

1. PROJECT TITLE Agricultural Development System	2. PROJECT NUMBER 263-0041	3. MISSION/AID/W OFFICE USAID/Cairo <i>20-39441</i>
	4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY) 83-11	
<input checked="" type="checkbox"/> REGULAR EVALUATION <input type="checkbox"/> SPECIAL EVALUATION		

5. KEY PROJECT IMPLEMENTATION DATES			6. ESTIMATED PROJECT FUNDING	7. PERIOD COVERED BY EVALUATION	
A. First PRO-AG or Equivalent FY	D. Final Obligation Expected FY	C. Final Input Delivery FY	A. Total \$14.9 million	From (month/yr.) 1/81	To (month/yr.) 6/83
			B. U.S. \$	Date of Evaluation Review May, 1985	

B. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

A. List decisions and/or unresolved issues; cite these items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., program, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
1. Agree on administrative and financial support structure for continuation and completion of current activities.	AGR/A MOA	Completed
2. The following are lessons learned that should be incorporated into future projects:	AGR/A MOA	
A. The approach taken by the ADS Project was not particularly cost-effective.	AGR/A MOA	6/86
B. Stable funding is essential to an effective applied research effort.	AGR/A MCA	6/86
C. A decision making structure should be established in the Agricultural Research Center to prioritize, monitor, and coordinate research activities.	AGR/A MOA	6/86
D. Training in research methods, Proposal development, and research management and administration, particularly for younger scientists, should be initiated.	AGR/A MOA	6/86

(cont.)

8. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS

<input type="checkbox"/> Project Paper	<input type="checkbox"/> Implementation Plan e.g., CPI Network	<input type="checkbox"/> Other (Specify)
<input type="checkbox"/> Financial Plan	<input type="checkbox"/> PIO/T	
<input type="checkbox"/> Logical Framework	<input type="checkbox"/> PIO/C	<input type="checkbox"/> Other (Specify)
<input type="checkbox"/> Project Agreement	<input type="checkbox"/> PIO/P	

10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT

A. Continue Project Without Change

B. Change Project Design and/or Change Implementation Plan

C. Discontinue Project

11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Title)

J. Lee, AGR *[Signature]*

J. Beausoleil, AGR *[Signature]* 5/3/85

D. Schaer, AD/AGR *[Signature]* 5/16/85

J. Conly, DPPE/PO *[Signature]* 5/15/85

G. Laudato, AD/DPPE *[Signature]* 5/16/85

A. Handly, DD *[Signature]*

12. Mission/AID/W Office Director Approval

Signature: *[Signature]*

Typed Name: **Frank B. Kimball, Director**

Date: **June 5, 1985**

CLASSIFICATION
PROJECT EVALUATION SUMMARY (PES) - PART I

Report Symbol U-447

1. PROJECT TITLE			2. PROJECT NUMBER	3. MISSION/AID/W OFFICE
4. KEY PROJECT IMPLEMENTATION DATES			4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY)	
5. KEY PROJECT IMPLEMENTATION DATES			6. ESTIMATED PROJECT FUNDING	
A. First PRO-AG or Equivalent FY _____	B. Final Obligation Expected FY _____	C. Final Input Delivery FY _____	A. Total \$ _____	
			B. U.S. \$ _____	
7. PERIOD COVERED BY EVALUATION			7. PERIOD COVERED BY EVALUATION	
			From (month/yr.) _____	
			To (month/yr.) _____	
			Date of Evaluation Review _____	

8. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., aigram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
<p>E. Macro and policy-oriented research should be funded through the Agricultural Economics Research Institute</p>	AGR/A MOA	6/86
<p>F. A plan for orderly transition of project activities to the GOE is essential to project sustainability</p>	AGR/A MOA	6/86

<p>9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS</p> <table style="width:100%;"> <tr> <td><input type="checkbox"/> Project Paper</td> <td><input type="checkbox"/> Implementation Plan e.g., CPI Network</td> <td><input type="checkbox"/> Other (Specify) _____</td> </tr> <tr> <td><input type="checkbox"/> Financial Plan</td> <td><input type="checkbox"/> PIO/T</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> Logical Framework</td> <td><input type="checkbox"/> PIO/C</td> <td><input type="checkbox"/> Other (Specify) _____</td> </tr> <tr> <td><input type="checkbox"/> Project Agreement</td> <td><input type="checkbox"/> PIO/P</td> <td>_____</td> </tr> </table>	<input type="checkbox"/> Project Paper	<input type="checkbox"/> Implementation Plan e.g., CPI Network	<input type="checkbox"/> Other (Specify) _____	<input type="checkbox"/> Financial Plan	<input type="checkbox"/> PIO/T	_____	<input type="checkbox"/> Logical Framework	<input type="checkbox"/> PIO/C	<input type="checkbox"/> Other (Specify) _____	<input type="checkbox"/> Project Agreement	<input type="checkbox"/> PIO/P	_____	<p>10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT</p> <p>A. <input type="checkbox"/> Continue Project Without Change</p> <p>B. <input type="checkbox"/> Change Project Design and/or <input type="checkbox"/> Change Implementation Plan</p> <p>C. <input type="checkbox"/> Discontinue Project</p>
<input type="checkbox"/> Project Paper	<input type="checkbox"/> Implementation Plan e.g., CPI Network	<input type="checkbox"/> Other (Specify) _____											
<input type="checkbox"/> Financial Plan	<input type="checkbox"/> PIO/T	_____											
<input type="checkbox"/> Logical Framework	<input type="checkbox"/> PIO/C	<input type="checkbox"/> Other (Specify) _____											
<input type="checkbox"/> Project Agreement	<input type="checkbox"/> PIO/P	_____											

<p>11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles)</p>	<p>12. Mission/AID/W Office Director Approval</p> <p>Signature _____</p> <p>Typed Name _____</p> <p>Date _____</p>
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NEAR EAST EVALUATION ABSTRACT

PROJECT TITLE(S) AND NUMBER(S) Agricultural Development Systems (263-0041)	MISSION/ATOM OFFICE USAID/Cairo
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PROJECT DESCRIPTION
The project is designed to strengthen the Ministry of Agriculture and related Agencies' capacity for horticultural and agricultural economics research and extension activities focused on developing economically rational farm-level solutions to production constraints.

AUTHORIZATION DATE AND U.S. LOP FUNDING AMOUNT 2/29/77 \$14.9 million	PES NUMBER 83-11	PES DATE May 1985	PES TYPE <input checked="" type="checkbox"/> Regular <input type="checkbox"/> Other (Specify)
ABSTRACT PREPARED BY, DATE N. Shafik, DPPE/PO May 1985	ABSTRACT CLEARED BY, DATE J. Lee AGR May 1985		<input type="checkbox"/> Special <input type="checkbox"/> Terminal

This second evaluation came at the conclusion of the formal involvement of the technical assistance contractor, the University of California at Davis, with the project. The team, composed of AID/W and USAID employees, was asked to evaluate the status of project research activities and to determine the degree of institutional development achieved.

The project's initial broad scope was soon narrowed to two principal sub-activities, strengthening horticultural research capabilities and building research capability in agricultural economics. A third sub-activity later emerged to include attention to research in post-harvest road handling, strengthening agricultural information management and equipping and organizing a new horticultural science laboratory.

Using a combination of technical assistance, training, technology transfer and adaptive research, the project was successful in making a substantial contribution to both productivity and to increasing the research skills of Egyptian scientists. It demonstrated that collaborative research teams involving government and academic scientists could produce useful results. Improved high yielding horticultural varieties were transferred to Egypt that were quickly adopted by Egyptian farmers. The tomato varieties introduced by the project have been so successful that the economic benefits from increased production of tomatoes alone may, in the end, justify the investment that this project represents. A less tangible achievement is the improved capacity of Egyptian agricultural economists to undertake empirically based analyses of a variety of economic problems and issues which confound the GOE in this sector. In spite of these achievements, and they are considerable, the project was not a success. The basic approach, conceived in an era of high level joint decision making between the U.S. and the GOE, produced an administrative and policy structure which, in the evaluation team's review, was too complex and too expensive when compared to the activities that ultimately emerged as the backbone of the project. The original institution building purposes of the project were not fulfilled, although significant contributions to institutional capacity were made. For a variety of reasons, the University of California at Davis had difficulty in developing appropriate project management, administrative and fiscal procedures. Adequate incentives for attracting and retaining qualified leadership and scientific personnel were slow to emerge, leading to severe implementation and management problems throughout the life of the project. Efforts to remedy these problems seemed to lead to still other difficulties with either AID or with the GOE.

Lessons Learned: (1) Building institutional capacity takes time, patience and continuity of effort. Project purposes and expectations should be realistically stated and clearly understood by all parties; (2) If institutional capacity is to increase, responsibility for achievements and for management of the process must be born by the host country; (3) When the pressure for spending money or achieving physical "outputs" becomes too great, the capacity building purposes will be subverted; and (4) Administrative problems can easily overshadow substantive project achievements. More attention should be focused on establishing management roles and responsibilities early in the project life.

Agricultural Development Systems
(263-C041)

Second Interim Evaluation

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June 1983

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EXECUTIVE SUMMARY

This interim evaluation of the Agriculture Development Systems (ADS 263-0041) comes at the conclusion of the formal institutional involvement of the University of California at Davis with the project. The University of California played a key role in the early design of the project during 1977 and 1978, and was the contracting agency for assisting the Government of Egypt's efforts to revitalize its agricultural research system. The project purpose was to increase the institutional capacity of the Government of Egypt to plan and manage an effective agriculture research system.

The project's initial broad scope was soon narrowed to two principal sub-activities, strengthening horticultural research capabilities and building up research capability in agricultural economics. A third sub-activity later emerged to include attention to research in post-harvest road handling, strengthening agricultural information management and equipping and organizing a new horticultural science laboratory.

Using a combination of technical assistance, training, technology transfer and adaptive research, the project was successful in making a substantial contribution to both productivity and to increasing the research skills of Egyptian scientists. It demonstrated that collaborative research teams, involving government and academic scientists could produce useful results. In the horticultural activity, improved high yielding varieties were transferred to Egypt which were quickly adopted by Egyptian farmers. The tomato varieties introduced by the project have been so successful that the economic benefits from increased production of tomatoes alone may, in the end, justify the investment which this project represents. A less tangible achievement is the improved capacity of Egyptian agricultural economists to undertake empirically based analyses of a variety of economic problems and issues which confound the GOE in this sector.

At another level the project was successful in raising the awareness of the GOE and AID of the potential of horticultural cash crops for both domestic consumption and for export. The GOE has begun to capitalize on this potential by liberalizing price controls and export regulations on many categories of horticultural crops. Moreover, at the micro level, the research capabilities of individuals have been strengthened and the existing research system energized.

In spite of these activity successes, and they are considerable, the project was not a success. The basic approach, conceived in an era of high level joint decision making between the U.S. and the GOE, produced an administrative and policy structure which, in the evaluation team's view, was too complex and too expensive when compared to the activities which ultimately emerged as the backbone of the project. The original institution building purposes of the project were not fulfilled, although significant contributions to institutional capacity were made.

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For a variety of reasons, the University of California at Davis had difficulty in developing appropriate project management, administrative and fiscal procedures. Adequate incentives for attracting and retaining qualified leadership and scientific personnel were slow to emerge, leading to severe implementation and management problems throughout the life of the project. Efforts to remedy these problems seemed to lead to still other difficulties with either AID or with the GOE.

It is unfortunate that this is so. The time, energy and quality of commitment of the many U.S. and Egyptian scientists associated with the effort far exceeds the rewards they may have received. Close working relationships between the two scientific communities were established and, with luck, will survive the end of the formal relationship. Training opportunities, access to research networks and materials will continue to materialize for Egyptian scientists. Out of this experience, perhaps the basis for a more productive Egyptian agriculture research system has been established.

There are important lessons which can be learned from this experience. These have been spelled out in some detail in this evaluation and in the 1981 evaluation of ADS. Perhaps the most important lesson is a conservative one. Building institutional capacity takes time, patience and continuity of effort. Project purposes, and expectations should be realistically stated and clearly understood by all parties. If institutional capacity is to increase, responsibility for achievements and for management of the process must be born by the host country. It cannot be shared or fragmented. Finally institutions are not just organizational charts, rules of procedure, or physical buildings. People make institutions work, and people must be allowed to make mistakes and learn from them. When the pressure for spending money or achieving physical "outputs" becomes too great, the capacity building purposes will be subverted. All of this is as true for developing agricultural research systems as it is for other development activities.

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PREFACE TO THE 1983 EVALUATION

This evaluation is a "regularly scheduled" AID evaluation of the AID financed Agricultural Development Systems (ADS) project. It comes at a point three months short of the completion of the UC/Davis contract with the Government of Egypt. AID, the GOE, and UC/Davis agree that contract will not be renewed or extended. USAID has proposed, however, that the project will be extended for one additional year, after which it is anticipated that the most promising activities will be incorporated into the proposed USAID agricultural "sectoral assistance" program with the Government of Egypt. Thus, a critical decision which might have shaped this evaluation, whether to continue with the UC/Davis contract or not, is no longer relevant. As stated in the scope of work developed for the evaluation by USAID/Cairo:

"the intent of Evaluation is to evaluate the status of present research activities being conducted by the project and determine the presence or absence of institutional development which may have occurred, or is occurring. USAID plans to use findings of evaluation as a guide in determining which, if any, research activities now underway merit continued support. (USAID/Cairo to STATE Cable #07265 dated March 1983.)

The 1983 evaluation team was: Richard Blue, Team Leader, Associate Assistant Administrator, Office of Evaluation in the Bureau for Program and Policy Coordination, AID/W, Bernard Pollack, Senior Horticulturist, AID S&T/AP, and Jack Sleeper, AGR/PAD, USAID. Fred Hutchinson, Director of BIFAD, AID/W, participated as an observer and provided valuable insights. Saneya Amin, FSN Economist was most helpful in assisting in the economics sub-project evaluation.

The methodology for the evaluation was standard for rapid appraisals. It included review of project documents, interviews with USAID, GOE and project staff and principal activity leaders. Site visits were made to field research stations, trial sites in various locations in Egypt, the Project Office, the Central Laboratory and the National Horticultural Laboratory.

Interviews with farmers were held in the ABIS area, the principal area of tomato production using ADS developed varieties. The evaluation began May 22 and a preliminary report was delivered to USAID, the Ministry of Agriculture, and project staff on June 9, 1983. The draft was reviewed by AID Washington and interviews held with University of California staff in July 1983. Based on comments from all parties the draft report was revised and final report delivered to USAID/Cairo.

The team acknowledges with gratitude the assistance of many people who provided information, insights and opinions about this project. We are especially grateful to Dr. Youssef Wally, Minister of Agriculture (MDA), Dr. Mohye El Din, MDA and Director of ADS, Dr. El Azzouni, Co-Director for Horticulture, Dr. Glassburner, UC/Davis and Co-Director of ADS, and Messrs. Ray Fort and John Swanson, USAID/Cairo, all of whom gave of their time and energy with considerable patience and understanding. We hope we have been accurate in our reporting and balanced in our judgments. Errors of commission and omission are, of course, the responsibility of the team.

I. INTRODUCTION

A. Background

The Agricultural Development System project (ADS 265-0041) was among the first projects authorized by AID in the agricultural sector under the renewed foreign assistance relationship between the Government of Egypt (GOE) and the Agency for International Development (A.I.D.). The ADS project agreement between the GOE and AID was signed in 1977. It was followed by an interim host country collaborative assistance contract between the GOE and University of California in 1978, with the Davis Campus (UC/Davis), assuming responsibility for coordination for the University. In 1979, an expanded five year contract was concluded between the University of California and the GOE to implement the project.

An interim evaluation of ADS was conducted by an external AID team in December and January 1981. This report, formally submitted to the Ministry of Agriculture in June 1981, is an extensive history and analysis of the origins, purposes, organizational structure and implementation history of the project. It is recommended that this evaluation and the UC/Davis response to it be read as essential background material for the present study.*

B. The Status of the ADS Project in 1981

The 1981 ADS evaluation team's principal findings and recommendations are paraphrased as follows:**

* R.Blue, et al, EGYPT: AGRICULTURAL DEVELOPMENT SYSTEMS PROJECT, AN INTERIM EVALUATION, USAID/Cairo, January 1981.

** The complete statement of findings, recommendations and lessons learned is in Annex ___ to this report.

1. Severe startup and implementation problems had delayed the project. Contributing casual factors were inexperience on all sides with host country contracts, misunderstandings about the purpose of the project, lack of correspondence between the Project Paper (the authorizing document) and the UC/Davis-GOE contract, difficulties in finding and gaining commitment from appropriate faculty members, and poor communication between all parties.
2. Early delays in project implementation led to pressure later in the contract life to rapidly develop project activities. This pressure may have put more emphasis on getting work underway rather than analyzing needs, setting priorities and concentrating resources on the highest potential areas and most significant problems.
3. In spite of early problems at the time of the 1981 evaluation, progress had been made in three main areas:
 - a joint project decision making structure had been developed, staffed and appeared to be working.
 - substantive work had begun in the horticulture subsector, especially tomatoes, the agricultural economics subsector, and certain other activities, e.g., a proposal for an agricultural library, feasibility studies for agricultural statistics, and several new research activities in agricultural science.
 - the most significant institutional accomplishment was the formation of collaborative research teams drawing from MDA, the Egyptian academic faculties and U.S. experts. This accomplishment was stressed by all parties and should not be understated.
4. The Central Laboratory being established on the University of Cairo campus was found to be an important part of the overall horticultural research effort. However, critical issues of physical development, management, budget support, access and control had not been adequately addressed or resolved.
5. The training requirements for Egyptian scientists had been severely underestimated, particularly in the Agricultural Economics subproject but also in Horticulture subproject. A training program was evolving but many needs had not been anticipated in initial budget planning for the project.
6. A main purpose of the project was to develop institutional capacity in the MDA. However, because the project was organized outside the ministry to some extent, it was questionable whether long term, sustainable institutional development would occur, whatever the benefits to individual scientists.

7. Financial management seemed inadequate. Although an evaluation is not a financial audit, the evaluation team found it difficult to reconcile budgets with actual expenditures and could not determine whether costs of specific activities were reasonable and in line with initial estimates.

Based on these findings, the 1981 evaluation made a number of recommendations, the most important of which are:

1. The Project Paper be amended to bring the goals and purposes of the project paper into closer alignment with the actual activities and projected real accomplishments of the project.
2. USAID monitoring and substantive management of the project needed to be strengthened.
3. A comprehensive institutional development and training strategy should be developed to insure long term sustainable activities and benefits of relevance to Egyptian agriculture.
4. Participation of U.S. scientists, including experts from universities outside the California system should be expanded.
5. Plans for general agricultural development should be dropped. However, efforts to extend results of crop specific activities and research papers from the Agricultural Economics activity should be accelerated.
6. The creation of a national agricultural information system, based on an expanded National Agricultural Library should be crushed.
7. The status of and operations and management responsibility for the Horticultural Laboratory should be clarified.
8. The agricultural economics research activity should be more effectively integrated with horticultural activities.
9. Dissemination of research results for all activities through workshops, publications, seminars and other means should be encouraged, but under a different project.

With the possibility that these recommendations were both reasonable and could be implemented, the 1981 report recommended that the contract with UC/Davis be extended for two years. This recommendation was based on the judgment that the project activities then underway had the potential for making an important contribution to Egypt's agricultural development. Given the nature of the research, particularly in the horticultural activity, and the early delays in implementing the project, more time was needed to achieve results and to develop a firm institutional basis for a viable long term program.

II. ORGANIZATIONAL STRUCTURE

A. Organizational Structure

The basic structure of technical advisory committees, subproject co-directors, project co-directors, project coordinator and joint boards (JPPB) remained unchanged from 1981 to the present. Although on the surface the system appeared rather top heavy, it did correspond to the idea of joint decision making and worked sufficiently well to generate, review and administratively support forty-two international activities in the two subprojects and in the third "other" category. The main elements of the project remained horticultural research, agricultural economics and selected other activities. Project expenditures accelerated rapidly in 1981 and 1982 and the project will have expended all funds by completion of the contract.

The system of joint decision making has had, however, several notable and perhaps unanticipated drawbacks. These are:

1. While enhancing institutional capacity in the broad sense, it dilutes the institution building purposes of the project in so far as the Ministry of Agriculture's Agricultural Research Centers are concerned.
2. It appears to give more control to the contractor (UC/Davis) than the GOE would like, hence leading to continued disagreement over issues of project administration.
3. It has contributed to the sporadic pattern of Egyptian efforts to assert control through occasional administrative resistance without really contributing to increased Egyptian responsibility for actions.
4. It has not produced careful financial accounting or budget management, supposedly one of the virtues of the system.

These weaknesses, perhaps overstated, require some discussion.

B. Institutional Development

The 1981 evaluation noted that enhancement of the institutional capability of the MOA related institutes was a major purpose of the ADS project and recommended that a comprehensive strategy be developed to that end. While significant enhancement has occurred of the capabilities and resources of individual scientists has occurred, a horticultural laboratory has been established and most positive of all, a pattern of ministry-academic team work has proven successful, these achievements do not by themselves constitute institutional development. For example, all Egyptian scientists interviewed stated that without incentive payments the collaborative research begun under ADS would not continue. Yet it is questionable whether the level of incentive pay can be maintained by the MOA. All MOA/ARC personnel agreed that whatever the accomplishments of ADS, and they are substantial, the Ministry of Agriculture had not benefitted in terms of its own institutional ability to plan, administer and evaluate a systematic research program. Indeed the Egyptian position paper developed by the Egyptian portion of the Joint Policy

Planning Board in September of 1982, indicated very little change in thinking about the organizational structure. In this paper support for project activities and management continues to rely on U.S. administrative as well as technical assistance. There is little to indicate that serious consideration has been given to the reorganization and integration of promising activities into an overall program. The main shift is away from joint decision making between Egyptians and Americans, but in all other respects, the "project mentality" prevails. For example, there would be an Egyptian director "assisted by an American senior technical advisor." Further, "each subproject will be administered by a resident technical advisor from Davis." The MDA appears to be wedded to a project approach, when what is needed is a more comprehensive program design for integrating the various activities started under ADS into a strategy for measuring production.

The ADS project concentrated its efforts, understandably perhaps, on developing activities and creating a process by which activities were reviewed and implemented. The planning horizon, however, was unusually short, even though most professionals involved recognized that creating a long term research strategy with the institutional properties of a research program and system was necessary. The location of the project outside the Ministry's Agricultural Research Center and the retention of substantial policy and budgetary and administrative control by UC/Davis reduced the extent to which institutional learning and increased capacity would accrue to the Ministry.

C. Control Over Administration

The failure to resolve the institutional development strategy issue meant that each individual research activity became an end in itself. At the outset it must be stated that in contrast to 1981, most Egyptian comments about the quality of U.S. scientific assistance were extremely positive, especially after other research scientists in the U.S. were enlisted to participate in the program. After incentive payments, continued collaboration with American colleagues was viewed by many Egyptians as the most important ingredient for the successful development of research in horticulture and agricultural economics in Egypt. The means by which these scientific relationships will be maintained, however, has not yet been developed.

Nevertheless, at the level of project administration, differences in procedure and style continue to cause difficulties. To overstate the case, American management at UC/Davis did not have confidence in Egyptian administrative abilities and did not want to be put in a position where Egyptian authority was paramount. To a lesser degree this concern extended to professional relationships as well. The UC/Davis administration had had difficulty initially in gaining the support and involvement of faculty members in the project, and felt that Egyptian technical control would further inhibit the involvement of U.S. scientists as well as the substantive progress of the activities. These concerns, plus initial UC/Davis inexperience in managing technical assistance relationships led to perhaps excessive efforts on the UC/Davis side to retain authority over the contract activities. This effort began in the initial stages of the project, and has continued throughout.

D. Egyptian Administration Actions

The apparent lack of confidence in Egyptian administrative capabilities on the UC/Davis side was matched by continued Egyptian resistance to the concept of joint decision making, which some, if not all Egyptian leaders saw as defacto dominance by the UC/Davis project leadership. Egyptians believed that a host country contract meant that UC/Davis worked for the Government of Egypt. The contract, however, explicitly gives the UC/Davis the responsibility for financial management and administration. The construction of budgets for each activity seemed to be very much a product of the UC/Davis coordination office and American co-coordinators in Egypt. Egyptian administrators of the project had little voice in decisions involving expenditure items involving U.S. dollars or AID dollar purchased Egyptian pounds. In a reactive fashion, they could control to some degree the timing and frequency of U.S. scientists visits to Egypt and the use of the Egyptian Special Fund.

Placed in a position where authority over the project's direction was more symbolic than real, and truly desirous of receiving substantive technical assistance, equipment, and in horticulture, new plant varieties, most Egyptians did not resist the terms of the arrangement. However, there is little doubt that when in 1982 the opportunity arose to reformulate administrative arrangements in anticipation of a new contract, the Egyptian leadership chose to subordinate UC/Davis to the Ministry of Agriculture.

E. Financial Management and Budgeting

Records in USAID files and those supplied by the project office indicate that improvement was made in reporting annual expenditures and in the preparation of budgets. (An evaluation is not a financial audit.) Nevertheless, several observations on the overall allocation and management of financial resources need to be made.

1. The rate of expenditure on approved activities improved dramatically in 1981 and 1982. So much so that funding for the final year 1983 had to be scaled back in anticipation of a budget shortfall. This in turn led the project to make a number of requests for augmentation of funds from USAID, to which USAID agreed on demonstration of actual needs. UC/Davis did not want to accept a qualified commitment, seeking instead firm official commitment to maintain expenditures at the 1982 levels. Apparently UC/Davis did not have great faith in USAID's ability to perform. The issue of contract extension became mixed up with project extension and augmentation. Finally, UC/Davis decided or realized, depending on one's perspective, in September 1982 that their contract would not be renewed. However, the issue of project augmentation remained. Failing to receive a firm USAID commitment in September 1982, ADS project administrators in UC/Davis and Cairo decided to cut back 1983 expenditures rather than maintain the 81/82 rate. This reduction meant that many research activities had to curtail planned expenditures for 1983. In early 1983, a Regional Inspector General's audit was begun on the dollar purchased Egyptian pound account, and a number of items charged were initially disallowed. Subsequently, all planned activities involving travel,

workshops and other related expenditures were suspended until reconciliation of the audit findings could be completed. Because of this the current evaluation was unable to review or make final judgments about expenditure rates or cost effectiveness of the programs as the end of contract status is approached. (FN: It should be noted that USAID has submitted a Congressional Notification for augmentation of the project in the amount of \$2,000,000. Of this amount, \$1.8 million was to go initially to the UC/D contract. Current thinking is to use most of the augmentation to carry the project through 1984 after the UC/D current contract is completed on September ., 1983.)

2. As noted in the 1981 evaluation, implementation problems in the early stages of ADS put pressure on project leaders to rapidly obligate and expend funds. In late 1982, UC/D project authorities recognized that they had encouraged this and that it had led to overbudgeting for some activities, overspending in others. For example, nine of the nineteen active horticultural activities exceeded their budget by ten percent or more although the overall rate for horticulture was about on target. The financial analysis prepared by ADS in October 1982 indicated that the project had expended \$4.8 million from the dollar and Egyptian pound accounts in 1981-82 alone. The rate of expenditure was much higher in the dollar account than the pound account, but at that rate, an additional \$1.9 million and \$353,316 worth of pounds was requested for 82-83. As mentioned above, this was not accepted by USAID although it did agree to augment based on demonstrated need.

The projected shortfall meant that a painful adjustment had to be made, the overall project had to move from an attitude of plenty to one of frugality. For example, the tomato activity, one of the most successful in the project, was cut from \$43,000 requested to \$24,000 in 1982-83 against an expenditure of \$49,000 in 1981-82. Deciduous fruits had spent \$56,000 in FY 81-82, requested \$55,000 in FY 82-83, but received only \$39,000.

These cuts were not appreciated by UC/D faculty, at least one of whom complained in writing that some less meritorious projects (in the writer's view) had received less substantial cuts, and that there had been no internal review and evaluation on which to establish priorities based on real progress. On the Egyptian side, budget cuts determined by the UC/D office were equally aggravating. They had been made without much if any input from the Egyptian Team Leaders. USAID complained that UC/D had misinterpreted the USAID position on further financial support. USAID was particularly annoyed that most of the cuts seem to come at the expense of extension and outreach activities, something USAID wanted to promote. UC/D countered that in the absence of a firm commitment to continue the project by September of 1982, they had no choice but to scale back the 82-83 budget. The net result of this was anger and frustration on all

sides. After two productive if not totally harmonious years, ADS seemed back where it started in so far as internal relationships were concerned. The Inspector General's audit, in the spring of 1983 further contributed to the growing sense of dismay and frustration. American and Egyptian scientists, who had begun to establish productive working relationship felt that they were paying the price for project management problems.

F. Administrative Costs

A fairly constant theme in discussions with Egyptian and some American scientist concerns the alleged top heavy administrative structure of ADS. This was also noted in the 1981 evaluation. UC/D addressed this issue in a February 1982 memo which made two basic points; one, the high ratio of administrative to program expenditures was a function of heavy front end costs associated with the start up of the program and, two, a project like ADS is going to require higher administrative costs because of necessity to operate both a Cairo and UC/D office. It was added that the initially high ratios of administrative to actual research expenditures (between 30 and 40 percent through September 1981) would come down to 25 to 27 percent by the end of 1982 as programs became fully active.

The evaluation team agrees that the structure of ADS puts a heavy burden on the budget for administration. The UC/D calculations, however, do not include the 26.5% university overhead charged to the direct dollar costs of each activity, nor do they include the costs of maintaining the technical administrative leadership at Davis. Although the university overhead rate is exceptionally reasonable, the combined costs of both technical committees alone equaled \$374,133 in 1981-82. Between 60 and 70 percent of this went to salaries of U.S. professionals. Using the dollar account we estimate that the ratio of administrative (including UC/D, Cairo, UC/D overhead, and technical administration) came to approximately 40 percent of dollar expenditures through 1982. Although this ratio may be reduced in 1982-83, total administrative costs have been unusually high for this project.

On examination of other expenditures by category within each subproject activity, a clearer picture of "where the money went" emerges. Based on preliminary budgets for the 1982-83 horticultural activities, excluding a line item for Horticultural Administrative: Technical, the total dollar amount available to horticultural research in 1982-83 was budgeted at \$970,000. This does not include a reserve fund of \$130,000. The average activity budget for 1982-83 was \$48,500. In addition, each activity had available, on average, LE 40,500 financed by AID. By analyzing six activity budgets prepared for 1982-83 in the horticulture subproject, the following composite budget breakdown was prepared.

TABLE I

Estimated "Average" Activity Budget
Horticultural 1982-83*

	<u>\$ U.S.</u>	<u>L. E.</u>
	<u>UC/Davis</u>	<u>Egypt</u>
Salaries 16.975 (35%)	20.250 (50%)	4.900 (12%)
International Travel	10.185 (21%)	15.350 (38%)
Expendables	7.760 (15%)	--
Misc. (Intern'l Travel)	2.910 (6%)	--
UC/D Overhead	11.840 (26.5%)	--
Equipment	3.820 (8%)	--

*Source: Activity working budgets for six Horticultural subproject
Activities UC/Davis, USAID files 1982-83.

No actual budget corresponds to the figures presented, but the average cost assigned closely reflect the pattern of distribution found in the six budgets which were examined. This average budget shows the large proportion of the technical assistance activity which when using senior scientists and frequent short term visits, must inevitably be used for salary, travel and per diem. For travel and per diem of U.S. scientists alone, approximately \$1,225 million was expended through FY 82, plus an additional \$376.500 for UC/D overhead for a total of \$1.6323 million. This represents thirty four per cent of the approximately \$4.645 million expended on activity agreements. U.S. travel and salaries together account for approximately 62% of the U.S. dollar side of the activity budgets.

None of this is meant to detract from the conclusion made elsewhere in this report that substantial contributions to Egyptian horticulture and agricultural economic research have been made. But it does raise serious questions about the cost effectiveness of the approach used to develop and enhance institutional capacity and to transfer the benefits of U.S. agricultural technology to Egypt.

G. Project Leadership

The 1981 evaluation noted that the ADS project had difficulty recruiting qualified leadership to the projects administration. It was assumed that these difficulties had been resolved by 1981. However, since the 1981 evaluation the project continued to experience some difficulties mainly with regard to leadership on both the UC/Davis and Egyptian sides. Highlights of these problems include:

- The replacement of the American Co-Director in Egypt, Dr. Pierre Loisseaux in mid-1981 with Dr. Bruce Glassburner in January 1982 after an interregnum of several months by Dr. Frank Child, UC/Davis coordinator in late 1981.
- The replacement in 1981 of the American Co-Director for Horticulture, Dr. Ross, with Dr. Simms.
- The replacement of Dr. Hindi as Egyptian Co-Director with Dr. Moheya El Din, Head of the Agriculture Economics Institute of the Agricultural Research Center of the MOA.
- The replacement on the USAID/Cairo side of Mr. Armstrong with Mr. Swanson, the current project officer.
- The replacement of Dr. Childs in 1982 as UC/D coordinator with Dr. Robinson, Associate Dean of the College of Agriculture.

Continuity of leadership in Cairo was maintained however by the presence of Drs. Rowntree and Sehera for the UC/D Egyptian team. On the Egyptian side Dr. Gueli continued to serve as Co-Director for Ag. Economics and Dr. El Azzouni as Co-Director Horticultural activities. Dr. Simms, who became Co-Director of Horticulture with Dr. El Azzouni had been associated with the project from the beginning in his role as tomato specialist and was able to move effectively into a more general leadership role.

While some change in personnel is inevitable, it is unfortunate that the ADS project, especially on the UC/Davis side, continued to be troubled by leadership changes in 1981. It was only in January 1982 that the present leadership team was in place. While these changes may have been necessary, the appearance of discontinuity contributed to the overall sense of management weakness.

H. Mobilization of Resources

As stated in detail in the analyses of subprojects, the project succeeded in overcoming several major weaknesses noted in the 1981 interim evaluation. These were:

--Lack of UC/Davis scientific faculty participation.

--Inability to recruit participation of leading scientists outside the UC/Davis and California systems.

--The need to broaden and deepen the participation of younger Egyptian scientists into the research activities.

UC/Davis faculty participation in the project increased throughout 1981 and 1982. By 1982 substantial numbers of the agricultural economics and horticultural faculties at UC/Davis were involved in scientific research and training activities in Egypt. By the end of 1982, individual faculty members expressed concern that the Egypt project was detracting from the ongoing responsibilities of the faculty. In an internal evaluation conducted in 1982 U/C Faculty members observed that there were relatively few professional rewards to be gained from project participation, although many felt that they had benefitted in terms of personal growth. Participation was seen more as a "missionary" obligation, rather than an expected part of their professional careers. This perceived lack of career benefit was reinforced by rather conservative administrative practices followed by UC/Davis with respect to leave, incentive payments and professional recognition.

This was a particular problem with UC/Davis horticultural scientists on 11 month appointments with the university. Participation in the ADS project had to fit in with other priorities. UC/Davis research scientists do not have complete freedom of action with regard to their research agendas. Research programs are funded by the state and subject to annual review. Technical assistance to and involvement with Egyptian research programs are not typically an recognized integral part of UC/Davis scientists funded research. Therefore the amount of time available for international technical assistance is quite limited, roughly ten to fifteen days a year. UC/Davis scientists pointed out their involvement with the ADS program was a heavy additional burden for them and their departments.

It is likely that even if the contract had not ended, UC/Davis would have had to substantially reduce the level of faculty involvement. There was real concern that first rate people would not be available to replace Drs. Glassburner, Roundtree and Simms in the Cairo office when their tours with the project concluded. In spite of these difficulties, UC/Davis was committed to seeking an extension of its contract on the basis of the progress which had already been made in moving the project forward.

The recruitment of scientists from other campuses, as well as expanded U.S. field visits to research and production centers in other states has been a definite improvement since 1981. With the addition of Dr. Kreizdorn (University of Florida) in citrus and Dr. Munger (Cornell University) in Cucurbits, Dr. Barham in garlic and Dr. Simms as Horticulture Co-Director the project could boast of having four past presidents of the American Society of Horticultural Science responsibly engaged in the work of the project. On the Agricultural Economic side, professionals from UC/Berkely and other schools became more actively engaged, and younger Egyptian economists were given opportunity for post doctoral training in the U.S.

The involvement of large numbers of highly qualified U.S. scientists from UC/Davis and elsewhere is a notable achievement of the project.

Progress in resource mobilization notwithstanding, it is troubling to observe the continued difficulty the U.S. foreign assistance program has in recruiting and rewarding university faculty involved in technical assistance activities. There are several important constraints which faced UC/Davis in this regard, most of which are discussed in detail in the 1981 evaluation. These are:

1. Lack of adequate rewards and incentives for U.S. faculty participation in the context of highly competitive domestic career paths.
2. Lack of administrative support from experienced contract management offices on the home campus.
3. Unwillingness to subordinate U.S. scientific expertise and research agenda to the leadership and research management of institution in developing countries.

Faced with these obstacles, the ADS project tended to attract more senior, established scientists for whom the risks of foreign involvement are not so high.

III. MOBILIZING TECHNICAL ASSISTANCE: THE LESSONS OF EXPERIENCE

Is there a better way to mobilize scientific talent for technical assistance tasks? No solution is without difficulties but USAID and the GOE together must address this problem early on in the planning for the new sector assistance approach. The evidence from ADS suggests some possible directions to pursue.

1. Combining a host country contract with a collaborative style mode appears to create a dilemma. The host government expects to direct the technical assistance institution subject to the terms of the bilateral agreement. The U.S. collaborating institution expects to be treated as a partner and, since the direction of the quality and mode of technical assistance is from the technically more developed to the less developed country, the collaborating institution tends to want professional control of the process. It may be that the only

way to resolve this dilemma is to avoid host country contracts if one is dealing with an American university. USAID must play a greater administrative and substantive role in administering the project. If the host country contract is preferred, technical assistance talent may be mobilized through individual consultative contracts, or through third party institutional arrangements.

2. There is no substitute for experience. It may not be sufficient but it is necessary. Key people in any technical assistance project must be blessed with the intellectual acumen and experience to command respect, the sensitivity to know when to proceed slowly and the determination to press for excellence. Less experienced people should not be precluded, but they should not be thrust into leadership roles. The ADS administrative team in Cairo from 1982 on was an excellent mix of these qualities. Senior U.S. scientific collaborators also were widely praised by their Egyptian colleagues. It is unfortunate that their involvement in the project did not develop until relatively late in project's life.
3. Administration is a separate and unique skill. The administrative problems of ADS overshadowed the substantive good that came out of the project. Administration is distinct from management. Good administration means the ability to keep records, inventory control, set up and implement financial and accounting procedures, prepare and deliver all manner of reports to all types of people. Overall and with notable exceptions, ADS was not a well administered project. This kind of skill is not necessarily found among plant breeders, physiologists or even economists. Yet we expect these people to know how to run a "business" according to the rules of the host country, the collaborating institution and the U.S. government. Are contracting institutions provided with courses in contract and financial administration? Does AID insist on these kinds of skills in writing terms of reference? Does AID provide ongoing support and problem solving assistance when issues arise? The answer for ADS is evident in the history of this project.

I. Revised Project Paper (PP)

To respond to the principal issues, and recommendations advised by the Evaluation Report of January 1981, and to take advantage of some "lessons learned" in implementing the project over the first three years of the contract, the Joint Policy and Planning Board at its meeting on February 22, 1982 approved a revised Project Paper (Attachment #1). Although there was only oral concurrence by USAID this draft revision has been the basis for carrying out activities under the host country contract between MDA and UC/D and does appear to be consistent with the broad scope of the original Project Paper.

The revision recognizes that the stated objectives were so broad as to allow for more activities than could possibly be accommodated within the time, financial and administrative constraints of the contract, as well as the personnel and resource constraints of the participating institutions. The revised PP now clearly delineates the broad overall goals of the project and the more specific achievements expected within the projected five year time frame.

The PP amendment formally recognized that the ADS project, in fact, was concentrating its efforts on the activities under the subprojects of Horticulture and Agr. Economics with a few other activities and the scope of the project during the remaining contract period will fall largely within these established components. The review team feels that the activities and procedures (technical) now being implemented by the project are more realistic and attainable. It also agrees with the JPB that at the end of the present five year contract there will not be a permanently revitalized and stable set of research institutions but that a major move in that direction will be of great help to the MOA in building for its long range development.

III. The Horticultural Sub Project

A. Goal and Purposes:

The stated goal for the Horticultural subproject is to enable Egyptian horticultural enterprises to supply nutritious fruits and vegetables in quantities ample for the increasing domestic demand and of a quality that will further penetrate the export markets of Arab countries, Europe and Southeast Asia.

The following purposes are stated in the Narrative Summary of the Logical Framework for the Horticulture Subproject:

1. To develop in Egyptian horticultural research institutions a greater capacity to plan, undertake, complete, and extend research and technological knowledge.
2. To increase productivity of Egyptian horticulture.
3. To encourage relevant research in fundamental disciplines.
4. To improve the postharvest handling, storage, and transport of horticultural products in domestic and export markets.
5. To develop new activities to overcome constraints on the above purposes.

Note: No place in the LF is there any mention made of intergrating activities in the Horticulture subproject with that of the Economics subproject.

B. Overview

The Horticultural Sub Project has been divided into 21 different activities, each with its own budget, principal investigators (American and Egyptian counterparts) extension, and staff. For those high priority commodity oriented activities (tomato, cucurbits, citrus, garlic, grapes and mango) the teams are well integrated with all subject matter specialists (breeder, pathologist, physiologist, extension specialist, etc.) available to the activity as necessary. A notable exception to this is an economist with agricultural management background. This is an inherent weakness that must be corrected before much progress will be noted in the activities. Cost of production and marketing information is necessary to the researchers and the growers so that they can continue to make the proper research and management judgements and decisions.

The teams assigned to the lower priority commodities (Seed Production, Nursery Industry, Cut Flowers, Food Science and Technology), Olives, Deciduous Fruit, Medicinal and Aromatic Plants, Date Palm, and Banana) are not as yet well organized and lack members for their teams. The remainder of the Horticultural activities (Central Lab and Library, and Tissue Culture) are non-commodity oriented.

Since 1981 the extension or outreach program has been intensified and improved. This is a definite plus and will contribute to the impact from improved research. Evidence of the extension inputs to the agricultural industry are reflected in the published production recommendations for cucumber, muskmelon, squash, watermelon, garlic, tomato, citrus, grape, olive, mango and floriculture. The most apparent and successful extension effort is with tomatoes. For this crop, all techniques for information transfer are being used (mass-media, direct contact, newsletters, growers meetings, demonstrations and field days).C. Activity Analysis

1. Major Commodities

Tomato

Tomatoes are the most important vegetable crop in Egypt and are grown on about 3 percent of the total planted area (150,000 ha). This appears to be the strongest of the horticultural activities in personnel, research effort and technology transfer. In terms of total project expenditures, it has been accomplished with a minimum of funding and travel. A major research effort to evaluate available varieties for adaptation to environmental, soil, and disease conditions in Egypt was started in 1980. It was intended that varieties surviving this intensive screening would provide short term recommendations until releases resulted from a longer term breeding program. The strategy has paid off in providing a long list of 22 varieties for both fresh market and processing and has improved yields from an average of 8-10 tons/F (feddan) to 30 tons/F. A concurrent breeding program to incorporate disease resistance, yield and quality factors into acceptable varieties has been established for the long term.

A concerted extension effort to transfer the available variety and production information to the farmers has resulted in the production and planting of over 2.5 million seedlings of the new types on 4500 feddans of demonstrations in 16 governorates. Almost 10,000 kg. of seed for the new varieties should be available for planting in this growing season. Egyptian leadership in this activity is excellent and can sustain itself without UC/D. Also, the cost/benefits ratio for this activity is very high. The returns to the Egyptian economy from the increased tomato yields would pay for the entire cost of the ADS project in one growing season.

Cucurbits

Cucurbits (cucumber, squash, pumpkin, muskmelon, watermelon) are grown on about one third of the vegetable acreage in Egypt and are of significant economic importance. After the addition of a team co-leader (Murger) from outside UC/D the team started to make progress. Although variety testing has provided temporary cultivars for the farmers, none are resistant to the common diseases and viruses affecting this group of plants. A comprehensive breeding program has been started to incorporate powdery mildew resistance in cucumber, squash and melon; virus resistance in cucumber, melon, squash and watermelon and fusarium wilt and gummy stem blight resistance in melon and watermelon. Also, considerable research dealing with cultural and management procedures that show positive results in improving production is underway.

The complexity of the genetics of resistance and the breeding procedures being used will require outside expertise for several years after the UC/D contract expires. It appears that the Egyptian leadership lacks sufficient training to conduct the research that will be necessary to carry the project forward. At this time funding for the activity appears to be adequate but the involvement of consultants and the necessity for additional training by Egyptian counterparts might require a larger budget. The impact of the activity on the vegetable industry is noticeable and will grow if new disease resistant varieties are introduced. The extension program is weak but an effort is being made to train agents. Good information and grower publications are available so a continued effort must be made by the MOA to prepare an adequate number of agents for technology transfer. Because most farmers are growing an array of crops, it would be expedient if extension agents were trained to extend information over a broad rather than a narrow range of crops.

Mango

Although the potential for growing and marketing this crop is high, in terms of acres in production it is a relatively minor crop. However, the budget and extended effort to determine the cause and control for Mango Inflorescence Malformation has made this a major priority crop. The actual cause of the problem has not been isolated but a broad series of tests have all but eliminated insects, diseases and/or viruses as the causal agent. The most fruitful research has been in the area of cultural practices, particularly with early management of pruning and thinning procedures. The extension service has managed to convey this information to the growers and it has decreased the percentage of malformation and increased yields. This is a short term objective and must be followed with a breeding program to produce varieties that are resistant to malformation and of higher eating and shipping quality.

As the program stands now it is not sustainable by the MOA. A breeding program will require a commitment for a breeder, long term training for present team members, expanded facilities (land, equipment, labor) and an increased budget. It is questionable if the cost/benefits ratio would justify making this kind of an expansion with this crop. A great deal of economic research is necessary before that question can be answered and it is recommended that a cost/benefits study be made to determine the value of this crop in the economy. However, until this can be accomplished it is recommended that the variety evaluation program be extended, better use be made of the U.S. collection in Florida and Puerto Rico and that technical assistance be expanded.

Garlic

Garlic is an important domestic and export crop that is grown only on about 5000 ha. The research effort is concentrated primarily on improving production through the selection of the highest yielding cultivars in the screening tests, improved management and cultural procedures, insect and disease control and better seed handling methods. This type research is traditional and about 80 percent transfer of technology. For the short term it is satisfactory and desirable but it cannot sustain a viable industry for long. Because of the potential for garlic production it is recommended that a

long term breeding program be initiated to develop high yielding, pungent, pest and disease resistant varieties with good storage and shipping qualities and long shelf-life capability. This will require an injection of funds, a plant breeder, and long term training for the Egyptian team members. It is strongly recommended that a production economist be added to the team and that a functioning extension element be trained and assigned to the field. Also, it is important that the MDA continue to use outside technical assistance until the Egyptian team has been trained and is capable of conducting the required research.

Grape

Grape is an economically important fruit crop in Egypt and ranks second to oranges in area under cultivation and production. Most of the production is used as table grapes and a small part going to a developing wine industry. With almost 5000 F of the New Lands area allocated to grape production it has the potential of becoming a leading export item. The research effort has been primarily screening local and introduced cultivars for adaptation to Egyptian environmental conditions. Eight new cultivars have been released from this program and research impact on the industry will be significant. In addition, research on thermal fumigation of the soil using plastic mulches and the potential of getting two crops/year could also have great economic impact. The Egyptian research team is well trained but lacks an agricultural economist. As extension effort has been mounted and an excellent grower publication has been produced and is being used by the growers. This activity is sustainable by the MDA with an occasional consultant for technical assistance. It is recommended that the budget for the grape activity be maintained at the present level of effort, that an agricultural economist be added or made available to the team and that a breeder be considered for the long term success of the activity.

Citrus

Citrus, primarily oranges, is the major fruit crop industry in Egypt. However, to maintain this position and be profitable, considerable research effort is needed to identify the major elements involved for increased production. Although the activity has concentrated on establishing a foundation planting of virus indexed material, rootstock evaluations and factors affecting production, the research has had very little impact on the industry and appears to lack imagination and innovativeness. Lack of management training and poor cultural practices in their own research orchards has negated much of the research results. Training is short term observational rather than long term academic and travel seems excessive. Neither the training nor travel seem to have contributed much to the success of the activity. The American counterpart seems to be carrying the project and without the infusion of outside technical assistance the MDA cannot sustain the activity. Although there has been some training of extension agents, there has been little, if any, extension effort and no evidence of their impact.

Because the activity is so important to the agricultural economy, it must be maintained and continued. It is recommended (1) that an outside evaluation be made of the needs of the citrus industry and that future research be based on their recommendation; (2) that a production economist be added to the team so that production, management and marketing studies can be undertaken to provide accurate guidance in making management decisions; (3) that short term, hands-on technical training be provided (in Egypt) to both research and extension members of the team and (4) that the activity be continued using outside consultation when necessary.

2. Minor Commodities (with potential)

This group of activities (Seed Production, Nursery Industry, Cut Flowers, Food Science and Technology) are listed in this fashion because accomplishments were too few to evaluate at the time of the review. All have a very high potential for adding to the agricultural economy, particularly because of their export possibilities. The Food Science activity has made significant progress with a procedure to speed up manufacture of white soft cheese and with processing of tomatoes for juice and paste. When complete this research will have a significant impact on the industry. Both the Seed Production and Food Science activities are essential to the success of the subproject and every effort should be made to maintain support. All four activities will require considerable support from the Economic group, particularly in the packaging and marketing area and will continue to need outside technical assistance.

3. Minor Commodities (with little potential)

Date Palm

Work began in March, 1982 at seven stations. The first years work was exploratory and was intended to establish a basis for long term research. The emphasis for studies was on leaf/bunch ratios, fertilization, pollination of bunch management. Short term studies were conducted on propagation, potency of male pollen sources, pollen storage tests, and the introduction and maintenance of eight date varieties from California. No extension effort was undertaken nor was the impact of the research measurable. This activity is not sustainable without additional resource support and it is questionable if the cost/benefit ratio would be high enough to justify continuation of the activity at this time. It is recommended that an in-depth economic feasibility study be made of this crop to determine national needs, resource capabilities, and returns on inputs. It would be a waste of resources to continue with any research until this study is complete.

Banana

The banana activity was very slow to start and has concentrated on the evaluation of introduced cultivars for adaptability to climatic and growing conditions in Egypt. Several new introductions are in quarantine but maintenance and care is so poor it is doubtful if many will survive. There appears to be a potential for a banana variety with a reliable production record and better eating quality but it would take a long time to develop an industry. This activity is not sustainable with the present leadership and it might be more cost effective if valuable resources, now assigned to this project, were diverted to one of higher priority.

Olive

The research emphasis for this activity has been to develop improved technique for the rapid asexual propagation of cuttings. This research effort would then contribute to the overall effort by the MDA to add 250,000 trees/yr. to the 20,000A of olives already being grown. This research has resulted in reasonable success with a misting procedure conducted in a greenhouse environment. The technique is well established and traditional and the results are generally predictable. Consequently, the current research with olives is again off-the-shelf, not very innovative, and rather expansive in relation to the economic importance of the crop. To date the research impact on the industry has been small and probably will not increase unless considerable effort is made by the MDA to change research direction. It is recommended that further expenditures for propagation be diverted to the tissue culture lab for extensive research on cloning techniques. Also, if the activity is continued, a long term breeding program for improved varieties must be considered and additional research be conducted on cultural and management procedures.

Medicinal and Aromatic Plants

The research in this activity is evaluating exotic plants having medicinal or aromatic properties and could be of significant economic importance. If program were expanded it should be in the direction of breeding and cultural and management practices. Also, an agricultural economist should be made available to the project. To improve the professional aspects of this project much more training is needed for both research and extension personnel. At the present level the activity seems to be self sustaining.

Deciduous Fruits

The research program is primarily an introduction and screening effort to find cultivars with low chilling requirements that are adapted to Egyptian environmental conditions and tolerant to saline soils and water logging. The long term nature of this project makes it difficult to evaluate impact but it appears to be good for apricots and peaches. If orchards were better maintained (weeds, diseases, insects and pruning and thinning procedures) research results might be more reliable. It is recommended that the research effort be diverted to better cultural and management procedures (spacing, trellishing, pruning, thinning and weed management) and that an economist be assigned to the activity to make cost of production studies. It appears that the cost/benefits ratio for this commodity might be rather low and that resources be diverted to higher priority crops. This activity is sustainable by the MDA at the present professional level.

4. Non-commodities

Tissue Culture Lab

The primary emphasis to date has been on ordering equipment, organizing and setting up the lab and training personnel. Preliminary research was started with garlic, strawberry, mango and potato but no results have been reported. To date research from this activity has had no impact in the agriculture sector

yet it has high potential for pay-off, particularly with the tropical fruits. The Egyptian leadership in this activity is well trained and the lab fully equipped with adequate technical personnel. Nevertheless, considerable outside assistance will be necessary to this activity to provide guidance and technical assistance. The lack of any activity to date makes it difficult to consider recommendations at this time. However, research on the cloning of olive, banana and date palm (difficult to propagate) and for virus free strawberries and disease free mango should be initiated immediately. I visited this lab 11/28/83 and found no activity taking place. Apparently nothing has happened here since the review.

Central Lab and Satellites

The ADS Central Laboratory is located in the Central Laboratory Building on the University of Cairo Campus and is an activity of the Horticulture Subproject of ADS. The building now being occupied is the property of the University of Cairo. At issue is "What happens to the Central Lab at the end of the ADS Project"? At this point the question is perhaps academic since the Minister of Agriculture has stated that the lab will be a part of the MOA and the building will be "leased" from the University on a long term basis. It is intended to be a national institution and become a general laboratory for "mainly horticulture and related sciences". At the present time the lab consists of a library, general lab, tissue culture lab, post-harvest facilities, packing and grading line and several greenhouses. It is under the able direction of Dr. S.Z. Twefik and appears to be functioning quite well in both a research and service mode for the ADS Project. It is the best equipped and functioning lab that the evaluation team has seen in Egypt and probably will remain so if the following conditions can be maintained:

1. The lab is provided with an adequate budget and that the incentive system remains intact. This will assure long term and competent technical labor in the lab that is so important to continuity of the program and training.
2. That maintenance of equipment is assured and replacement of supplies occurs as necessary.
3. That additional new equipment is purchased to maintain the state-of-the-art capability.
4. That there is agreement by all users (MOA and University of Cairo) as to use and direction of the lab.
5. That regulations for use of the lab remain simple enough so that bureaucratic orders do not smother the desire for the use of the lab, yet responsible and responsive enough to maintain an order of professionalism.

This laboratory and the attached library is essential to the project for both its basic and applied research and must be maintained and used. It is probably the most outstanding accomplishment of the ADS project and should provide the incentive to the young researchers to strive for the goal set for this project. The impact this can have on future horticultural and other research in Egypt is high and the benefits derived will be high when compared to its cost. However, the MOA must take great care that this accomplishment does not become a monument like so many other labs in Egypt.

The satellite labs at the ARC in the Barrage area (El-Kanater) are in complete disrepair. Because of the importance of this station to the total agricultural research program it is recommended that these labs be refurbished and brought up to a professional level for use by those researchers working at the station. It is also important that the satellite stations be supplied with field equipment that is adequate for the researchers responsibilities. At present there is little or no equipment to do field research.

D. Achievement of Purpose

1. In only one case, the Tomato project, has the activity been institutionalized. This was no doubt due to the guidance and leadership of Dr. William Sims who was with the project from the start and on a full time basis. All the other activities will need some type of technical assistance and in many cases economic assistance. The weakest areas of institutionalization have been planning the research and extending the results and much more training is needed in these areas.
2. In some fashion or another each of the activities contributed to increasing the productivity of Egyptian horticulture. The greatest impact will come from the Central Lab, Food Science, Tomato, Cucurbit, Garlic, Grape, Citrus, Seed Production and Tissue Culture activities. Projects like the tomato and cucurbit have already started to pay-off economically and the Central Lab has made a significant academic contribution.
3. Except for the tomato, cucurbit, grape, and tissue culture activities very little relevant research in the fundamental disciplines has been noted. The major research effort has been in the traditional mode with traditional crops. Only a handful of the reported published papers could make it into a refereed journal.
4. The Tomato, Citrus and Post Harvest activities have contributed most to the improvement of the postharvest handling and storage problems. Nothing has been reported from any of the activities on storage and transport of horticultural products.
5. The constraints on doing research and extension in a developing country are overwhelming and this project offers no exception. The lack of an acceptable extension service is probably the largest constraint to the success of this project. No matter how much research is conducted and reported, if it does not get to the farmer it is worthless.

E. General Recommendations

1. Every activity must have an agricultural economist available. The reasons are submitted in the activity details above.
2. Several of the teams have weak leadership or have leaders with other responsibilities that are more demanding of their time. It is recommended that teams be reformed and that only well trained full time leaders and team members be chosen.
3. Rather than have an extension component in each activity it is recommended that specialists be named to serve more than one activity.

4. The cytology lab for genetic studies should be expanded and maintained in the Central Lab.
5. To speed up research, particularly with annual crops, teams should take advantage of the ability in Egypt to produce two or three crops a year.
6. It is recommended that the project take advantage of the availability of USAID/S&T/AGR centrally funded projects such as Weed Control and Pest Management.
7. It is recommended that the onion and potato research be included in the horticultural research program.
8. It is recommended that the project be alert to the possibility of new, high cash value crops such as asparagus, sweet potato, many of the root crops, and Avocado.
9. It is recommended that an in-country three to four week training program be initiated for extension agents. This should be a hands-on, trouble shooting type of training, teaching "what" to extend rather than "how" to extend.

Economics Subproject

1. Progress in Achievement of Purpose

The purpose of the economics subproject as outlined in the 1979 UC contract addendum, is to enhance the capacity of the Ministry of Agriculture and other Egyptian institutions to identify and analyze agricultural problems, provide policy alternatives, and select and implement agricultural policy. Enhancement of this capacity was to be accomplished by upgrading the analytical skills and knowledge of Egyptian agricultural economists through the provision of funds for policy-oriented research, training and professional collaboration amongst themselves and with U.S. agricultural economists.

In less than three years of what was originally planned as a five year project, many of the benchmarks set out in the project paper to measure progress towards achieving this purpose have come close to being met (Table II). A total of 115 Egyptian Ph.D's and 120 junior economists (60% of whom are university research assistants) or about three-fourths of the agricultural economics profession in Egypt participated in the subproject. Virtually all of the agricultural economists at the disposal of the MOA have been utilized in the program. Over half of the 235 Egyptian collaborators comprise Egypt's younger "second generation" of economists, who in the future will have larger policy- and decision-making roles in the society. Furthermore, many economists who participated were trained in socialist countries. Despite the fact that these individuals were less familiar with empirically-based methods, they were able to acquire new analytical skills and exposure to Western economic inquiry through their participation in the program--two were actually team leaders.

TABLE II
END OF PROJECT STATUS OF ECONOMICS SUBPROJECT
IN SEPTEMBER 1983

	<u>Target</u>	<u>Actual</u>
Egyptian economists who have participated in collaborative research	150-175	235 <u>1/</u>
UC faculty and graduate students who have participated	60	44 <u>2/</u>
Workshops	2-5	10
Post-doctoral candidates	14	10
Doctoral candidates	6	3
Egyptians who have attended professional meetings	16	7
Research activities completed	32	21 <u>3/</u>

1/Includes 120 Egyptian research assistants (MSC degree).

2/Excludes 10 professors from other U.S. universities.

3/Excludes two activities which need six months for completion.

Source: Economics Subproject contract addendum Log Frame and UC/Davis records.

Through "activity agreements" between the GOE and the contractor, research was carried out in six general policy areas: prices (4 activities); human capital and social institutions (7 activities); allocation of "development resources" (1 activity); food security (4 activities); and land and water use (2 activities)^{1/}

Each of the 23 research activities initiated under the subproject included one or two Ph.D Egyptian economists and one or two U.S. counterparts providing ten MSC personnel working on a policy-oriented topic using modern techniques of data analysis. This "hands-on" research training was supplemented by workshops, seminars, guest lectures, exchange visits between U.S. and Egyptian researchers, short courses of instruction (such as English for economists, micro-computer courses) and other training, as well as longer training programs for the ten post-doctorates and the three doctoral candidates.

Most of the working papers produced by members of these activities exhibit the learning process which took place under the subproject. In general, the first third of the papers authorized by Americans tended to be methodological, while those by Egyptians tended to present historical backgrounds or general overviews, and in some cases may be characterized by rhetorical assertion rather than empirical analysis. Subsequent papers, however, begin to show increased analytical maturity, collaboration and independence of authorship by Egyptians.

^{1/} The Biogas Evaluation Activity appears only marginally related to these policy areas.

TABLE III
ADS PARTICIPANT TRAINING TRIPS TO U.S.
IN ECONOMICS ACTIVITY (1980-1983)

<u>No. Participants</u>	<u>Length of Stay</u>	<u>Purpose of Visit</u>
3	Continuing	doctoral program
10	One year	post doctoral studies & research
29	Four weeks or more	work with collaborators on data analysis and/or computerization; utilization of UC libraries and visit California water delivery system
35	Two to three weeks	work with collaborators on data analysis and/or computerization; and/or report preparation
3	Less than two weeks	visit water delivery system and collaborate on activity design
80	Total	

Source: UC/Davis records.

For example, the first paper (No. 23) of the Food Subsidies Activities was written by the Egyptian team leader and presented the broad institutional framework of price policies and food distribution. A subsequent paper (No. 45), including other team members as authors described how a theoretical model could be used to measure the welfare costs of wheat pricing policy. Two subsequent papers applied this model more thoroughly: No. 84 examined the welfare costs of rice pricing and quota policy; and No. 111 examined the welfare costs of broad bean marketing and distribution policy. Numbers 59 and 60, which included other Egyptian team members as authors, completed the team's work on measurement of differences in income and consumption between rural and urban areas. Two additional papers (Nos. 74 and 89) were written by

senior members of the team, the last being a considerably improved revision of the first paper. Subsequent papers (Nos. 144 and 145) showed significant analytical improvement and maturity in understanding of the Egyptian context. The last paper (No. 150), a summary of welfare impacts of government policy, was reviewed by the entire team, and carries the names of all team members. Of these eleven papers, at least six of these papers are worthy of submission to professional journals.

2. Institutionalization of the Project

The January, 1981 evaluation finding still stands: the subproject has failed to put into place a permanent mechanism to bring government and university economists closer together in working relationships and thereby institutionalize the policy advisory role. However, collaboration between Egyptian economists, while in a mode operating outside the MDA and the universities, has been substantial.

Through the 23 research activities, the project achieved a high degree of collaboration between the MDA economists and economists in various establishments and institutions, including: the faculties of economics and political science in ten Egyptian universities, the National Institution of Research, the American University, the Ministries of Investment, Supply, Economy and Planning, etc. For example, the Agricultural Policy Analysis Activity has two members from the Ministry of Supply, three from the Ministry of Planning, two from the MDA, one from the Institute of National Planning, two from universities and one from the Suez Canal Bank.

Many collaborators involved with the economics subproject feel it has demonstrated that cooperation is possible and fruitful between the various organizations and departments concerned with agricultural policy in Egypt. Some are confident that cooperation will continue after termination of the project: probably not at the same level as during the project, but definitely at a higher level than the pre-project level.

3. Marketing of Research Findings

Other than through the process of collaboration between the Egyptian researchers, there are two primary ways the findings of the 23 activities have been marketed in Egypt by the project administration: the organization of ten thematic workshops, plus numerous smaller seminars and workshops; and the publication and distribution of the 152 working papers. Reaction to the workshops and papers is difficult to measure, but it is clear that they generated a high degree of interest.

The ten Economics Policy Workshops (listed in Table IV) were well attended during the duration of the sessions by government and university personnel outside the project. Each was opened by the Minister of Agriculture, who more often than not said something substantial in his presentation. Invitations to the workshops were sent to all those thought interested. Proceedings were translated into Arabic by the project administration and sent to the relevant

ministries. Leaders of the workshops were in most cases asked to present their recommendations to the Minister of Agriculture, other relevant ministries or policy-making groups. This was also done with many of the smaller seminars and workshops involving only one activity. Government and university personnel involved in the ninth workshop on food price policy and subsidies were invited to present and discuss the workshop findings on the popular Arabic radio station during the last week in May 1983.

Table IV

Economics Policy Workshops
Sponsored by the ADS Project

- | | |
|---|-----------------------|
| 1. First Economics Policy Workshop
"Economics of Agricultural Intensification" | March 28-31, 1981 |
| 2. Second Economics Policy Workshop
"Agricultural Marketing in Egypt" | June 23-24, 1981 |
| 3. Third Economics Policy Workshop
"Migration & Mechanization in Egyptian Agriculture" | December 15-16, 1981 |
| 4. Fourth Economics Policy Workshop
"The Promotion of Egyptian Exports of
Horticulture Policy in Egypt" | March 29-30, 1982 |
| 5. Fifth Economics Policy Workshop
"Agricultural Policy in Egypt" | September 18-19, 1982 |
| 6. Sixth Economics Policy Workshop
"The Future of Cotton in the Egyptian Economy" | December 18-19, 1982 |
| 7. Seventh Economics Policy Workshop
"Mechanization Issues in Egyptian Agriculture" | February 17, 1983 |
| 8. Eighth Economics Policy Workshop
"Livestock Economics in Egyptian Agriculture" | March 3, 1983 |
| 9. Ninth Economics Policy Workshop
"Food Price Policy and Subsidies" | May 11-12, 1983 |
| 10. Tenth Economics Policy Workshop
"Labor Migration and Egyptian Agriculture" | May 19, 1983 |

The working papers are formally submitted to the Foreign Relations branch of the MDA, which announces the existence of the studies to those thought interested. Papers are then distributed by the project administration upon request, or sent formally to those in the MDA thought interested. To date, some 8,000 copies of papers have been distributed within Egypt alone. Numerous working papers are also republished in the research bulletins of the Departments of Agricultural Economics at Zagazig and Ain Shams Universities. The project has also generated several publications in U.S. journals and one book; the latter did not include Egyptian authorship.

There has been very little discussion or exchange of ideas between project personnel and the AID Agriculture Office concerning the findings and recommendations of the research activities. Reasons for this failure to communicate might include: the acrimony which has characterized the relations between UC/Davis and the AID/Cairo Mission; failure of the AID Mission to follow the January, 1981 evaluation recommendation to assign an agricultural economist to monitor the economics subproject; perceived lack of interest on the part of the AID Mission (the Project Officer was the only person from AID who attended the Ten Policy Workshops); and perceived unwillingness to cooperate on the part of UC/Davis (in at least three instances AID tried unsuccessfully to obtain research papers from UC/Davis).

4. Relationship with Horticulture Sub-Project

More attention has been given to the macro-economic aspects of horticultural production and marketing since the January 1981 evaluation. However, none of the research has dealt with the micro-economic implications of the agronomic research in the horticultural project.

Two new research activities were added in 1981, in addition to the Vegetable Marketing Activity already underway during the evaluation in January and which sponsored its own policy workshop later in the year. The post-harvest losses for Vegetables and Fruits Activity examined tomatoes, grapes and potatoes (considered a horticultural crop) and produced one paper (two in process), while the Citrus Industry Analysis produced two papers (two in process). In

addition, the Fourth Economics Policy Workshop on Horticultural Export, sponsored in March, 1982, was attended by more than 100 participants who heard 18 presentations. Several smaller one-day workshops were held on horticulture post-harvest problems, citrus marketing and marketing survey techniques. The personnel from the Horticulture Subproject actively participated in the post-harvest workshop.

Other subsequent policy research activities have included horticultural crops in their analyses: The Economic Efficiency and Resource Use Activity examines farms in the Cairo vegetable zone, and the Commodity Systems Activity includes an analysis of potato marketing.

Given the scope of work in the original economics subproject paper limiting research activities to macro-economic policy analysis, there was never any serious consideration of the proposal that the economic impact of agronomic research under the project be analyzed. Perhaps because the feeling among the Egyptian members of the JPPB has been that it should be left to the farmers to decide the profitability of the agronomic packages and be left to the market to make its own adjustments. They therefore felt that limitation of economic research to policy analysis of prices, marketing and export of horticultural crops was more appropriate.

5. Relevance of Research

It is not possible to review here the 152 papers for technical content and relevance. However, it is clear that over half the topics addressed in the 23 research activities are clearly relevant to Egyptian agricultural development problems and AID/Cairo priorities in the agricultural sector (Table V). In particular, the work on price policy has been extremely relevant and should be more closely examined by the AID Mission. Almost one third of the 152 working papers deal directly with matter of price policy, as did the Fifth and Ninth Policy Workshops on price policy and food subsidies. Many of the papers presented at the Sixth (Cotton), Seventh (Mechanization) and Eighth (Livestock) Policy Workshops also dealt at considerable length with price policy issues.

Table V
Agricultural Development System Project
List of Research Activity and Number
of Papers Produced as of June, 1983

	<u>No. of Papers</u>
1. Food Security and Agricultural Price Policy	20
2. Demand, Supply and Government Policy	20
3. Livestock and Livestock Products	17
4. Food Consumption in Rural Egypt	17
5. Government Price Policy and Food Subsidies	13
6. Demand for Mechanization	12
7. Rural Labor Supply and Agricultural Employment	8
8. Marketing Potential for Vegetables for Export/Domestic Market	8
9. Integrated Village Studies and Policy Analysis	8
10. Agricultural Policy Analysis	5
11. Farm Efficiency and Agricultural Policy	4
12. Role of Cooperatives	4
13. Citrus Marketing	3
14. Agricultural Pricing Policies & Trade Balance	3
15. Lakes Development vs. Soil Reclamation	2
16. Poultry Industry Policy	2
17. Farm Efficiency and Resource Use	2
18. Post Harvest Losses for Vegetables and Fruits	1
19. Biogas Evaluation	2
20. Commodity System Analysis	1
21. Rural Development and Consumption	1
22. Effect of Partial Market Pricing of Land & Water Allocation	0
23. Irrigation Evaluation	0
Papers authored solely by Egyptians	31
Papers authored by both Egyptians and Americans	78
Papers authored solely by Americans	<u>43</u>
	152

6. Cost Effectiveness of the Subproject

The Agricultural Economics subproject is essentially a non-revenue producing project over the short term. Furthermore, the subproject has had multiple functions (primarily training and research). It is therefore very difficult to measure the costs of the project in terms of its outputs.

Cost effectiveness analysis is the means by which AID tests the financial viability of non-revenue producing projects. Given a specified number of outputs which must be produced in order to achieve the project targets, cost effectiveness analysis can be utilized to compare the total AID grant costs of project outputs to those of alternative activities.

Total cost in AID grant dollars has been estimated for the three year duration of the subproject in Table X. Were it assumed that professional development through collaborative research and participation in workshops and seminars could be grouped under the rubric of training along with the formal and informal training programs under the project, then the total AID cost of each of the 235 Egyptian collaborators may be estimated at \$13,900. This figure is somewhat over one-third the current AID cost of a two-year MSC program in the U.S. (\$38,400). Given that collaborators continue working for the government or universities and that many would be unavailable for training in the U.S., the "training" afforded to Egyptians under the ADS project may be a profitable short-term investment of AID dollars in human capital. The question nonetheless may be raised whether participant training in the U.S. would give a greater return over the long run.

The analysis ignores the research function of the project and its impact upon Egyptian economic thought through seminars and distribution of papers. It also overlooks the value of the program to U.S. researchers and the value to Egypt of generating interest among U.S. economists in studying Egyptian agricultural problems. A similar analysis of the cost of each of the 153 working papers produced under the project to date (many of which are suitable for the publication in international professional journals) would ignore the very important educational function served by the papers and related workshops and seminars. Neither analysis is of the training and research outputs adequately measures the impact of the project upon the public policy debate, which may be considerable.

Table VI.
Economics Subproject Expenditures (000)

1980-81	927.8
1981-82	1,370.1
10/82-3/83	585.0
4/83-8/83	385.6
Total	\$3,268.5

Source: UC/Davis and GOE project staff

7. Future Directions

It is clear that the economics subproject should be given more time to complete the 23 activities initiated under the project. Two activities (commodity marketing and village studies) have reached the survey completion stage, and need another six months for data analysis, writing and publication of results. In addition, there are some 40 papers which are currently being discussed and edited by the activity team--it is possible that 20 of them will be published as working papers by the contract close-out date.

Once the contract terminates on August 31, the burden of implementation of the phase-down will fall upon the GOE and AID. Given the workload of the Agriculture Office, it is highly unlikely that a Project Officer will have the time to assume a more active role in implementation of the project and continue the work of the contractor: assistance in editing papers, coordination of exchange visits, supervision of publication, arranging seminars, and paying bills, including bills for encumbrances incurred before departure of the contractor. The GOE and AID should soon come to an agreement upon a means of carrying on phase-down work for the next year.

For the long term, future research and training programs in agricultural economics must build upon the strong beginning made under the ADS project. AID and the GOE should begin to give serious consideration to the inclusion into the Supporting Agriculture Systems program of a new activity which will be based upon the successes realized in the ADS project and which will meet the need to create an institution of agricultural policy research and planning drawing on government and non-government economists. Such an activity would also include post-doctoral training in the U.S., research on policy-oriented issues, and short term consultation visits by top level U.S. agricultural economists. This activity should be implemented by the Agricultural Economics Research Institute of the MDA.

III. End of Project Status - General Conclusions

In this section general conclusions are made and recommendations advanced for USAID consideration in planning new activities under the sector approach.

A. Institutional Development

1. The ADS enhanced institutional capabilities in the following ways:
 - a. A collaborative team-work approach was developed and proven successful in a majority of activities. The Ministry of Agriculture has accepted the principle of joint MDA-academic collaboration.
 - b. Individual scientists have improved their research planning and management skills.
 - c. The beginning of a more empirically based research orientation has been developed, especially among agricultural economists.
 - d. A more collegial decision making structure for insuring quality and relevance of research strategies has been developed, with the idea of peer review of critical elements in the system.
 - e. A large number of younger Egyptian scientists have been given opportunities to expand their skills, observe and learn from association with U.S. scientists new and productive ways to practice their craft.
2. The ADS project for a variety of reasons was unable to develop within the Ministry of Agriculture an institutional capability for planning and implementing a research and extension program in horticultural and agricultural economics.
 - a. The project mole was "outside" the Ministry, hence more institutional learning accrued to UC/Davis than to the MDA.
 - b. No strategy for forcing integration to the MDA's Agricultural Research Center was ever developed. The contract ends without a well conceived plan for orderly transition of the project and continuation and expansion of its most useful activities.
 - c. An overall training strategy for continual upgrading and reinforcement of Egyptian scientists' research skills and management capacity has not been developed. Without it the advances made under ADS may rapidly evaporate.
 - d. While the project succeeded in developing a large number of activities (42) involving many Egyptian scientists (over 500), both American and Egyptian leaders agree that many teams were overstaffed and contained unproductive participants.
 - e. The tendency to concentrate research on commodities (citrus, tomatoes, etc.) may not be the best use of all scientific personnel.

For example, it may not be necessary to have an olive pathologist, a tomato pathologist, and so forth. These specialists were not organized into disciplinary lines in the ADS activity.

B. Overall Cost Effectiveness

It is difficult to assess the benefits to the Egyptian economy of research projects like ADS. Much of what was accomplished was in the nature of the rehabilitation of a run down research infrastructure, both physical and human. ADS has succeeded in breathing new life and vigour into horticulture and agricultural economics in Egypt. Increases in the production of tomatoes alone may well yield economic returns sufficient to justify expenditures. Nor is there any doubt that research skills in agricultural economics and horticulture have been greatly improved. However, when one assesses the cost effectiveness of the projects, one must conclude that ADS was not a particularly cost effective way to transfer technology or achieve capability enhancement. There are many reasons for this.

1. The structure of decision making and project administration (joint boards, technical committees, co-directors, three administrative offices, incentive payments, etc.) meant that a very large percent (as much as 40%) of the U.S. dollar and pound funds went to defray administrative costs.
2. Participation of senior U.S. scientific and administrative personnel is expensive, even though their involvement is much preferred over more junior scientists by the GOE.
3. The pattern of frequent short term visits by U.S. scientists and administrative and policy leadership led to exceptionally high travel costs. For example in the fourth quarter of 1982, primarily September, 39 Americans visited Egypt for an average stay of 10 days. Of these 13 (33%) were for administrative/policy purposes. If the average cost per trip is estimated at \$3,500, travel expenses for U.S. personnel alone came to \$136,500 for the fourth quarter of 1982. This may be unusually high because of the tendency of U.S. participants to travel to Egypt in the early fall.
4. Egyptian salaries in MDA and universities are too low to attract and retain qualified full-time personnel for research projects. This is particularly true for many qualified Egyptians who can command higher salaries abroad or elsewhere in Egypt. Therefore the incentive payment structure built into the project was a necessary condition for scientific participation. However, the attractiveness of incentive payments may have led to the "distributive logic" discussed in the 1981 evaluation--and therefore overstaffing of some activities.
5. Because the project experienced implementation delays, considerable pressure emerged to sign up activities and spend money. This is not to imply that any proposal that came along was funded but it does suggest that perhaps too much emphasis was placed on individual activities, and not enough on establishing clear research priorities, assessing progress, and adjusting project resources to reward positive accomplishments.

6. Combined with the late start (most project activities really begin in 1981), the uncertainty about project (and contract) extension and budget augmentation led to innumerable budget adjustments in 1982. The final 82-83 budget was substantially cut at the last moments in 1982, about the time when UC/Davis determined that they would not continue the contract in face of unclear signals from the MDA and USAID. These reduced budgets forced all activities to slow down and, finally, with the emergence of negative preliminary audit findings in early 1983, USAID suspended further expenditures. There is little doubt that this uncertainty and instability had a deleterious effect on the substance of both research subprojects in 1983. Whatever the reasons, there is now no plan for orderly transition of project management to the MDA, Egyptian researchers appear to be totally uninformed as to plans to maintain their activities, arrangements for continual collaboration with American scientists are not working out, and many Egyptians are already making plans to move on to other positions. This "hedging of bets" is an understandable phenomenon, but has serious negative implications for the continuation (and completion) of promising research activities. Overall the "boom or bust" mentality was not conducive to a cost effective and productive program of research and development. All parties, USAID, UC/Davis, and the MDA must share the responsibility for the current unfortunate situation.

C. Management Effectiveness

ADS management should be assessed in terms of substantive output and administrative procedures. On the substantive side, output was impressive if one recognizes that the project really was active over a three year period (late 1980 to early 1983) rather than five years as originally envisaged. While management procedural difficulties should not overshadow substantive accomplishments, they must nevertheless be noted and discussed.

1. Although project administration improved greatly in 1982, the history of management difficulties continued to give the ADS project an aura of ineffectiveness which was difficult to overcome.
2. Financial administration was a recognized weakness in both the Cairo and Davis offices. The consequence was a negative preliminary audit by the Inspector General which resulted in a suspension of project funding. The ADS Cairo office had recognized the need for strengthening its administrative capability but its requests for help went unfulfilled.
3. The timing of the audit in the last year of the project was particularly unfortunate. An audit in 1981 would have focussed attention on financial and management issues at a point early enough in the project to allow for remedial measures to be taken without damage to the substantive aspects of the project.

4. Efforts were made in 1982 to improve relationships between USAID and ADS. Regular meetings were held between the USAID project manager and the UC/Davis Cairo co-director. USAID was invited to participate in project workshops, seminars and the like. There is little evidence, however, that these efforts overcame the negative perceptions of the project based on previous experience. USAID reluctance to become a partner in the relationship was perceived by UC/Davis as rejection and non-support. USAID's position was that its agreement was a bilateral one with the government of Egypt. The UC/Davis team wanted USAID support as if the contract was between them and the U.S. Government. At the same time UC/Davis was reluctant and unprepared to deal with the myriad procedural rules and reporting requirements of either USAID or the GOE, and asserted their own sense of professional judgment and scientific competence. The GOE side continued to make sporadic efforts to gain control of the process, based on their view, only partially accurate, that UC/Davis worked for them. At the same time it is clear that the GOE relied on the UC/Davis team to implement the multitudinous actions necessary to make the project productive. The net result of this, plus the uncertainties about contract extension, budget augmentation and project paper revision continued to create hard feelings and misunderstandings on all sides. At the level of scientific collaboration, it should be stressed that Egyptian scientists developed close and positive personal relationships with many American scientists and they are very strong in their belief that these relationships should continue at some level.

VII. General Recommendations

The intent of this assessment has been to evaluate ADS to determine the status of institutional development and to advise USAID on which research activities now underway merit continued support. Specific recommendations are made with regard to the horticultural and agricultural economics subprojects, as well as more general recommendations on institutional development.

A. Immediate Actions Needed

1. USAID and GOE should immediately work out administrative and funding arrangements for continuation and completion of current activities through 1984.
2. During 1983-84 USAID and GOE should:
 - a. Assess all activities and establish research priorities in the context of an overall program strategy for horticulture research and agriculture economics and other activities.
 - b. Review composition of all teams and reorganize when necessary to achieve results.
 - c. In the main, the principal of MOA/academic teams should be encouraged, depending on the nature of the research to be conducted. However, not all scientific work requires a "team" approach.

B. Future Planning

1. An institutional support structure with MDA should be established to provide necessary administrative and financial support to the program.
2. A decision making structure should be established within ARC to:
 - a. Determine research priorities and areas of high level support.
 - b. Assess, evaluate and reward those activities which have shown high potential and demonstrated progress.
 - c. Ensure that economic analysis is linked to research in horticultural, particularly with regard to farm management, production costs and benefits and the economics of domestic and export marketing.
 - d. Once research activities are funded, activity leaders should have the flexibility to implement programs and make appropriate expenditure decisions.
3. A combined international and Egyptian research advisory committee should be convened every second year of the program to review results and make recommendations to the GOE and USAID. Continuous monitoring and annual progress reviews should be the responsibility of the MDA.
4. Training and professional development in research methods, proposal development and research management and administration should be an integral part of the program. Special effort to assist younger Egyptian scientists in their own development should be stressed.
5. In funding agricultural research and extension, USAID should consider utilization of all funding mechanisms, including CIP, private sector programs, participant training, small grant programs, decentralization and local development programs and all other sources which might be tapped to support various collateral aspects of the sector assistance approach.
6. Other than encouraging specific micro level research in agriculture economics USAID and GOE should continue to fund macro level policy oriented research, but the administration and funding of such research should be under the direction of the Institute of Agriculture Economics Research, with appropriate arrangements for proposal selection and funding to assure quality, relevance and objectivity.
7. USAID will experience significant increase in demands on direct hire staff during 1984 and into early stages of sector assistance program. USAID should assign specific management and substantive responsibility to staff for agriculture economics and separately for horticultural research and extension through 1984. As the sector assistance program comes into being, USAID may want to review its internal organization in anticipation of the new approach.

C. Very Long Term

USAID has sought to increase the visibility of its assistance to Egypt in all sectors. Given Egypt's potential in horticulture crops, its favorable climate and excellent soil conditions, USAID may wish to consider the establishment of an international center for horticultural research, affiliated if appropriate with the CGIAR system.