains the results of a survey to determine the appropriateness of training at ISAI for graduates' employment, suggestions of ways to encourage recruitment for secondary agriculture education (SAE), a discussion of criticisms related to the training of counterparts at ISAI, suggestions for establishing feedback mechanisms from ISAI graduates and students, and potential new initiatives in agriculture education.

The second report is a list of ISAI graduates with their current place of employment. The third report explores ways to further the involvement of women in SAE.

192

I. OVERALL APPROVAL OF THE ISAI

On the whole, the Ibb Secondary Agriculture Institute (ISAI) must be considered a successful project. All of those interviewed perceived the ISAI to be ultimately beneficial to the agricultural development of the country, and they wished to see its contract renewed.

Many employers of ISAI graduates are pleased with the training of their employees. They say that ISAI graduates are better prepared for their work than extension agents who have gone through the shorter 9 or 11 month extension training program, that they are good technicians, hard working and eager to learn.

Most of ISAI's faculty were praised by both graduates and students for being personable and always available to answer students' questions. This is clearly an important element in any school situation and speaks well for the expatriate and local staff. Furthermore, the ISAI participates directly in agricultural development through its outreach program. This program includes training courses for extension agents employed in agricultural development projects, consulting services to these projects, demonstration plots and field days for neighboring farmers. In addition, a beekeeping rehabilitation project in the Dhamar earthquake area is nearing completion. These points should be kept in mind in reading the remainder of the report which focuses on problem areas.

II. MAJOR PROBLEMS WITH ISAI TRAINING

Three major complaints are heard repeatedly by employers of ISAI graduates: 1) that ISAI training does not sufficiently emphasize the application of theory, 2) that graduates wish to continue their education rather than remain extension agents as they were trained to be, and 3) that ISAI graduates wish to fill supervisory positions immediately after graduation rather than work with other extension agents. These issues will be discussed in turn.

A. Graduates are Unable to Apply Their Theoretical Knowledge to Solving The Problems of Local Farmers

1. The Problem

This complaint was voiced by virtually every person interviewed. While graduates and current ISAI students complain that they do not understand the relevance of much of their course material, graduates and their employers refer to the apparent inability of graduates to apply their theoretical knowledge to field situations. The consensus is that ISAI graduates perform well as technicians, but not so well in situations where general problem-solving capabilities are required. Given the goals of the ISAI, this issue needs to be explored and addressed in the extension design.

2. Causes and Proposed Solutions

a. The most frequently cited solution is to increase the proportion of time devoted to laboratory and field work in the curriculum. Yet time devoted to practicals is approximately 50% of the total time spent in agricultural courses during the regular year, with an additional four weeks of field experience during the summer. Thus, the problem may be one of inefficient use of time available for practicals rather than insufficient time.

b. Classroom content is not always related directly to its possible applications. One-seventh of students and graduates complain that attempts are not made to relate botany to agricultural practice, or chemistry to soil science. Students do not always understand the relevance of the subject matter they are learning -- e.g., why they need to know the anatomy of a cow. Apparently, many of ISAI's faculty members perceive theory and practice as separate activities, or they are not versed in effective methods of integrating the two.

A short in-service seminar for ISAI faculty members should be held to help them develop more effective methods of integrating theory with practice. An expert in teaching methods with a specialization in hands on learning could be appointed on TDY for this purpose. This expert could also help to design changes in the curriculum that will orient it more toward the integration of theory and practice, and lead to more efficient use of both classroom and laboratory fieldwork time.

c. The ability to translate classroom content into solutions to farmers' problems is also related to the appropriateness of what is taught. Much of the content of ISAI curriculum is oriented toward agricultural practices that require a high degree of technology and/or economic organization. Students are taught to operate farm and dairy machinery and ways of organizing large agricultural cooperatives. Some students, e.g., those who will work on large plantations or government food industries, need this technology. Yet most graduates' extension work is conducted among small terrace farmers for whom this technology is inappropriate, leaving graduates with little they can do to help these farmers.

Students need training in improved agricultural techniques that are applicable on small local farms. Examples of such technology include improvements in draft implements such as plows that will pulverize soil or otherwise improve soil structure, the design of animal-drawn disc harrows or spike cultivators, improved methods of storing and processing dairy products at home, production of methane gas for cooking or operating machinery, and ways to set up small-scale marketing cooperatives at the village level.

A specialist in appropriate technology should be added to the staff of the institute. Alternately, such a specialist should be appointed on TDY for at least three months to conduct workshops for faculty, students, and graduates employed in extension and to review the curriculum. This specialist, who could be drawn from US consulting firms that specialize in appropriate technology, would ideally have had previous experience in a developing country like Yemen.

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d. A similar situation exists in food technology. The consensus among ISAI graduates and students is that the course in food technology is geared toward sophisticated food processing techniques that are not applicable at the household level. Techniques that graduates would prefer to learn include making tomato paste, drying fruit, drying vegetables (including onion and garlic), drying and roasting coffee beans, and making marmalade. Among more complex food processing techniques that students and graduates would find relevant, only the making of carbonated beverages and bottling and canning juices were mentioned. (All but one of the graduates interviewed voiced this complaint. The above list is a compilation of all the techniques that graduates mentioned.)

Given the traditional Yemeni preference for smoked flavors, smoking techniques that may be adopted at the household or village level would be appropriate.

e. Other appropriate subjects are currently taught in insufficient depth or not at all. These include:

(1) Farm and Range Management

Interest was expressed by one-fourth of the officials interviewed for more in-depth training in farm and range management than is currently offered at the ISAI. A related suggestion was that students be taught the economic benefits to be gained from a well-managed farm. Unfortunately, facilties at the ISAI are not adequate for the in-depth treatment of these subjects. However, such a program could be established at the SSAI which has sufficient land available to establish a model range. Students of farm management could also have access to the neighboring MAF farm.

(2) Beekeeping

Currently the beekeeping instructor is not trained in beekeeping. Some graduates and students expressed dissatisfaction with the way in which the course is taught.

A Yemeni instructor with a specialty in beekeeping is expected to return in the mid-1986. He should be encouraged to consult with the beekeeping expert in residence as well as with local farmers to discover the most appropriate beekeeping for Yemen.

f. A related problem is that ISAI curriculum tends to be oriented toward agricultural conditions in the Arab Republic of Egypt rather than the Yemen Arab Republic. [1]

Yemeni agriculturalists should be asked to review the new curriculum for appropriateness to Yemeni agricultural conditions. There exists a cadre of Yemeni professionals (some of whom have authored books on agriculture) whose expertise can be tapped for this purpose.

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[1] According to most graduates and students, the course on field crops is the one most successfully oriented to Yemeni conditions.

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195

At the same time, ISAI faculty should be encouraged to visit Yemeni farmers in order to learn more about local soil/water conditions, local plant/animal diseases, local crops and their value to farmers, constraints against the introduction of new crops, reasons for particular agricultural/irrigation practices, etc. This information will help them to orient their courses and curriculum toward local conditions. Currently some faculty members do have regular contacts with local farmers.

g. More appropriate final comprehensive examinations should be developed.

Many complaints were heard from ISAI faculty, students, and graduates that the final comprehensive examinations prepared by the MOE are not appropriate to the ISAI curriculum. The ISAI should encourage the MAF and the MOE to cooperate in developing examinations geared specifically to the ISAI curriculum.

h. Improvements can be made in the utilization of laboratory/fieldwork time.

Currently each period lasts for 45 minutes, which is too short a time for most field situations. More efficient use could be made of fieldwork time if available periods were combined into fewer periods of 90 minutes duration or longer. For extension fieldwork, longer periods of at least three or four hours are needed if students are to gain a practical understanding of the kind of social interaction that is involved in extension work.

i. Increase the amount of time allotted to summer field study.

The summer field study, which graduates appreciate highly, should be extended to two months instead of one month. This would increase students' time at each site to two weeks instead of one, thus providing them the opportunity to participate in the work of the projects more intensively than is possible currently. All graduates interviewed were in favor of such a plan.

If this is done, provision would have to be made in the contracts of Yemeni instructors for extra time during summers. (The contracts of expatriate staff include provisions for teaching during the summer months.)

j. Add a year of practical work experience under the supervision of ISAI faculty.

It has been suggested that ISAI students be required to spend a year in practical work experience supervised by ISAI faculty after they complete the three year course of study. They would receive a salary for their work, but they would not receive a diploma until after the completion of the fourth year. This plan was suggested in response to complaints that graduates who go into military service immediately after graduation forget much of what they learned in secondary school. The opportunity to apply their knowledge immediately would help to fix it in students' minds.

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To be adopted this plan would need to be approved by the MOE, and arrangements would have to be made to postpone military service until the completion of the fourth year. This is potentially problematic given the present setup of the MOE. Further, the small staff at the ISAI may not be able to fulfill the additional supervisory responsibilities that would be required given their limited resources.

k. Writing research papers should be encouraged.

A good way of gaining experience in applying theoretical knowledge to problem solving is through the writing of research papers. Currently research papers are not assigned to students because the school library is not accessible to them. This constraint will be removed when an MOE librarian is appointed and the library opened for student use. ISAI faculty should then be encouraged to assign term papers that focus on developing creative solutions to agricultural problems.

l. Establish a visiting lecturer series.

In order to utilize the expertise available in Yemen and to provide students with a more comprehensive view of available work opportunities, a lecture/seminar series should be established.

Lecturers should be Yemenis who work in agricultural fields but outside the framework of the ISAI. They may be directors of agricultural projects, managers of food industries, directors of extension, or agricultural researchers. They may also be successful farmers or entrepreneurs. They would discuss job opportunities for ISAI graduates, typical problems faced in these jobs, and/or issues of particular relevance to Yemeni agriculture that may not be covered in depth in the curriculum.

Attendance for the first few lecture/seminars would need to be compulsory. As the lecture/seminars become an established part of school activity, students will attend voluntarily if they find them to be useful. Such lecture/seminars can become significant learning experiences.

m. Shortage of Equipment and Facilities

During the first two years of its operation the ISAI suffered from a severe shortage of equipment and facilities, which severely curtailed laboratory and field activity. This situation has improved considerably permitting students more hands on experience than was possible in the past.

n. Establish a commission for vocational education.

Currently SAIs are operated according to the same rules and schedules as other secondary schools. It is not practical for the MOE to make special provisions for SAE, given the small number of students involved. It has been suggested that a commission for vocational education be established at the ministerial level. It would be composed of representatives from the MOE, the MAF, and

other relevant ministries. If such a commission were set up, it may provide the flexibility needed to make SAE more appropriate and responsive to the needs of extension agents in Yemen.

B. Graduates Wish to Continue Their Education and Are Not Content with Extension Work

This was a complaint voiced by ten of the officials interviewed. Almost all graduates and students interviewed expressed the desire to continue their education past the secondary level. As is the case in most developing countries, students who graduate from secondary schools wish to continue their education. It cannot be denied that the Yemen Arab Republic needs cadres of well-educated professionals. The complaint is not a denial of the value of higher education, but an expression of frustration with the fact that the need for middle level professionals in agriculture is not being met.

It appears that two conditions contribute to the problem:

1. The media advertisements used to recruit students are misleading. They give recruits the impression that many more university scholarships are available to ISAI graduates than is actually the case. Students enroll expecting to be able to continue their education after secondary school. The realization that scholarships are available only for a few top students is the major reason for the high drop-out rate in the first three months of attendance at the ISAI. Students and graduates are often bitter for what they consider to be broken promises on the part of ISAI's administration.

2. The salary of extension workers, at 1600 YR per month, is not sufficient to support a family comfortably. Many graduates of the ISAI would be content to remain extension workers if salaries were increased. [2/]

This problem will not be solved until secondary education in Yemen is much more widespread than it is now. It may be mitigated somewhat if ISAI graduates who intend to continue their studies are required to serve as extension workers for one or two years before beginning university studies. This would be more easily accomplished if graduates of agriculture institutes could be exempt from military service as are graduates of health and teacher training institutes.

Meanwhile, recruitment efforts should de-emphasize university scholarships in favor of other incentives to attend ISAI. (Presenting work in agriculture as an opportunity to serve one's country should not be discounted as a strong incentive.)

[2/] Salary increase is a major reason why graduates wish to pursue higher education. The addition of even two years of post-secondary education would raise their salary by 500 YR per month.

C. Graduates All Want To Be Supervisors

Especially among the first graduating class, many ISAI graduates expected to be placed in supervisory positions immediately after graduation. They were not willing to work at the same level as extension workers who had undergone only 9 or 11 months of training. This problem was exacerbated by the fact that in some projects ISAI graduates were placed in supervisory positions because of the shortage of trained personnel. (This complaint was voiced by supervisors of ISAI graduates in all but one project visited).

This problem is not as serious as would appear because most ISAI graduates did submit to working as extension agents and technicians when they realized that supervisory positions were not open to them and when they realized the value of the experience and knowledge of older extension agents. In any case the problem is likely to diminish as the number of SAE graduates working in extension increases relative to the number of extension agents who have undergone shorter training periods.

III. OTHER CRITICISMS

A. Poor Preparation in English and Mathematics

Students and graduates complain bitterly about their poor preparation in English and mathematics (all students and graduates interviewed complained about English, and one half mentioned mathematics as well.) Apparently the English text they are required to use is too advanced for their level. Attempts have been made to adopt a more appropriate text.

Evidently mathematics is weak in most secondary schools in Yemen. Little can be done to improve this situation unless the mathematics curriculum is changed at the central level.

B. Poor Dormitory and Cafeteria Conditions

Five of the graduates interviewed and many first year students complained abut dormitory conditions, saying that they are not kept clean. They also complain about the quality of the food, with specially low ratings given to breakfast and dinner. Improvements in the living conditions of students should be relatively easy to manage. They would improve student morale and perhaps academic achievement as well.

IV. REASONS FOR ABSENTEEISM

Reports on absenteeism initially appeared inconsistent, with some interviewers complaining of high rates of absenteeism with low levels of commitment (to work, school), and others stating that this is not a serious problem among students or graduates.

It appears that a high rate of absenteeism characterizes specific situations:

109

A. Students from distant areas (e.g., the Tihama) tend to take prolonged visits with their families even during the school year. This, of course, affects their academic performance and is ultimately reflected in their level of commitment to work after graduation. As more SAIs are established in various parts of the country, this problem is expected to diminish.

B. Married graduates who are assigned to work in areas located at a distance from their families also demonstrate low commitment to their work and high absenteeism. When living conditions permit their families to join them, the problem of absenteeism disappears and their productivity improves. Proximity to graduate's families should, therefore, be considered in the distribution of graduates.

C. Students stated that they did not bother to attend classes in which the instructor simply read his lecture from the text. They prefered to remain in their dormitories and read the lectures themselves.

V. ENCOURAGING RECRUITMENT IN SECONDARY AGRICULTURE EDUCATION

A. Encouraging Recruitment in SAE in General

With the exception of the Sanaa Veterinary School, the problems of recruitment faced by SAIs in Yemen have little to do with curriculum content. They reflect instead the low value placed on agricultural activity by secondary school students and the low salaries paid to extension workers and technicians.

1. Halt Alternative Training for Extension Agents

Despite the above issues, enrollment in SAE is expected to increase when the alternative shorter training sessions for agricultural extension agents are halted.

2. Increase Opportunities for Post-Secondary Education in Agricultural Fields

Enrollment at SAIs would increase if the opportunities for post-secondary education were enhanced. That is, if more university scholarships were provided to SAI graduates, if SAI students are accepted into the Sanaa University Faculty of Agriculture when it is established, or if a two-year post-secondary specialization course (on the model of the NIPA training courses) were made available to SAI graduates.

This, of course, seems to contradict the purpose of SAE which is to train middle level professionals in agriculture. This problem does not have easy solutions.

3. Increase Salaries of SAI Graduates

Enrollment is also likely to increase if the salaries of extension workers and technicians are increased. ISAI graduates complain that they cannot support a family on their current salary

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of 1600 YR per month. Given the financial problems of the MAF this problem is not likely to be solved in the near future.

4. Intensify Recruitment Efforts in Diverse Regions

It was suggeted that recruitment efforts be intensified among preparatory school students in diverse regions of the country (e.g., Sanaa, the northern highlands). Yet ISAI's experience with students from distant areas demonstrates that these students tend to have high absenteeism and low commitment to school work.

B. Specific Constraints Associated with the SSAI and the SVS

Additional factors contribute to low recruitment at the SSAI and the SVS. The location of the Surdud Institute and its dearth of communications and health facilities serve to discourage recruitment. The SVS has to overcome local prejudices against professionals working with animals and the novelty of the concept of medical care for animals. Nevertheless, enrollment doubled in the second year of the school's existence and is expected to increase with time.

VI. CRITICISMS RELATED TO THE TRAINING OF COUNTERPARTS

In general, ISAI counterparts interviewed were pleased with working conditions at the ISAI. Some actively participate in teaching. All say that they would be willing to put in more time than they do now in assisting ISAI instructors. Criticisms related to counterparts' focus on the length of time required to gain English proficiency. Counterparts criticize ISAI management for not permitting them access to agricultural machinery. These criticisms will be discussed in turn.

A. English Proficiency

The major criticism of counterpart training is the length of time needed to attain the required English proficiency for MS training at US universities. One proposed solution, that is approved by the counterparts' English instructors, is to free counterparts to study English full time for an entire year. It is difficult to learn a new language when the only time available to do so is in the afternoon after a day's work. Counterparts would then spend the first year training with ISAI instructors and the second year studying English.

Other proposed solutions include lowering the required TOEFL scores slightly, then send counterparts to the US for six months of intensive language training before they begin their graduate studies.

A third proposed solution is to send counterparts to Arab universities where language difficulties will not provide a barrier to their studies. Yet the consensus among ISAI faculty members, who are familiar with the facilities available at both Arab and US universities, is that agriculture education provided in the US is far superior to that provided by universities elsewhere. In order to insure quality training of Yemeni professionals, it would be preferable to continue sending MS candidates to US universities.

B. Access to Agricultural Machinery

Counterparts at the ISAI feel the need to be trained in the use of equipment owned by the ISAI. They do not have access to farm machinery which, they say, is treated almost as if it were the personal property of expatriate instructors. If today's counterparts are the future teachers of the ISAI they should be trained in the use of farm machinery and trusted with this equipment.

VII. REFRESHER COURSES AND FEEDBACK

Graduates expressed the need to return to the ISAI for refresher courses in order to take advantage of new learning opportunities at the ISAI that were not available when they were students and to keep up with developments in agriculture. Some refresher courses have been offered as part of the outreach program, and those graduates who attended them found them useful. The number of these courses needs to be increased and targeted to a larger number of graduates.

When graduates return for refresher courses they should be given the opportunity to discuss what they perceive to be the weaknesses and strengths of their training with ISAI faculty and staff, and to discuss the problems and difficulties they face at work with their former teachers.

It may also be useful to institute regular student evaluations at the school. Students interviewed during the course of this research were found to be frank, even in the presence of ISAI faculty. The dialogue established by this feedback from students and graduates would benefit faculty in reviewing their own work. It may also provide students and graduates new perspectives on the constraints faced by ISAI faculty in the execution of their duties.

VIII. NEW INITIATIVES

A. Introduce Practical Agriculture into Elementary and Preparatory School Curriculum

Many of those interviewed voiced the wish that practical agriculture with hands-on emphasis be introduced in elementary and preparatory schools. These persons felt that such an addition to the curriculum would raise popular awareness of the importance of agriculture and reinstitute an appreciation for agricultural work.

If a concerted effort is made to introduce practical agriculture into elementary and preparatory schools, this is likely to develop an interest in agriculture among students during their formative years. It will also link agriculture conceptually to academic study, thus decreasing the stigma attached to the former. These developments should, in the long run, improve enrollment figures in SAE.

B. Establish a Post-Secondary Agriculture Training Program

Several persons interviewed expressed an interest in a program

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of more specialized training than is possible at a secondary school with a general education curriculum. A good way to accomplish this without compromising the quality of SAE is to establish a post secondary training program that will graduate specialists in various aspects of agriculture. Graduates of an SAI would have the option of continuing their studies or joining the labor force.

If specialization courses can be held in the afternoons and evenings on the NIPA model, students could attend after working hours. Officials at NIPA, which sponsors a series of post secondary training classes which include seminars and short courses [3/] have expressed an interest in cooperating with a project of this kind so long as it can be related directly to agricultural development.

NIPA also offers a two-year diploma program that permits graduates to continue their education at the second or third year of university. This model may be appropriate for post-secondary agriculture education.

Two years of post-secondary education grants graduates a 500 YR/month salary increase over secondary school graduates. The option of a two year program with these salary benefits may alleviate the problem of middle level professionals who wish to attend university rather than join the labor force.

Whether graduates of non-agricultureal secondary schools are eligible to attend this program would have to be decided in developing the curriculum.

Since all post secondary training in Yemen is co-educational, these courses would be automatically open to women. On the other hand, if the program is only open to graduates of an SAI, women would be barred from the program unless serious attempts are made to train women in SAE.

[3/] A number of these are related to agricultural development.

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204

ANNEX L

Study of Educational Aspirations
of Preparatory School Students in Yemen

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Study of Educational Aspirations of Preparatory School Students in Yemen

The major purpose of this study, performed in late 1984, was to determine the educational aspirations and plans of preparatory schools in three provinces in Yemen. The Directors General of Education from Ibb and Taiz provinces were asked to give the names of ten schools; two city schools and eight rural schools. They were randomly selected, so that one city school and four village schools were given a presentation concerning the opportunities in secondary agriculture education in Yemen. The other five schools were given no presentation. One city school and two village schools were then selected in Rada'. The city school and one randomly chosen village school were given the presentation; the other village school was not. Two teams were then trained in data collection at the ISAI. These teams either give a presentation and collected data, or just collected the data without the presentation. Approximately two weeks were used in collecting the data.

TABLE 1
Number Planning for Additional Secondary Education

	Yes	No	Total
City	252	1	253
Village	731	6	737
Total	983	7	990

The question was asked, "Do you plan to continue your secondary education?" Overwhelmingly, 983 said yes and 7 said no. This is probably a very unrealistic aspiration for most of these students. When talking to the principals of the schools, they indicated that approximately 25% would continue their education to secondary school. The overwhelming "yes" was from both the city and village students.

TABLE 3
Type of Choice for Those Indicating General Education

	Science	Arts	Total
City	136	6	142
Village	523	85	608
Total	659	91	750

It is easy to see that, from both the city and village schools, the large majority of the students who indicated they wanted to go, to general education secondary schools preferred the science curriculum.

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TABLE 4
Occupations Chosen by Those Planning to go to Secondary Agriculture School

	City	Village	Total
Agricultural Extension Agent	37	161	198
Technician	13	76	89
Agricultural Research Station	53	150	203
Private Business Owned by Others	14	27	41
Self-Owned Private Business	7	25	32

The government positions of agriculture extension agent and agriculture research service were chosen by larger numbers of both city and rural village students. Sizable numbers, though, are interested either in going into work for private business owned by others or in going into business for themselves, upon graduation from agricultural secondary schoo.

TABLE 5
Responsibility for School Choice

	Independent	Someone Else	Total
City	215	30	245
Village	602	113	715
Total	817	143	960

Most of the students indicated that they were responsible for their choices and were not guided by someone else. It is interesting that, at this early age, they feel that they are not influenced, but that they made up their own minds.

TABLE 6
Others Who Were Significant in Helping Make Choice

Parents	128
Brothers or sisters	46
Teachers	7
Friends	25
Others	6

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207

The students who had said they were guided by someone else were asked who was responsible for making this choice. A number of students checked more than one area, but by far the largest group said they were influenced by their parents. This may mean that if one is trying to influence students and give them a broader range of opportunities, the parents should be given the information needed to help make these choices.

TABLE 7
Number of Students Planning to Go to College

	Yes	No	Total
City	229	16	245
Village	667	53	720
Total	896	69	965

Large numbers of students in Yemen indicate that their plans are to continue their education beyond secondary school by attending universities. This is an extremely unrealistic aspiration. It may be necessary to develop some type of guidance program for the students to help them become acquainted with the types of opportunities which are available, and to relate these opportunities to their abilities. This finding is not uncommon in many underdeveloped countries where everyone does have aspirations to have a university education.

TABLE 8
Kinds of University Education Preferred

	City	Village	Total
Engineering	68	176	244
Medicine	77	223	300
Military Education	36	106	142
Agriculture	6	36	42
Science	9	23	32
Law	4	28	32
Commerce	3	21	24
Arts	2	9	11
Economics	5	12	17
Pharmacy	1	–	1
Music	–	1	1
Education	1	15	16
Total	212	650	862

The prestigious occupations are shown in Table 8. The areas of engineering and medicine are by far ahead of the others. The students are not aware of the programs available or the ability needed to reach them. The areas of agriculture, science, law, commerce, arts, economics and education are much farther behind, and yet there are probably many more opportunities in these areas than in engineering and medicine.

TABLE 9
Those Aware of Agricultural Secondary Institutions in Yemen

	Ibb	Surdud	Sanaa	Total
With Presentation	186	27	46	259
Without Presentation	163	20	34	217
Total	349	47	80	476

The question was asked, "Are you aware that there are agricultural secondary institutions available in Yemen?" Slightly under half were aware that they existed. By far the largest number were aware of the school at Ibb, with Sanaa Veterinary School next and the school at Surdud the least. This is probably not a very accurate indication for the entire country, as the information was taken from preparatory schools in areas near to ISAI.

TABLE 10
Where the Students Obtained their Information on Agricultural Secondary Schools

Radio	75	71	146
Television	129	89	218
Newspapers	48	55	103
Teachers	23	32	55
Relatives	36	30	66
Friends	68	41	109
Others	--	--	--
Total	379	318	697

The largest number of students obtained their information from the formal communication channels of radio, television and newspapers. The personal contacts of teachers, relatives and friends proved less successful. This shows that the youth in Yemen do rely on the mass communication channels for educational information.

TABLE 11

Those with Knowledge of Secondary Agriculture Schools

	Yes	No	Total
With Presentation	213	243	456
Without Presentation	196	257	453
Total	409	500	909

Students were asked if they were knowledgeable of secondary agricultural schools before this presentation was made. Slightly more than half of those answering said they were not. This was 500, compared with 490 who said they were knowledgeable. There was very little or no difference in numbers with or without the presentation.

SUMMARY

In summary, those students in preparatory schools in Yemen have high aspirations which are not realistic. This is both in going on to secondary school and then to college, and in types of professions available to them. Their interest in agriculture is low. After presentations were made concerning the agricultural secondary schools, interest increased. It is recommended that there be an organized program acquainting the students with opportunities in agricultural secondary schools and agriculture in Yemen. As was shown by the numbers indicating interest after the presentation, this should insure an adequate number of applications for the secondary agricultural schools, and would enable the schools to be more selective with the students chosen.

ANNEX. M

Detailed Implementation Plan

Detailed Implementation Plan

The ISAI Subproject

Year and Program Month of Occurance	Activity/Event	Responsibility
Before Implementation	ISAI, SPP amendment approved	AID/W
Before Implementation	ISAI, Grant Agreement signed	USAID/YARG
Before Implementation	ISAI conditions precedent met	YARG
Before Implementation	Amend AID/CID contract to provide funding and authority to proceed with implementation	USAID; AID/W
First Year 1	Identify, get approval and assign counterparts (CPs) in agricultural economics, horticulture, and dairy processing for ISAI; extension, soils, food processing, and dairy processing for SSAI; and animal production and animal health for SVS	MOE, TL, NMSU and SPD
1	In the ESL program at YALI, enroll 2 CPs from ISAI; 8 CPs from SSAI; and 5 CPs from SVS	MOE, TL, NMSU
1	Send 3 CPs from ISAI to US for MS training	MOE, TL, NMSU
1	Send evaluation specialist to Yemen to initiate a monitoring and self evaluation system	SPD, NMSU,
3	Prepare list of commodity needs for FY 85	TL
4	Initiate procurement of commodity needs for FY 85	SPD, NMSU, Core
5	Extend contract to 2/87 or replace animal production expatriate	TL. SPD, NMSU
6	Extend contract or replace horticulture expatriate	TL, SPD, NMSU
8	Extend or replace TL	SPD, NMSU

212

8	Extend contract or replace dairy food process expatriate	TL, SPD, NMSU
10	Send MOE officials to US for study tour/workshop on organization and administration of agricultural education system	TL, SPD, NMSU
10	Commodities procured on 4/85 arrive in Yemen	TL
11	The animal production CP completes MS training in US and returns	TL, SD, PD
11	Close out ESL positions at SSAI	TL, SPD
Second Year		
1	In the ESL program at YALI enroll 3 CPs from ISAI, 4 CPs from SSAI, and 2 CPs from SVS	TL, MOE, NMSU
1	Send evaluation specialist to Yemen to conduct program evaluation	TL, SPD, NMSU, MOE
2	Send 1 CP from ISAI, 7 CPs from SSAI, and 4 CPs from SVS to US for MS training	TL, MOE, NMSU, SPD
3	Prepare list of commodity needs for FY 86	TL, SPD
4	Initiate procurement of commodity needs for FY 86	SPD, TL, NMSU, Core
4	Extend contract or replace farm manager at ISAI	SPD, TL, NMSU
6	Send 1 BS candidate from ISAI, 1 from SSAI and 1 from SVS to US for undergraduate training (farm managers)	TL, SPD, NMSU, Core
7	Close out expatriate animal production position	TL, SPD, NMSU
10	Expected arrival of commodities procured on 4/86	TL

213

11	2 CPs, one in entomology and one in animal production complete MS in US and return to Yemen	SPD, TL, NMSU
12	Send key administrators from MOE and MAF to US for agricultural education orientation study tour	TL, SPD, NMSU, USAID
Third Year		
1	Enroll 2 ISAI CPs, 4 SSAI CPs, and 2 SVS CPs in YALI	TL, NMSU, Core, USAID
3	Prepare list of commodity needs for FY 87	TL
4	Initiate procurement of commodities needed for FY 87	SPD, NMSU, Core
6	Conduct external evaluation	USAID, NMSU, TL, SPD
6	One crops, 1 food processing and 1 school director CP complete MS training in US and return to Yemen	SPD, TL, NMSU, MOE
6	Extend contract or replace expatriate contract in horticulture	TL, SPD, NMSU
8	Replace or extend contract with TL	SPD, NMSU, USAID, MOE
8	Replace or extend expatriate contract with dairy processing teacher	TL, SPD, NMSU
10	Commodities procured on 4/87 arrive in Yemen	TL
11	Develop and implement 6 weeks agricultural education workshop in US for MS candidates	SPD, TL, NMSU, MOE
12	Select and move in agricultural education specialist for SSAI	SPD, TL, NMSU, USAID, MOE
12	Conduct feasibility study for 2 additional SAIs and 1 technical school in Yemen	SPD, TL NMSU, USAID, MOE

214

Fourth Year		
3	Prepare list of commodity needs for FY 88	TL
4	Initiate procurement of commodities for FY 88	SPD, NMSU, Core
4	Extend or replace farm manager	TL, SPD, NMSU, USAID, MOE
6	One extension CP from ISAI, 1 agricultural economist, 1 in crops, 1 in entomology, 1 in horticulture, 1 in farm mechanics, 1 school director, and 1 in animal production from SSAI, and 1 in animal production, 1 in food processing, 1 in animal health, and 1 in veterinary science from SVS complete MS training in US and return to Yemen	TL, SPD, NMSU, MOE USAID
6	Two substitute CPs from ISAI, 4 from SSAI, and 2 from SVS begin MS training in US	TL, NMSU, Core
7	Terminate extension specialist assignment	TL, SPD, NMSU
10	Expected arrival of procurement orders for FY 88	TL
Fifth Year		
1	Conduct internal evaluation	SPD, TL, NMSU, USAID
3	Prepare list of commodity needs for FY 89	TL
4	Initiate procurement of commodities for FY 89	SPD, NMSU
6	1 CP in agricultural economics, 1 in horticulture, 1 in dairy processing from ISAI; 1 CP in extension, 1 in food processing, 1 in dairy processing from SSAI; and 1 CP in animal production and 1 in veterinary science from SVS complete their MS training in the US and return to Yemen	TL, SPD, NMSU, Core

25

7	Terminate dairy/food processing positions	TL, SPD, NMSU
8	Extend or replace TL	SPD, NMSU, USAID, MOE
10	Expected arrival of procurement orders for FY 89	TL
11	Develop and implement 6 weeks agricultural education workshop in US for Yemeni MS candidates	SPD
11	Terminate entomology/horticultural expatriate position	TL, SPD, NMSU
Sixth Year		
1	Conduct internal evaluation	SPD, TL, NMSU, USAID, MOE
3	Prepare list of commodity needs for FY 90	TL
4	Initiate procurement of commodities for FY 90	SPD, NMSU, Core
6	1 CP from ISAI, SSAI, and SVS complete BS degrees (farm manager) in US and return to Yemen	TL, SPD, NMSU
9	Terminate farm manager position	TL, SPD
10	Expected arrival of procurement orders for FY 90	TL
11	2 substitute MS candidates from ISAI, 4 from SSAI and 2 from SVS complete their MS degrees and return to Yemen	TL, SPD, NMSU, Core
Seventh Year		
2	Terminate TL	SPD, NMSU

ANNEX N

Draft Project Authorization

____ AMENDMENT TO PROJECT AUTHORIZATION

Name of Country: Yemen Arab Republic
Name of Project: Agriculture Development Support
Number of Project: 279-0052

1. Pursuant to Part I, Section 103 (Agriculture, Rural Development and Nutrition) of the Foreign Assistance Act of 1961, as amended, the Agriculture Development Support Project for the Yemen Arab Republic (YAR) was authorized on May 30, 1979, and amended September 24, 1979; May 27, 1980; July 11, 1980; August 10, 1982; August 20, 1982; December 17, 1982; June 1, 1983; and _____. That authorization is hereby further amended as follows:

a. In addition to the amounts previously authorized, not to exceed seventeen million United States (US) Dollars ($17,000,000) in grant funds shall be available for the Ibb Secondary Agricultural Institute Subproject described herein. These additional funds are to be made available over a six and one-quarter year period from the date hereof subject to the availability of funds in accordance with the AID OYB/allotment process, to finance the foreign exchange and local currency costs of goods and services for the Subproject.

b. The definition of the Project contained in the existing Project Agreement, as amended, is further amended by adding the following definition thereto:

"The Ibb Secondary Agricultural Institute Subproject will provide participant training, technical assistance, instructional equipment and supplies, and expansion feasibility studies for secondary agricultural education in the Yemen Arab Republic."

2. I hereby authorize the initiation of negotiation and execution of an amendment to the Project Agreement as amended by the officer to whom such authority has been delegated in accordance with AID regulations and delegations of authority subject to the following essential covenants and major conditions, together with such other terms and conditions as AID may deem appropriate:

a. <u>Conditions Precedent to Initial Disbursement</u>

Prior to any disbursement, or the issuance of any documentation pursuant to which disbursement will be made, the Grantee shall, except as the parties may otherwise agree in writing, furnish to AID in form and substance satisfactory to AID:

(1) A statement of the persons acting as Grantee's representatives for this subproject plus a specimen signature of each such person.

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28

3. Waivers:

Based on the justification contained in Annex __ of the Project Paper, I hereby authorize the purchase of three vehicles (valued at $50,000) of Code 935 origin through single source/ proprietary procurement.

Further based on the justification described in Annex __ of the Project Paper, I hereby authorize off-the-shelf procurement in Yemen of up to $200,000 of commodities of Core 935 origin, without regard to their per unit price.

Exclusion of procurement from Free World countries other than the cooperating country and countries included in Core 941 would seriously impede attainment of US foreign policy objectives and objectives of the foreign assistance program.

Further, based on the justification described in Annex __ of the Project Paper, I hereby authorize transportation on Core 899 flag vessels from the United States to Yemen Arab Republic of up to $50,000 in goods.

In all other respects, the subproject Project Authorization, as previously amended, remains in full force and effect in accordance with its terms.

Except as amended above, the authorization for AID Project 279-0052, as previously amended, shall remain in full force and effect.

Assistant Administrator
Bureau for Near East

Date

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219

ANNEX O

Draft Amendment to the Project Grant Agreement

AID Project No. 279-0052
Agricultural Development Support

AMENDMENT NO. 23
TO THE
PROJECT GRANT AGREEMENT
DATED JUNE 14, 1979
BETWEEN
THE YEMEN ARAB REPUBLIC ("YAR")
AND
THE UNITED STATES OF AMERICA
ACTING THROUGH
THE AGENCY FOR INTERNATIONAL DEVELOPMENT ("AID")

The Project Grant Agreement (the "Agreement") dated June 14, 1979, as amended, between the Yemen Arab Republic and the United States of America is hereby further amended as follows:

PART I OF AMENDMENT 23

Article 2 of the Agreement, "The Project", is amended by adding a new Section 2.9:

SECTION 2.9: Definition of the Ibb Secondary Agricultural Institute Subproject

"The Ibb Secondary Agricultural Institute Subproject, which is further described in Attachment A to the Amendment, will assist the Grantee to provide participant training, technical assistance, instructional equipment and supplies, and expansion feasibility studies for secondary agricultural education in Yemen.

PART II OF AMENDMENT 23

Article 3 of the Agreement, "Financing"

SECTION 3.1, "The Grant", is amended by deleting the words (old amount) / United States Dollars (US Dols.) and substituting therefor the words (new amount) / United States Dollars (US Dols.).

SECTION 3.3, Project Assistance Completion Date, is further amended with respect to the Secondary Agricultural Education Subproject only, by deleting in subsection (a) "December 31, 1989" and substituting therefor "XXXXXXXX".

PART III OF AMENDMENT 23

Article 4 of the Agreement, "Conditions Precedent to Disbursement", is further amended by adding a new Section 4.10, as follows:

SECTION 4.10, Conditions Precedent to Disbursement for the Secondary Agricultural Education Subproject:

(a) Prior to any disbursement for the Ibb Secondary Agricultural Institute (ISAI) Subproject, the YAR shall, except as AID may otherwise agree in writing, furnish in form and substance satisfactory to AID a statement of the names and titles of the persons acting as the Grantee's representative(s) for this Subproject, plus a specimen signature of each such person.

(b) Prior to any disbursement for the ISAI Subproject for procurement of commodities, the YAR shall, except as AID may otherwise agree in writing, furnish in form and substance satisfactory to AID a detailed commodity procurement plan including, but not limited to _____.

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221

(c) Pripr to any disbursement for the ISAI Subproject for participant training, the YAR shall, except as AID otherwise agrees in writing, furnish in form and substance satisfactory to AID a detailed training plan including but not limited to _____.

Article 4. SECTION 4.3, Notification, is amended by adding a comma and the number 4.8 after the number 4.10.

Article 4. SECTION 4.4, Terminal Date for Conditions Precedent, is amended by adding new Subsection (f) as follows:

Ibb Secondary Agricultural Institute Subproject. If the condition precedent specified in Section 4.10 (a) has not been met within sixty days from the date of the Amendment to the Agreement, or such later date as AID may agree to in writing, AID, at its option, may terminate this Agreement as it relates to the Subproject by written notice to the Grantee.

PART IV OF AMENDMENT 23

Article 5, Special Covenents, is amended by adding a new SECTION 5.8.

SECTION 5.8, Special Covenents for the Ibb Secondary Agricultural Institute Subproject. The Grantee agrees to:

(a) Provide appropriate placement of returning trainees for a time period at least twice that of their training period.

(b) Budget sufficient funds for the replacement and acquisition of instructional budget and supplies.

PART V OF AMENDMENT 23

This Amendment to the Agreement shall enter into force when signed by all the parties hereto.

Except as specifically amended hereby, the Project Grant Agreement, dated June 14, 1979, as previously amended, between the YAR and the United States of America, shall remain in full force and effect.

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222

IN WITNESS WHEREOF, the Yemen Arab Republic and the United States of America, each acting through its respective duly-authorized representatives, have caused this Amendment to the Grant Agreement to be signed in their names and delivered as of the day and year first-above written.

YEMEN ARAB REPUBLIC

(name) Minister for Development and Chairman, Central Planning Organization	(name(Minister for Agriculture and Fisheries

UNITED STATES OF AMERICA

William A. Rugh Ambassador to the Yemen Arab Republic	Charles F. Weden, Jr. Director US Agency for International Development, Yemen

223