

PD-AAU-105

UNCLASSIFIED

UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C. 20523

PROJECT PAPER

EGYPT

NATIONAL AGRICULTURAL RESEARCH

263-0152

August 14, 1985

UNCLASSIFIED

AGENCY FOR INTERNATIONAL DEVELOPMENT
PROJECT DATA SHEET

1. TRANSACTION CODE
 A = Add
 C = Change
 D = Delete

Amendment Number _____

DOCUMENT CODE 3

2. COUNTRY/ENTITY
 EGYPT

3. PROJECT NUMBER
 263-0152

4. BUREAU/OFFICE
 ANE-USAID/Egypt

5. PROJECT TITLE (maximum 30 characters)
 National Agricultural Research Project

6. PROJECT ASSISTANCE COMPLETION DATE (PACD)
 MM DD YY
 09 30 92

7. ESTIMATED DATE OF OBLIGATION
 (Under "B." below, enter 1, 2, 3, or 4)
 A. Initial FY 85 B. Quarter 4 C. Final FY 92

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

A. FUNDING SOURCE	FIRST FY 85			LIFE OF PROJECT		
	B. FX	C. L/C	D. Total	E. FX	F. L/C	G. Total
AID Appropriated Total	16,000	14,000	30,000	68,700	61,300	130,000
(Grant)	(16,000)	(14,000)	(30,000)	(68,700)	(61,300)	(130,000)
(Loan)	()	()	()	()	()	()
Other U.S.						
1.						
2.						
Host Country		6,900	6,900		80,000	80,000
Other Donor(s)						
TOTALS	16,000	20,900	36,900	68,700	141,300	210,000

9. SCHEDULE OF AID FUNDING (\$000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH CODE		D. OBLIGATIONS TO DATE		E. AMOUNT APPROVED THIS ACTION		F. LIFE OF PROJECT	
		1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan
(1)	100	080				30,000		30,000	
(2)									
(3)									
(4)									
TOTALS									

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each)
 052 050 060 070

11. SECONDARY PURPOSE CODE
 141

12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)
 A. Code R/AG TECH
 B. Amount

15. PROJECT PURPOSE (maximum 480 characters)
 To improve the capability of the Egyptian agricultural research community to provide a continuous flow of improved, appropriate agricultural technologies.

14. SCHEDULED EVALUATIONS
 Interim MM YY 06 88 MM YY 09 90 Final MM YY 10 92

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

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

17. APPROVED BY
 Signature: Frank B. Kimball
 Title: Frank B. Kimball, Director
 Date Signed: MM DD YY 08 14 85

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

Table of Contents

	<u>Page</u>
Project Data Sheet	i
Table of Contents	ii
Glossary	v
Map	vi
PROJECT PAPER	
I. Summary and Recommendations	1
II. Background and Project Description	4
A. Background	4
B. Project Description	5
1. Rationale	5
2. Description	10
3. Strategy for Achievement of Purpose: Outputs	14
4. Inputs	21
III. Methodology	26
A. Economic and Financial Analysis	26
B. Social Soundness Analysis	27
1. Compatibility with the Sociocultural Environment	27
2. Spread Effects--Diffusion of Improved Technologies	28
3. Social Consequences and Benefits	29
C. Technical and Administrative Analysis	30
D. Institutional Analysis	31
E. Environmental Concerns	32
IV. Financial Plan	32
A. Expenditures	32
Table 1. Estimated Budget	33
Table 2. Projected Expenditures and Obligations--USAID Funds	34
Table 3. Projected Expenditures GOE Funds	36
B. Description of Funding Categories	38
V. Implementation Plan	39
A. A.I.D. Overall Responsibility	40
B. GOE Responsibility	41
C. Technical Services Contractors	41
D. Contracting/Funding Mode	42
E. Implementation Schedule	44

	<u>Page</u>
VI. Evaluation Plan	45
A. Internal Evaluations	46
B. External Evaluations	46
VII. Conditions, Covenants and Negotiating Status	47
A. Conditions Precedent	47
1. Conditions Precedent to Initial Disbursement	47
2. Conditions Precedent to Disbursement for Technical Services	47
3. Conditions Precedent to Disbursement for Architectural and Engineering Services	48
4. Conditions Precedent to Disbursement for Construction and Renovation	48
5. Conditions Precedent to Disbursement for Commodities	49
6. Conditions Precedent to Disbursement for Training	49
B. Covenants	49
Special Covenants	49
General Covenants	50

ANNEXES

1. Logical Framework
2. Cables
 - A. PID Approval Cable
 - B. Cable Exchange on NAPP to NARP Change
3. Statutory Check-List
4. Request for Assistance
5. 611(a) Determination and 611(e) Certification
6. Waiver Justification
7. Project Evaluation Summaries
 - A. Rice Research and Training (263-0027)
 - B. Agricultural Mechanization (263-0031)
 - C. Agricultural Development Systems (263-0041)
 - D. Major Cereals Improvement (263-0070)

Glossary

ADS	Agricultural Development Systems Project
AID	Agency for International Development
AMP	Agricultural Mechanization Project
ARC	Agricultural Research Center
AU	Administrative Unit
CAMD	Center for Agricultural Management Development
CC	Coordinating Committee
CDSS	Country Development Strategy Statement
CSA	Central Administration for Seeds
DCA	Data Collection and Analysis Project
EMCIP	Egypt Major Cereals Improvement Project
Feddan	1.038 acre
FA	Financial Analyst (at PBDAC village bank)
GOE	Government of Egypt
HYV	High Yielding Varieties
IADS	International Agricultural Development Service
IBRD	International Bank for Reconstruction and Development (World Bank)
IFAD	International Fund for Agricultural Development
IRR	Internal Rate of Return
ISNAR	International Service for National Agricultural Research
MOA	Ministry of Agriculture
NARC	National Agricultural Research Council
NARP	National Agricultural Research Program
PASA	Participating Agency Service Agreement
PBDAC	Principal Bank for Development and Agricultural Credit
RRC	Regional Research Center
RRT	Rice Research and Training Project
SFPP	Small Farmer Production Project
SMS	Subject Matter Specialists
TA	Technical Assistance
USDA	United States Department of Agriculture
VA	Village Extension Agent

8. Methodology
 - A. Economics & Financial Analysis
 - B. Social Soundness Analysis
 - C. Technical Analysis
 - D. Administrative & Institutional Analysis
 - E. Environmental Analysis

9. Components
 - A. Data Collection
 - B. Information Utilization and Dissemination
 - C. Seed Production
 - D. Applied Research Grants

10. Major Inputs
 - A. Technical Assistance
 - B. Training

PROJECT REVIEW COMMITTEE

Joseph Beausoleil, AGR/A, Chairman

Jonathan Conly, DPPE/PO

Sherif Kaldas, DPPE/PAAD

Homi Jamshed, FM/FA

William Charleson, HRDC/ET

Michael Williams, LEG

Project Paper

National Agricultural Research Project
263-0152

I. SUMMARY and RECOMMENDATIONS

A. Project Title:

National Agricultural Research

B. Project Number:

263-0152

C. Source of Funds:

Economic Support Fund

D. Total Project Amount:

AID \$130 million, GOE LE 66.4 million (\$80 M)

AID

Proposed FY 85 obligation : \$30 million
Proposed FY 86-89 obligations : \$100 million

GOE

Proposed first year contribution : LE 5.7 million (\$6.9M)
Proposed additional contributions : LE 60.5 million (\$73.1M)

E. Terms:

To GOE: entire amount as a Grant.

F. Grantee:

Grant funds will be made available to the Implementing Agency, the Agricultural Research Center of the Ministry of Agriculture and Food Security.

G. Coordinating Agencies:

USAID/Cairo and the Ministry of Agriculture and Food Security.

H. Implementing Agency:

The Agricultural Research Center of the Ministry of Agriculture and Food Security.

I. Life of Project:

Seven years: PACD September 30, 1992

J. Project Goal:

To increase agricultural productivity by improving the quality of technologies available to farmers.

K. Project Purpose:

To develop the capability of the agricultural research community to provide a continuous flow of improved appropriate agricultural technology.

L. Environmental Soundness of Project:

The activities of this project in regard to A.I.D. environmental procedures qualify for a negative determination in compliance with the requirements of 22 CFR 216 (Section 216.3(b)(1) of Reg. 16).

M. Project Summary:

AID and GOE resources will be used to improve the management capacity, research techniques and methods, and the skills and professional competency within the agricultural research community. These resources will also be used to upgrade research facilities and to equip these facilities adequately. AID resources will be in the form of training, technical assistance, commodities, construction and support services. GOE resources will be primarily for salaries, and for operations and maintenance

This project will build on the experience, organization, and accomplishments of the ongoing, but soon to terminate USAID/E Rice Research and Training (0027), Agricultural Mechanization (0031), Agricultural Development Systems (0041), Major Cereals Improvement (0070), and Data Collection and Analysis (0142) Projects. The thrust of all the above mentioned projects has been to strengthen the research generation and transfer capabilities of the Ministry of Agriculture and Food Security (MOA).

The implementing agency will be the Agricultural Research Center (ARC) of the MOA. The ARC will be responsible for integrating the discrete USAID/E funded research projects initiated in the late 1970's and for coordinating resources so that all agricultural research related organizations in Egypt both from the public and private sectors can contribute to the Project's goal.

Generation of improved technologies is the responsibility of the ARC's Research Affairs Division. The present method of field verification of station research results followed by extensive demonstration with farmers' participation has successfully developed technological packages for rice, wheat and maize with the assistance of the Rice and Major Cereals Projects. The Project will continue to develop ARC's capability using this method and expand it to other commodities.

Transfer of improved technologies resulting from the research will be the responsibility of the ARC's Extension Affairs Division. Units within this Division collaborate by providing field staff to train and advise village extension agents and farmers participating in the demonstrations and by preparing descriptive material on how to apply the technological packages. This information will be disseminated through the MOA extension services and by using inputs suppliers both in the public and private sectors.

To facilitate the research and extension processes, the Project will strengthen the ARC's data collection/analyses and information utilization/dissemination capacities. To ensure that improved seed varieties are available to farmers, the Project will support with preference for the private sector, the production, processing, and distribution of certified seed. To involve the academic and agribusiness communities in research, grant funds will be made available to conduct studies and experiments on problems related to national agricultural research priorities.

An agricultural research council will be established by the MOA to coordinate and guide the Project. The council will be assisted by a support unit in ARC headed by a project director and with adequate technical and administrative staff.

The Project will concentrate on strengthening the capability of the agricultural research community to respond to farmers' needs with respect to improved technologies. The Project will be considered successful by the affect that the adoption of the improved technologies has on increasing production.

N. Recommendations:

1. that USAID/Cairo approve a Grant for \$130 million to be funded in increments over a five-year period beginning with \$30 million in FY 85 for the National Agricultural Research Project (263-0152); and
2. that the PACD be established at September 30, 1992.

II. Background and Project Description

A. Background

The Nile Delta with its associated Nile River Valley is one of the world's oldest agricultural areas, having been under continuous cultivation for at least 5000 years. With exception of a few oases and some arable land in the Sinai most of Egypt's 5.8 million cultivated feddans are confined to this area. The total reflects approximately 900,000 reclaimed feddans which have been partially offset by 700,000 feddans lost to urbanization.

As late as 1960 Egypt was essentially self-sufficient in food production. However, over the last two decades, food production has failed to keep pace with consumption. Consequently, the nation has become increasingly dependent on food imports. Food production can be increased by:

intensification of agriculture; and
reclamation of land.

Due to its year-around favorable climate, fertile soils, and abundance of irrigation water, Egypt enjoys crop yields that are among the world's highest. The development of improved agricultural technologies is presently perceived as the more cost effective means of further increasing local yields and thereby increasing production. Since Egypt's yields are already on the high end of the yield-response curve a more sophisticated technology and management is required to effect the desired yield levels.

Land reclamation, which in the past received up to 40 percent of agricultural sector funds, has given relatively low investment returns. Nevertheless, 900,000 feddans have been reclaimed and with new advances in sprinkler, drip, and other irrigation schemes, the possibilities of expanding the arable area through land reclamation should not be dismissed.

Over the past several years, USAID has supported the technology development option for increased crop yields and food production and consequently funded several research and research related projects which were implemented through the ARC and other Ministry of Agriculture (MOA) Divisions. These AID-funded projects have made available almost \$200 million much of which was used for research leading to the generation of improved technologies.

Typical is the Rice Research and Training Project (263-0027). Its purpose is to "provide new information and knowledge for rice production, seed processing and storage by increasing research and training capabilities."

The Rice Research Project concentrated on the generation of improved technologies including varieties and the dissemination of these technologies using technological packages. The Rice Project also supported technical assistance in administration, extension, mechanization, plant breeding and seed processing. Other inputs were training, construction, and the acquisition of laboratory equipment.

The approach used by the Rice Project is that of technology generation, field verification, and extensive demonstration. The success of this approach can be judged by the resulting average yields on 40,000 feddans spread over the six principal rice growing governorates. The average yield of the 25,000 farmers who participated was 9.4 MT/ha versus a national average of 5.7 MT/ha; a 65 percent increase.

Also noteworthy were the educational aspects of the project demonstration/extension efforts. Numerous meetings were held with large farmer groups to explain the merits and demonstrate the components of the improved packages. Additionally, television programs were scheduled to inform and teach the farmers; articles were published in the newspapers; and project billboards were posted along highways throughout the regions.

B. Project Description

1. Rationale

The project described herein is based on a two year MOA/AID collaborative study which identifies a major constraint to increased production--the lack of technologies to address continuously changing agronomic conditions. The project's intent is to remove that constraint by developing an agricultural research capacity capable of continuously generating and demonstrating site specific improved technologies.

Egyptian agriculture has the potential to double its production. With the completion of the Aswan Dam and with Egypt's favorable climate, continuous year-round irrigated cropping is now possible even in Upper Egypt.

Permanent irrigation radically changed Egyptian agriculture. Instead of one annual crop, control of the irrigation water allows for two and even three crops per year. The increased water availability, however, has brought other technical challenges. Salinity, waterlogging and associated problems are increasing and require the development of new solutions and technologies in order to increase yields.

This project's design emphasizes in the short run the intensification of farming--producing more--on the existing arable land base by the timely application of improved technologies. In the long run, as research facilities are refurbished, laboratory equipment acquired, and research skills, management, and methods improved, the ARC will be able to place more emphasis on research appropriate for reclamation of desert land.

Intensification requires timely and effective application of location-specific cultural practices. Soil preparation, seeding rates, fertilizer recommendations, pest control and harvesting methods etc., have to be developed for each crop and even for different varieties of the same crop. This is also true when mechanization replaces animal power or substitutes for labor.

Intensification also requires efficient use of inputs. Overuse or poor field distribution of water has negative effects on production. Overuse of fertilizer increases production costs, may decrease yields and leaves other farmers without fertilizer.

The use of seed drills for planting wheat instead of the traditional broadcasting is an example of improved technology. Demonstrations by the Agricultural Mechanization Project have shown that by drilling seed, yields can be increased up to 30 percent. The seed drill also allows more efficient use of inputs. There is little wasted seed, and the drill promotes efficient fertilizer use by placing the fertilizer in the immediate zone of plant uptake.

Intensification also requires high yielding varieties. High yielding varieties of rice and wheat contributed to substantial increases in production during the sixties and seventies. But varieties tend to degenerate with time and become susceptible to diseases. New varieties must be continually developed to meet the ever changing agro-ecological conditions of Egypt.

For example, in 1984 a portion of the rice crop was damaged by blast disease. The variety most affected was a recently introduced high yielding type in use in many parts of the world. Because the Rice Research and Training Project was in place, the infrastructure was available and was able to provide other less susceptible HYV to farmers. Had there been no ongoing breeding and research program the blast problem would have had a long-term impact costing several million dollars. Similar breeding programs are needed for all food production activities.

Intensification of agriculture requires improved technologies. An objective of agricultural research is to put together packages of improved technology. In the case of crops, the package includes an improved variety, the appropriate mix of inputs, and the recommended cultural practices. In the case of livestock, the package would include an improved breed, adequate feeds and pharmaceuticals, and animal care recommendations.

If Egyptian farmers are to increase production by more intensive farming they will need a continuous flow of improved technology. The project's intent then is to meet this need by strengthening the agricultural research capacity in Egypt.

This project will build on the experience, organization, and accomplishments of the on-going, but soon to terminate USAID/MOA Rice Research and Training (0027), Agricultural Mechanization (0031), Agricultural Development Systems (0041), and Major Cereals (0070) Projects. The thrust of all the above mentioned projects has been to strengthen the research and dissemination capabilities of the ARC. The project will continue and expand these efforts, while breaking ground to identify new technologies.

Accomplishments of, and lessons learned from these projects are noted below. (See Annex 7.):

a. The Rice Research and Training Project provided for the construction of a first class rice research facility at the Sakha experiment station. Scheduled for completion in February of 1986, the station will have all the required facilities to conduct even basic research experiments on this important Egyptian food crop.

Twelve scientists have done graduate or post-doctoral training in the United States and 32 rice advisors have

been trained at the International Rice Research Institute (IRRI) in the Philippines. Work needs to continue on developing the capacity for research management, improved plant breeding and for conducting interdisciplinary research.

Much of the success of the Rice Project must be attributed to the seed production/certification process that was able to provide sufficient quantities for 50 percent of the area planted in rice in 1984. The Rice Project has also developed an effective technology transfer system in which a research and extension team of four subject matter specialists, 22 advisors, and 45 trainers reached over 25,000 rice farmers on over 40,000 feddans during the last production cycle.

b. The Agricultural Mechanization Project has tested a wide array of equipment under Egyptian conditions with the aim of standardizing equipment and implements for better utility on farmers fields. A number of activities under this project have exposed an estimated 18,000 farmers to time-saving technological packages for both land preparation and harvesting with the effect of showing as much as a 25 percent increase in yields in wheat and rice.

The mechanization project has been extremely effective in using a personal approach as well as mass media in transferring technology. One of the successful elements of the Project has been a credit fund which made it possible for 10,000 farmers to adopt mechanized technology by replacing animal drawn "sakias" with motor driven pumps.

c. The Agricultural Development Systems (ADS) Project conducted research on the production and marketing of numerous horticultural crops. Working closely with the Horticulture Research Institute of the ARC and several Egyptian universities, significant contributions were made in varietal improvement of tomatoes, cucurbits (squash, melons, cucumbers), deciduous fruits, mangoes, grapes, olives, dates and bananas.

A tissue culture lab was developed, staff trained, and is now conducting research on strawberries, potatoes and bananas. The economics component of the project

conducted collaborative research on agricultural and food policy with U.S. universities in a manner which promoted the professional development of Egyptian agricultural economists both within the MOA and in the Egyptian universities. Over 180 research studies were produced and have been found to be extremely useful to Egyptian policy makers.

d. The Major Cereals Improvement Project (EMCIP) has made a substantial contribution to research facilities. Five complete stations are in the process of completion. They will have 64 completely equipped laboratories. Eleven scientists are in doctoral programs at universities in the United States. The International Center for Improvement of Maize and Wheat (CIMMYT) has provided technical assistance and training.

Upgrading the genetic material base and creation of new plant materials was carried out by the project and will be continued under NARP. Research conducted on nitrogen fixation in soybeans identified the factor which had limited rhizobium nodulation for years. This achievement resulted in increased production and reduced costs of production. Similar research will be conducted under NARP.

The Major Cereals Project has a grants program which sponsors research projects with Egyptian universities. The research projects related to wheat, maize, forages and legumes have strengthened the universities and Field Crops Institute relationships and contributed to the professional development of the scientists and students.

The NARP complements the ongoing AID funded Irrigation Management Systems (IMS) (G132) Project with the Ministry of Irrigation (MOI). The IMS Project focuses on irrigation infrastructure, systems operations and maintenance and on-farm water management.

Research on irrigation problems is carried out under the IMS Project through the Water Research Center (WRC) of the MOI. The objective of the WRC is to develop technological packages that integrate improved agronomic practices along with on-farm water management. NARP will support collaborative efforts between the ARC and the WRC.

The NARP will make available to the Small Farmer Production (0079) Project the results of research. The results of research in a documented form will be made available to project and bank staff to assist in appraising loan proposals and in advising borrowers on the utilization of their loans. Also printed material will be prepared to guide the farmer-borrower on the application of improved technology during the production cycle.

The project also complements the activities of other donors working with Egyptian Agriculture. The International Bank for Reconstruction and Development (IBRD), for example, is beginning its Second Agricultural Sector Loan. The IBRD loan makes credit available to the private sector for the importation of farm machinery and spare parts. As Egyptian agriculture becomes more dependent on mechanization, there will be a need to develop technologies that respond to this change. The project's activities will be complementary to the IBRD loan by doing research to adapt for this machinery to Egyptian farming conditions.

2. Description

The primary Egyptian institution responsible for developing agricultural technology is the ARC. The agricultural faculties of the various Egyptian universities, the National Academy of Science and the National Research Center also conduct agricultural research as do the few, but growing number of agribusinesses. This project will focus on strengthening ARC's capacity to generate and transfer improved technologies in collaboration with other organizations involved in agricultural research.

The goal of the project is to increase agricultural productivity by improving the quality of technologies available to farmers.

The goal will be achieved by increasing the quantity and improving the quality of agricultural technologies that result in higher yields and greater production when adopted by farmers. The demonstration phase of the research process will be used to measure the increased yields resulting from the use of improved technologies. Monitoring yearly increases for the affected commodity will serve to measure the adoption rate of the improved technology by farmers.

The purpose of the project is to develop the capability of the agricultural research community to provide a continuous flow of improved, appropriate agricultural technology.

The purpose will be achieved when Egyptian scientists are able to apply basic research available through the International Agricultural Research Centers (IARCs) to Egyptian conditions. Emphasis in the first years of the project will be on adaptive research. As facilities are remodeled or refurbished and adequately equipped and as research management, methods, and skills improve, more applied and ultimately basic research will be conducted. Applied research will predominate. Some of the top scientists, however, will do basic research in collaboration with the specialized IARCs such as the International Center for Agricultural Research of Dry Areas (ICARDA) or the International Center for Research in the Semi-arid Tropics (ICRISAT).

The ARC Research Affairs Division's present research method of field verification of station research results followed by extensive demonstration with farmers' participation has successfully developed technological packages for rice, wheat and maize. The project will continue to develop ARC's capacity using this method and expand it to other crops.

Research, however, has to go beyond crops. Given the importance of livestock in the Egyptian farming system, the research has to be broadened to include the interrelationship of crops and animals. This is particularly important as animals are used less for power and more as a source of food. Improving animal genetic material will be one of the targets of research in this area.

Transfer of improved technologies resulting from the research will be the responsibility of the ARC's Extension Affairs Division. Units within this Division collaborate in the demonstration phase by providing subject matter specialists (SMSs) and by preparing descriptive material on how to apply the technological packages.

In the demonstration phase, village extension agents who have been relieved of the control function work under the technical guidance of the SMSs. Their responsibility is to train the participating farmers in the practices required by the improved technologies. This process serves not only to train farmers in the use of improved technologies but also to improve the skills of extension agents in communicating with farmers.

Until the MOA extension service is reorganized to support the technology transfer function, it would be inefficient for

NARP to support this service. The NARP, however, will support those extension agents who are detailed to work with the ARC in the demonstration programs. Training, technical material, and logistic support services will be made available to them.

The demonstration programs have proven to be an effective extension mechanism under the Rice and EMCIP Projects. This mechanism relies on farmer to farmer transfer and has resulted in the expansion of the crop area using the improved technologies to six times the demonstrated area.

The preparation of descriptive material is an iterative process which begins with documentation of the procedures following station research. The material is revised following field verification for use by farmers in the demonstration phase. Finally, it is revised again after the demonstration phase for dissemination to the general public.

The NARP will support the ARC Extension Affairs Division in the preparation of descriptive materials on the application of improved technologies. These descriptive materials will be prepared for different audiences such as extension agents, and agricultural bank loan officers, input suppliers and the farmers themselves.

A project component that links the research and extension functions is information utilization and dissemination. Research can be accelerated and duplication avoided when information on similar research is accessible. Research results need to be communicated to potential users. The project will support a National Research Library which will be a source of information not only for research scientists but also for extension agents and the public in general.

The Project will also establish a data collection and analysis component to help the ARC attain its research goals. The information collected and analyzed can also serve MOA decision-makers for policy and planning purposes. Equally important is the monitoring of research results. Data collection and analysis of adoption rates is essential as well as the production/yields obtained by farmers using the improved technologies.

This component will continue the work begun under the Data Collection and Analysis (0142) Project and under the economics component of the Agricultural Development Systems (ADS) Project (0041). It will strengthen not only ARC capacity, but also the data collection and analysis capacity of the MOA.

Improved seed varieties must be made available to farmers. To provide sufficient quantities, the Project will have a seed production component. The activities under this component will be to complete the work begun under the Rice and EMCIP Projects and to support private sector initiatives in seed production/distribution.

The ARC's Production Affairs Division is responsible for the production of breeder and foundation seed required by the research programs. The ARC also multiplies seed for the self-pollinated crops such as wheat, barley, rice and fava beans. This seed is multiplied by private farmers under contract and then processed by ARC before sale to farmers. The NARP will complete the seed processing facilities built under the Rice and EMCIP Projects and provide training to personnel responsible for operating and maintaining these facilities. This will ensure sufficient quantities of quality seed for production purposes.

Recent MOA policies favorable for private sector participation in seed production and supply have resulted in the emergence of several private seed companies. These companies have started producing hybrid maize and sorghum seed and are giving growing attention to forage and vegetables as well. The NARP will make available technical assistance and training to expand the role of the private sector in production and distribution of seed.

The public sector is expected to continue supplying seed for the self-pollinated crops. As opportunities for profitable operations emerge, the private sector will expand from mainly hybrid seed to self-pollinated crop seed production and supply. These opportunities will depend partially on how successful the Project is in eliminating subsidies for self-pollinated crop seeds and in obtaining the promulgation of plant variety protection laws.

The NARP, working with the MOA Undersecretary for Seed Production will provide assistance to improve the seed registration and certification processes. This will require not only physical facilities and equipment but institutional changes that provide sufficient autonomy to a seed authority.

To involve the agricultural research community outside of the ARC, a research grants program will be coordinated by ARC. Egyptian universities, alone or in collaboration with a U.S. Title XII university will be funded by the project to carry out research. The private sector, agribusinesses such as input suppliers or farming enterprises will be encouraged to participate in the program. Other organizations from the public or private sector, interested in conducting agricultural research will also be encouraged to present proposals.

A committee with representatives from academia and the private sector will be established to oversee the grants program. The committee will be responsible to the ARC's Board of Directors. Relevance of the proposals to the research priorities as established by ARC will be the principal criterion for judging the merits of a proposal.

To facilitate the research and extension processes, the NARP supports data collection/analysis and information utilization components. To ensure that improved seed varieties are available to farmers, a seed production component is included. And finally, to involve the agricultural community outside of the ARC, a research grants program is funded.

The NARP will absorb the Rice Research, EMCIP, Mechanization, ADS and other ongoing research related AID-funded projects. These projects currently have their own budgets which will assure their continuation into FY 86. Absorption of the research components of these projects by NARP is to be effected in such a manner that there is no interruption or delay in their ongoing present programs. Thus, NARP will be initiated at the already high level of activity with considerable, in place supporting facilities and equipment.

3. Strategy for Achievement of Purpose: Outputs

The Project will be implemented by the MOA through a National Agricultural Research Council (NARC) chaired by the Minister. The NARC will include a deputy chairperson named by the Minister, the Director General and Deputy Director General of ARC, MOA Undersecretary for Seed Production, and the Undersecretary for Economics. Other members may be named by the Minister to serve on a permanent or ad hoc basis.

The Minister will delegate authority as required to implement the Project to the Deputy Chairperson which may be redelegated as appropriate. The Deputy Chairperson, will be assisted by a full time Project Director also named by the MOA to administer day by day operations.

A Coordinating Committee (CC) and an Administrative Unit (AU) will be established. The CC will advise the ARC and MOA on policy and planning issues. The AU will be responsible for administration of the Project under the direction of the Minister or his delegated representative.

The CC will consist of representatives of the major organizations, including the private sector, concerned with agricultural research in Egypt. It will be responsible for

identifying broad areas of agricultural research needs and establishing priorities for the conduct of research to address those needs.

The ARC is in the process of organizing seven regional agricultural research committees (RRC) according to the major agroecological zones. The RRCs are composed of representatives of both the public and private sector. They serve as a forum for considering how local research efforts can be better coordinated. To ensure that the CC and the NARC are informed of local issues, copies of the deliberations of the RRC's monthly meetings will be made available to them.

The AU will be headed by the Project Director appointed by the MOA. The project director will be assisted by technical personnel (counterparts to the technical assistance team) and by administrative personnel. The Project Director will report directly to the MOA or his delegate but will function within the existing ARC organizational structure. The Technical Assistance team leader will work directly with the Project Director.

The AU will prepare for the MOA's approval, a detailed implementation plan for the life of the project. The AU will also prepare the Project's annual operating plan and budget for the MOA's approval. This plan and budget will be consistent with the implementation plan.

All entities (institutes, stations, etc.) within the ARC, will prepare annual operating plans based on ARC's overall operating plan. These plans will establish quantifiable objectives and identify indicators to measure progress towards those objectives during the course of the year.

The Project will concentrate on improving ARC's management and administrative capacity, its research techniques and methods, and the skills of its professional and technical staff. The Project will also develop ARC's capacity to collect and analyze data and to utilize and disseminate information. It will encourage other institutions both from the private and public sectors to participate in the agricultural research effort through a grants program. To ensure that quality seeds are available, it will improve the seed registration and certification processes. And finally the project will upgrade facilities by new construction or by refurbishing existing structures and will see that these facilities are properly equipped. Specific outputs for each of these activities are as follows.

a. Improved Management

Assistance is required to improve management in the following areas: (1) policy and planning as related to the overall direction of the ARC programs and coordination with other agricultural research organizations such as the National Research Center and the Egyptian universities; and (2) the management of ARC's institutes, stations, and production farms; and (3) the management of research projects, teams or sections.

An improved management system will be developed based on revised by-laws and clearly defined functional statements for all departments, divisions, and major units of the ARC. Procedural manuals will be developed including a personnel manual which will reclassify positions and establish an incentive program to reward superior performance.

Senior management will be prepared to carry out their primary responsibilities as policy makers and strategic planners for the ARC. They will know how to use the information available to them to establish the ARC's research agenda and to measure progress toward the realization of that agenda. Senior management will also provide guidance as to the research strategies to be used.

Channels of communication will be developed with two important sources of management information. The two sources are: ARC's Data Collection and Analysis Unit and the seven Regional Research Committees. The latter source is especially important because it places ARC in contact with farmers.

General managers of research institutes, stations, and farms will receive training in planning and execution. Special emphasis will be placed on preparing annual operating plans and budgets. They will be taught how to establish measurable objectives and to monitor progress toward those objectives.

Mid-level managers, e.g., supervisors of research projects, teams, or sections, will receive training in the principles of group dynamics. Emphasis will be placed on those skills needed to lead an interdisciplinary group of professionals or to coordinate two or more groups working toward the same objectives.

The technical assistance team will have primary responsibility for management development. However, linkages with the International Service for National Agricultural Research (ISNAR) will serve as an important resource to strengthen research management capabilities.

b. Improved Research Methods

The research method presently employed by ARC is crop oriented and consists of technology generation, verification and demonstration. The Rice Research and Training and Major Cereals projects have effectively used this method with results of over 50 percent increase in yields at the demonstration phase.

Despite demonstrated increases in yields, the improved technology packages have not been fully adopted by farmers. One explanation is that this crop-oriented method does not sufficiently consider the complexity of the Egyptian farming system. Another explanation is the absence of economic incentives.

Present research methods will be improved by including a systems approach and by incorporating economic analysis. This means looking at different food crops, e.g., rice, beans, vegetables, as alternatives for inclusion in the cropping pattern and as competitors to forage crops for animals. Economics plays an important part in farmers' production decisions and must be integrated into the research method.

The Major Cereals project was amended in 1980 to include farming systems. Nothing was realized. Apparently it was premature to introduce this concept before a basic research method was established. Now that a research method is established, the ARC is ready to expand it to respond more closely to the Egyptian agricultural reality. Furthermore, recent advances in micro-computer technology facilitate the systems approach to research. The project encourages greater use of micro-computers to assist researchers in designing, managing, and analyzing the results of their experiments.

c. Personnel Development

The output under personnel development will be both trained personnel and the establishment of a staff development program. Training ranges from technical through professional development to the post-doctoral

level with emphasis on practical training. For this reason, training at the International Agricultural Research Centers (IARC's) and similar institutions where opportunities exist for applied research experiences, is preferred.

During the first year, in addition to continuing ongoing training programs, the project will assess its technical and professional needs. The selection of candidates for training will be based on the study's findings and recommendations. Since personnel development is a key function of management, ARC's annual operating plans will include a training component and specific annual training objectives.

d. Data Collection and Analysis

Data collection and analysis is an operational unit capable of meeting ARC's informational needs and also can be used by MOA and other planners. The unit will provide the ARC's management with timely data for policy and planning purposes. This unit will coordinate its work with the office of MOA's Undersecretary for Economic Affairs.

Particular attention will be given to monitoring of pricing policies in coordination with PL 480 Title 1 discussions and agreements. This unit will be responsible for gathering pertinent data and performing analysis as required to ensure that common objectives are met.

e. Information Utilization and Dissemination

The National Agricultural Research Library (NAL) will be headquartered in Cairo at the Giza research station. The NAL will serve as the central unit for the libraries located on the research stations throughout the country. The NAL's collection will consist primarily of agricultural research publications both in the form of monographs and serials.

The NAL will provide inter library lending services, automated search services, and an extensive selection of reference material. The NAL will also have a vigorous outreach arm which will give access to users other than the ARC research community.

f. Seed Production

The objective of the seed production component is to meet farmers' demands for certified seed. ARC will be

24

responsible for producing breeder and foundation seed of those improved varieties resulting from its research. Where feasible as in the case of hybrid maize and vegetables, the private sector will be encouraged to produce, process, store, and distribute registered and certified seeds. When this is not feasible as for wheat and rice, the MOA's seed authority will be responsive.

Seed certification needs to be separated from production and processing so that the certifiers are not certifying their own work. The ideal would be an independent entity with public participation.

g. Improved Facilities

The ARC will have adequate and appropriate facilities to carry out its research assignment. Under the Rice Research and Training Project a complete rice research facility has been constructed. The Major Cereals Project has constructed new facilities at five of the 31 research stations. Some construction remains such as storage and conveyance structures for the seed processing plants. Future construction will stress refurbishing or remodeling existing structures.

Funds are inadequate to refurbish or remodel all the existing facilities of ARC. For this reason, the ARC will prepare a construction plan and establish priorities. The annual operating plan will identify the structures for refurbishing or remodeling as required to fulfill its research priorities. There are, however, a number of specific construction needs such as the library facilities that can begin immediately.

h. Commodities

Adequate and appropriate equipment, including vehicles, is required for ARC to carry out its research program. The project design identified some of the commodities required for the data collection and analysis, the information utilization and dissemination, and the seed production components. It has not yet identified specific additional equipment required by the various institutes and research stations. The ARC will perform an inventory of equipment and its status which will serve as the basis to identify additional requirements or replacement of antiquated or unservicable equipment. The annual operating plans will indicate specific acquisition needs. The budgets will contain sufficient counterpart funding to operate and maintain AID-funded vehicles and equipment.

25

Pick-up trucks are considered the appropriate vehicles to haul materials to verification and demonstration sites. Some motorcycles will be required to give easy access to field researchers who monitor farmers' work without having to tie up four wheel vehicles. Trucks for hauling seed from contract farmers to the seed processing plants must be of sufficient number and size to handle the large volume of seed. Since many of the research stations are located outside of the population centers where the staff resides, vans or buses will be provided.

i. Grants Program

The major output of this program will be the findings of various research studies which will be partially derived from local and private sector participation. A secondary output will be improved research capability of the cooperating institutions. Another secondary output will be the strengthening of ARC's linkage with U.S. and Egyptian universities and agri-industry. An additional output will be increased collaboration, reduced duplication, and the development of professional associations in Egypt.

The Project is designed to induce CHANGE. The outputs of this Project, relating to the performance of the agriculture sector, will include:

- a significant increase in Production and productivity in the agricultural sector by farmer adoption of improved technologies.
- an improved planning and management capability which will make more efficient use of the resources available for agricultural research.
- an improved policy analysis capability which will lead to policy determinations in favor of free market prices and the elimination of production regulations and subsidized prices.
- a strengthened research extension linkage which will result in continuously upgrading the technical skills of extension agents.
- a significant expansion of the role of the private sector in factor (already begun with hybrid seed) and product marketing and related agribusinesses.

4. Inputs

The inputs required to produce the above outputs are technical assistance, training, construction, and commodities to carry out a research program. The timely provision of such inputs, according to the implementation schedule is required.

a. Technical Assistance

The technical assistance (TA) provided to the ARC over a seven year period will consist of 12 long-term positions for a total of approximately 50 person years and over 300 person months of short-term assistance. The purpose of the TA is to assist the ARC develop:

- an improved agricultural research management system to assist in planning, implementing, and monitoring basic, applied and adaptive research programs;
- improved research techniques and methods;
- an improved research information utilization and dissemination system;
- an expanded data collection service to assist policy analysis, economic analysis, modeling and program monitoring; and
- an improved and expanded capacity to produce high quality foundation and certified seed to meet farmers demands.

(1) Long Term Technical Assistance. Long term technical assistance, will work primarily at the ARC headquarters, or regional research stations.

(2) Short Term Technical Assistance. Short-term technical assistance will be provided the ARC to advise on research problems of a technical nature. Long-term linkage arrangements will be established with U.S. universities, the IARC's, U.S. private sector companies, and others.

Funds for technical assistance total \$14.7 million of which \$9.4 million will be for the long-term and \$5.3 million for short-term assistance.

b. Training

The project will offer various training options to strengthen the ARC's research and research support

services. Training will be available at all levels in the ARC and include managers, researchers, technicians, clerks, and skilled laborers. Training will concentrate on:

- Research planning;
- Research management;
- Research techniques and methods;
- Strengthening particular technical areas;
- Information systems management;
- Data collection/analyses; and
- Skills required to operate and maintain equipment, vehicles, and farm implements.

The training offered will be both long-term (six-month or more) and short-term (less than six months), for degree and non-degree purposes as follows.

- (1) Formal Education:
 - joint U.S.-Egypt graduate degree programs (approximately 60 participants)
 - post-doctoral (approximately 100 participants)
- (2) Non-formal education:
 - pre-service training (approximately 1500 participants)
 - in-service training (approximately 7000 participants)
 - observation and invitational tours, conferences, and seminars (approximately 330 participants)
 - short courses (approximately 10,000 farmer participants)

During the first project year a Master Training Plan will be developed that describes selection criteria for participants; detailed objectives for each level of training; and, recommendations for preferred training methods and procedures. Training provided by NARP will be practical, hands-on and based on the actual knowledge, skills, and attitudes needed to perform the job.

Training for all categories will be initially coordinated by the host country technical assistance contractor and ARC staff. Long-term training to the maximum extent possible will be coordinated by existing Egyptian institutions. Before the fourth year of the

Project, all training aspects will be managed by GOE staff. Short-term, in-country training could include direct contracts with private sector training companies. Training opportunities for staff development will be available to private and public sector organizations with interest and experience in research. Training staff supplied by a contractor will assist the GOE with planning, curriculum development, training of trainers, and evaluation. Egyptians trained by the contractors will provide much of the short-term training in Egypt.

The MOA's Center for Agricultural Management Development (CAMD) will be used for management skills training. This center was developed under the Agricultural Management Project (0116). The Center has resident facilities over 50 participants and adequate classroom space to conduct various courses at the same time.

The estimated budget for training is \$34.6 million, \$24.5 million of which will be for non-degree, \$6.8 million for degree, and \$3.3 million for post doctoral applied research studies.

c. Construction

Buildings for the National Agricultural Library will be refurbished or remodeled to house the collection and equipment adequately. A total of \$1.5 million will be required, two thirds of which (\$1.0 million) will be used for station libraries and the remainder for the central library building.

Funds (\$1.3 million) will be made available to build living quarters on the remote station sites. The decision on the type and location of housing will be left to the ARC.

Construction for the seed production component includes receiving and storage facilities for the recently constructed seed plants (EMCIP Project). Funds (\$0.5 million) for this construction will be drawn down during the first year of the project.

Funds (\$8.0 million) will be available to construct or refurbish laboratories. These funds will not be used until the ARC establishes construction priorities based on its research agenda.

A minimum amount of funding (\$0.5 million) is set aside for farm structures. The farm structures to be built will be left to ARC's decision and approved, if contained in annual operating plans.

d. Commodities

Library funding (\$3.0 million) will finance equipment, furnishings, and also collection development in hard copy, microfiche or other format.

Funds (\$10.5 million) are available for laboratory equipment and supplies. None of these funds will be used until ARC inventories the existing laboratory equipment and supplies. Most of these funds (\$8.0 million) will be used for purchase of equipment during years 2, 3, and 4 of the project. The remaining funds (\$2.5 million) will be equally divided over the seven year life of project for purchase of supplies.

The project will provide the farm equipment (\$2.5 million) required to conduct field experiments and to produce foundation seed. Use of these funds is contingent on an inventory of existing farm equipment and inclusion in the annual operating budget. These funds will also be used to purchase spare parts.

Seed equipment will be purchased (\$0.5 million) for the five recently constructed processing plants. The project will fund \$1.0 million for procurement of data processing hardware and software for the Data Collection and Analysis Unit. The funds may be also used to purchase the data processing services on a temporary basis.

Funds (\$5.1 million) for vehicles will be used to purchase: (1) pickup trucks required to transport personnel (scientists, field researchers) and to haul materials to farmers' fields for the verification and demonstration phases; (2) trucks with trailers to collect seed from contract farmers and deliver to the processing plant; (3) vans for transporting employees to station sites located outside of population centers, and (4) motorcycles to provide access to farmers' fields for researchers. The project will also provide \$1.0 million for purchasing office equipment and furnishings.

The Project will provide \$1.7 million for demonstration packages. This allows the preparation of 5,000 technical packages a year. Each package contains the seed, fertilizer and chemicals which will be given to cooperating farmers for field testing and demonstration.

The Project will attempt to establish a motorcycle loan fund in conjunction with the PBDAC and selected governorate level banks. These banks will administer the fund as intermediate credit institutions in accordance with the requirements of Chapter 19, Handbook 1B. This fund will operate to provide a manner by which selected subject matter specialists and extension agents can obtain a loan to purchase a motorcycle for their work and personal use. The borrower will be expected to use the motorcycle for work and will be reimbursed from the project monthly at a level adequate to cover operation, maintenance and service. It is estimated that this reimbursement will permit the borrower to repay the cost of the cycle over a three-year period. It is expected that reimbursement will be dependent on satisfactory service to farmers. Exact procedures for this fund will be developed during the first year of the Project. The fund will finance approximately 225 motorcycles at an estimated cost of \$350,000.

e. Grants Program

The project will fund a \$22 million grants program. These funds will be used to support collaborative research efforts primarily with Egyptian universities and with private agribusiness firms.

The program will use a two-tiered approach to implementation. There will be first a small board of from three to five members with representatives from the various elements of the agricultural research community. This board will receive guidance from the NARC regarding priority research areas to be targeted by grantees. The board will prepare documentation explaining procedures for proposal preparation scope, and the criteria for selection for funding. When proposals are received they will be reviewed by a technical panel which will rate the proposals according to predetermined criteria and place acceptable proposals in rank order. It is envisioned that not over five of these technical review panels of not over five members each will be needed. Composition may be regular, or on an ad hoc basis depending on the particular discipline involved and the quantity of proposals in that discipline. A procedure will be developed matching fund availability to acceptable

proposals in priority research areas. Progress reports will be provided quarterly and site inspections and a review of the reports will determine if funding will be continued during the full duration of the proposal. Annual reports will be reviewed and presented at a centrally located conference. The approach developed by the Major Cereals Project Grants program will provide a guide to structuring and implementing this activity.

III. Methodology

A. Economic and Financial Analysis

The purpose of economic analysis is to determine whether the Project is a worthwhile investment for Egypt, i.e., whether the outputs from a project are sufficiently valuable to warrant the expenditure of scarce resources. The larger the discounted real benefits for a given set of real costs, the more confident we are in recommending the Project.

For most new agricultural research projects, the benefits are not easily quantifiable ex ante since the outputs of the research process are unknown. However, data are available in Egypt to estimate these benefits, based upon the past seven years of project experience. High marginal returns to investment in research are implied through potential increases in production and farmer income. For resistant varieties and species to remain productive in the face of rapid pest and disease permutations, research scientists must continue to improve genetic and cultural characteristics. Among plant scientists, a rule of thumb states that major technical adaptations must be ready for field application every three years.

There are several effective means to estimate the economic soundness of investment in agricultural research. Three of these were used to evaluate the potential benefits and scheduled costs of this Project. They are summarized below and reported in more detail in Annex 8.

The first alternative (Table 8A) examines the individual farmer's return to improved practices developed by the Agricultural Research Center over the last seven years. Based upon a 1984 World Bank analysis, returns per feddan over all costs due to the new technological practices range from an increase of 25 percent for wheat to 2320 percent for vegetables.

The second alternative (Tables 8 B/M) examines the rate of return to research investments in wheat, rice and maize. If

yield increasing and/or cost reducing technological packages similar to the past seven year period are developed, or if the current technological efficiency is maintained through ongoing research, the flow of benefits costed against a USAID and GOE project investment of \$210 million would provide an internal rate of return of 160 percent without mechanization or 267 percent with mechanization. The benefit-cost ratios are 2.4 and 5.4, respectively (Table 8M).

The third alternative (Table 8N) calculates the internal rate of return to the incremental changes in total agricultural value added, projected at a without-project rate of 2 percent per year and a with-project incremental rate of 2, 4, 6, 8, and 10 percent for years six through ten, followed by a 10 percent per annum increase through the 20th year. Total USAID and GOE project costs are calculated at \$210 million, and are disbursed over year 1 through year 5. The internal rate of return of 212 percent calculated in terms of agricultural value added reflects and validates the range of IRR's calculated in the second alternative.

As noted in the Annex, these are robust figures. The three alternative analyses provide strong evidence that investing in Egypt's agricultural research generating institutions should prove to be wise allocation of resources.

B. Social Soundness Analysis

The primary beneficiary of the Project is the Egyptian farmer who, by adopting improved agricultural technologies, increases production and income. To the extent that food production is increased, Egyptian society in general is better off. Increased domestic supplies of food mean less reliance on imports. Improved farmer's incomes will have a positive affect when spent in the rural community and ultimately spread to urban areas.

1. Compatibility with the Sociocultural Environment

The Project is compatible with the sociocultural environment in that it reinforces and supports what farmers are already doing--maximizing their production opportunities. The Project reinforces what the farmers are already doing independently by trial and error. The Project does this by marshalling resources of the agricultural research community to generate technologies using scientific methods and by transferring these technologies to farmers using modern communication techniques.

Technologies that take farmers generations to develop can be developed in a few years through a well managed and adequately supported agricultural research program. Farmers need the support of an effective agricultural research program if they are going to keep production in line with a growing population's demand for food.

The research method currently being used is also compatible with the sociocultural environment. This method consists of conducting verification of station research results on farmers' fields and then demonstrating the technologies with full participation of the farmers before a technological package is released. This assures that the recommendation of the technological package conforms with the sociocultural environment of the farmers. Farmers' opinions are listened to and acted upon before a technology passes from verification to demonstration and from demonstration to release as an improved package.

The Project makes no assumptions as to what the benefits will be other than increased production and improved incomes for farmers. The specific technologies resulting from the research will be accepted by the recipients if they themselves consider them beneficial. No assumptions are made such as mechanization is the answer or a certain seed variety must be grown, or even specific agronomic practices used.

The same can be said with respect to participation in the Project. Participation of farmers in the verification and demonstration phases is essential for the success of the Project. Farmers who participate will do so voluntarily. To compensate for the time involved and the use of the farmers' land, the package of inputs (seed, fertilizer, chemicals), however, will be given to the farmer.

2. Spread Effects - The Diffusion of Improved Technologies

The Project does not limit itself to one beneficiary group but rather aims at serving the entire farming community. The goal will be reached when increased agricultural productivity results from the adoption by farmers of improved technologies. The diffusion of these technologies is a critical element of the Project.

An improved technology can be a high yielding variety or it can be a technological package. If it is merely an improved variety, the diffusion process is fairly simple. If it is a total package, the diffusion process usually requires various mechanisms.

High yielding varieties are readily adopted by farmers. The demand quickly exceeds the supply as farmers hear or see the results. The Project anticipates meeting the demand by completing the seed processing facilities of the ARC and by encouraging private sector involvement in seed production (especially hybrid, vegetables, and legumes).

Based on the experience of the Rice and EMCIP Projects, wide and rapid diffusion of the technological package is not a problem. The involvement of farmers in the demonstration phase, the training of field extension works, and the available mass media channels serve to diffuse the information quickly. The constraint to adoption of the technologies is not informational but rather the timely availability of inputs required by the technologies. This constraint is beyond the scope of the present Project, but will be dealt with in future related agricultural projects.

3. Social Consequences and Benefits

Generally speaking, technology has been found to be scale neutral. ARC's present method of technology generation which involves small farmers in the verification and demonstration phases may result in a small farmer bias. This, of course, would not be considered negative since 95 percent of the Egyptian farmers farm less than five feddans of land.

Consumers will also benefit from increased food supplies. Since the research envisioned will include pest management and post-harvest handling, the quality of the food that reaches the consumer is also expected to improve. It is not anticipated that the introduction of improved technologies will lessen the labor force in agriculture. Experience from the Mechanization Project has been that improved technologies that make use of machinery have generally addressed labor constraints at peak demand periods. Improved technologies that use machinery have also lessened the burden for women farmers.

The employment pattern may change slightly as more and different types of machinery are used that require skilled labor to operate and maintain. As production increases, non-farm employment opportunities should increase in the rural areas such as in processing, packaging, and transporting.

Women will benefit when relieved by mechanization of burdensome work performed usually as unpaid household work. This will allow more time to take care of small animals which is a source of income for them. Women will also benefit from

the employment opportunities created in marketing the excess production. Generally speaking most of these opportunities are more suitable for women.

C. Technical and Administrative Analysis

The ARC through its research institutes has successfully conducted five USAID-funded projects. It has carried out extensive construction activities greater in magnitude than those proposed in the NARP.

It has identified and selected participants for training. It has done commodity procurement and prepared specifications for a wide array of field and laboratory equipment. A computer based inventory control capability was developed under EMCIP which is appropriate for NARP. Machinery service facilities provided under EMCIP have the ability to maintain and repair vehicles procured under the NARP. Local currency operational budgets established under P.I.L.s deal effectively to deliver a wide range of services. Technical assistance teams focusing on commodity specific research have generated new technologies and delivered those technologies to farmers. University Grants programs have begun to collaborate research efforts of the ARC with those of the university scientific community.

All of these activities have been carried out by staff of the ARC, but on a compartmentalized or institute specific basis, not by the ARC as a single management entity. A good indication that the ARC is technically capable of carrying out the NARP is that the persons responsible for implementing the five discrete projects are now the persons filling the upper echelon administrative positions of the ARC. As a result, the experience they gained while managing a discrete project as a part of, but subordinate to, the ARC will be brought to bear in implementing the NARP.

The project focuses on improved planning and management by providing management training at all levels thus addressing the primary weakness of the ARC.

By broadening the base and increasing the effectiveness of the NARC to direct and coordinate the agenda for Egyptian agricultural research, the ARC, assisted by NARP funding and Technical Assistance, will have the technical capability to implement the Project.

D. Institutional Analysis

The ARC, Egypt's largest agricultural research organization, develops and tests technologies to increase agricultural production.

Due to its large staff (approximately 24,000) extensive facilities, complex assignments, and donor assisted projects, the ARC's administrative/management requirements are equivalent to those of many large industrial and international organizations. However, by its own admission, ARC is deficient in many of the necessary management skills (most notable is its highly centralized decision-making authority). Most upper echelon personnel achieved their current positions via the technician route, i.e., as plant breeders, soil scientists, etc., with promotion based on seniority. Donors have also stressed technical training for projects at the expense of management.

ARC's need for improved management is most evident in its indecision and lack of timeliness. This is particularly evident in field activities where inputs such as seed, herbicides, pesticides, and fertilizer frequently arrive too late to meet seasonal deadlines. These delays are related to a centralized decision-making system which requires most decisions to be made at higher management levels and thus, unduly delays implementation. The effect in terms of crop yields can be serious.

Other institutional constraints include a general lack of supporting services such as grounds and building maintenance, procurement and inventory control, library and informational services and statistical support. These support deficiencies are largely related to inadequate training and insufficient budgetary support. Most ARC facilities require refurbishing and upgrading in order to meet their objectives and provide the technology required to increase food production. Upgrading of the ARC's administrative/management capability is absolutely essential and can be achieved through management training (both in Egypt and the U.S.) and internships, technical assistance in management disciplines, training of support personnel, adequate budgetary support, commodity procurement, project monitoring and the refurbishment and/or construction of buildings and facilities. With such assistance, the appropriate sections of ARC and its institutes can develop the administrative/management capabilities required to effectively implement this project.

E. Environmental Concerns

Communications between AID/W Environmental Coordinator, Mission Environmental Advisor, and Mission crop protection specialist were maintained throughout the Project Paper design stage. The activities of this project in regard to A.I.D. environmental procedures qualify for a negative determination, in compliance with the requirements of 22 CFR 216 (Section 216.3 (b) (1) of Reg. 16).

It is recognized that an Integrated Pest Management and Crop Protection System is needed in Egypt. This system will substantially contribute to increases in productivity. A permanent policy for crop protection is also essential to ensure that no negative environmental effect will occur.

In approaching a solution to problems identified, a crop loss assessment effort should begin immediately. It will examine all crop production cycles and identify stages where changes are needed and recommend solutions. These recommendations will give the project implementation a realistic view of problematic areas to deal with in order to establish an effective Integrated Pest Management and Crop Protection System. As much as it is important to launch a crop loss assessment effort, it is essential to establish an economical threshold for insect infestation for each of the major crops.

IV. Financial Plan

The total cost of the project is estimated at \$210 million. AID will provide a grant of \$130 million. The GOE contribution will be equivalent to \$80 million in cash and kind.

A. Expenditures

Table 1 provides a breakdown of AID and GOE funding by line item. Table 2 provides a projected life-of-project expenditure by line item and Table 3 an estimated obligation schedule.

TABLE 1
ESTIMATED BUDGET
(\$ 000)

	USAID			GOE	Project To
	\$	LE \$ Equiv.	Total \$	\$ Equivalent @ \$1=LE.83168	USAID+GOE \$ + Equiv.
Technical Assistance					
Short Term	5,300	-	5,300	600	5,900
Long Term	9,400	-	9,400	1,200	10,600
Subtotal	14,700	-	14,700	1,800	16,500
Training					
Non-degree	4,500	20,000	24,500	2,000	26,500
Degree					
M.S., Ph.D.	6,000	800	6,800	800	7,600
Post Doctoral	2,500	800	3,300	400	3,700
Subtotal	13,000	21,600	34,600	3,200	37,800
Construction					
Laboratories	-	8,000	8,000	500	8,500
Farm Structures	-	500	500	100	600
Station housing	-	1,300	1,300	1,700	3,000
National Research Library	-	1,500	1,500	400	1,900
Seed Facilities	-	500	500	100	600
Subtotal	-	11,800	11,800	2,800	14,600
Commodities					
Lab equip and supplies	10,500	-	10,500	700	11,200
Farm equipment	2,500	-	2,500	400	2,900
National Research Library	2,000	1,000	3,000	200	3,200
Seed Processing Equipment	500	-	500	50	550
Data Services	1,000	-	1,000	50	1,050
Vehicles	5,100	-	5,100	700	5,800
Administration	2,400	-	2,400	50	2,450
Demonstration Package	1,000	700	1,700	550	2,250
Subtotal	25,000	1,700	26,700	2,700	29,400
Services					
Salaries	-	-	-	62,000	62,000
Travel	1,100	-	1,100	630	1,730
Administration	-	1,000	1,000	200	1,200
Maintenance	-	2,200	2,200	800	3,000
Printing	-	500	500	40	540
Media	500	500	1,000	400	1,400
Research Grants	7,000	15,000	22,000	400	22,400
Land Preparation	-	1,000	1,000	50	1,050
Subtotal	8,600	20,200	28,800	64,520	93,320
Evaluation & Audit					
Evaluation	500	-	500	80	580
Audit	100	-	100	-	100
Subtotal	600	-	600	80	680
Contingencies					
Subtotal	6,800	6,000	12,800	4,900	17,700
TOTAL	68,700	61,300	130,000	80,000	210,000

TABLE 2 PROJECTED EXPENDITURES AND OBLIGATIONS
USAID FUNDS
(000'S)

	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6		Year 7		TOTAL		GRAND TOTAL
	\$	LE \$ Equiv.															
1. Technical Assistance																	
Short Term	300	-	800	-	900	-	900	-	850	-	850	-	700	-	5,300	0	5,300
Long Term	200	-	1,200	-	2,000	-	2,200	-	1,800	-	1,200	-	900	-	9,400	0	9,400
Subtotal	500	0	2,000	0	2,900	0	3,100	0	2,650	0	2,050	0	1,500	0	14,700	0	14,700
2. Training																	
Non-degree	200	1,000	600	3,000	1,000	4,000	900	4,000	700	3,000	600	3,000	500	2,000	4,500	20,000	24,500
Degree																	
M.S., Ph.D.	100	50	800	100	1,000	150	1,400	180	1,900	150	1,000	100	700	70	6,000	800	6,800
Post Doctoral	100	50	300	100	400	150	500	150	500	150	400	100	300	70	2,500	800	3,300
Subtotal	400	1,100	1,700	3,200	2,400	4,300	2,800	4,300	2,200	3,300	2,000	3,200	1,500	2,140	13,000	21,600	34,600
3. Construction																	
Laboratories	-	300	-	800	-	3,000	-	3,000	-	500	-	100	-	-	0	8,000	8,000
Farm Structures	-	-	-	-	-	200	-	300	-	-	-	-	-	-	0	500	500
Station housing	-	-	-	200	-	600	-	500	-	-	-	-	-	-	0	1,300	1,300
National Research Library	-	-	-	300	-	600	-	400	-	200	-	-	-	-	0	1,500	1,500
Seed Facilities	-	-	-	300	-	200	-	-	-	-	-	-	-	-	0	500	500
Subtotal	0	300	0	1,600	0	4,600	0	4,200	0	1,000	0	100	0	0	0	11,800	11,800
4. Commodities																	
Lab equip and supplies	200	-	2,500	-	3,000	-	2,000	-	1,500	-	1,000	-	-	-	10,500	0	10,500
Farm equipment	-	-	1,000	-	1,000	-	500	-	-	-	-	-	-	-	2,500	0	2,500
National Research Library	-	-	500	200	1,000	300	500	300	-	100	-	100	-	-	2,000	1,000	3,000
Seed Processing Equipment	-	-	500	-	-	-	-	-	-	-	-	-	-	-	500	0	500
Data Services	-	-	200	-	300	-	300	-	200	-	-	-	-	-	1,000	0	1,000
Vehicles	-	-	2,000	-	2,000	-	-	-	1,100	-	-	-	-	-	5,100	0	5,100
Administration	300	-	400	-	400	-	400	-	250	-	300	-	250	-	2,400	0	2,400
Demonstration Package	20	25	150	75	250	150	250	150	15	125	100	125	70	50	1,000	700	1,700
Subtotal	520	25	7,250	275	7,950	450	7,900	450	3,800	225	1,400	225	320	50	25,000	1,700	25,700

OK

PROJECTED EXPENDITURES AND OBLIGATIONS (CONTINUED)

	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6		Year 7		TOTAL		GRAND TOTAL
	\$	LE	\$	LE	\$	LE	\$	LE	\$	LE	\$	LE	\$	LE	\$	LE	
	\$ Equiv.		\$ Equiv.		\$ Equiv.		\$ Equiv.		\$ Equiv.		\$ Equiv.		\$ Equiv.		\$ Equiv.		
5. Services																	
Salaries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
Travel	100	-	150	-	200	-	200	-	175	-	150	-	125	-	1,100	0	1,100
Administration	-	75	-	150	-	175	-	150	-	150	-	150	-	150	0	1,000	1,000
Maintenance	-	250	-	350	-	350	-	350	-	300	-	300	-	300	0	2,200	2,200
Printing	-	-	-	50	-	90	-	90	-	100	-	90	-	80	0	500	500
Media	50	50	100	50	100	70	100	100	160	100	35	70	15	50	500	500	1,000
Research Grants	350	400	500	1,100	1,000	2,000	1,500	3,000	1,500	3,000	1,300	3,000	900	2,500	7,000	15,000	22,000
Land Preparation	-	50	-	100	-	200	-	200	-	200	-	150	-	100	0	1,000	1,000
Subtotal	450	625	750	1,810	1,300	2,885	1,600	3,850	1,775	3,850	1,485	3,760	1,040	3,180	8,600	20,200	28,800
6. Evaluation & Audit																	
Evaluation	-	-	-	-	125	-	-	-	150	-	-	-	225	-	500	0	500
Audit	-	-	-	-	-	-	100	-	-	-	-	-	-	-	100	0	100
Subtotal	0	0	0	0	125	0	100	0	150	0	0	0	225	0	600	0	600
7. Contingencies																	
	-	-	1,100	300	1,200	1,200	1,200	1,200	1,100	1,200	1,100	1,100	1,100	1,000	6,800	4,300	12,600
TOTAL	1,930	2,250	12,600	7,165	15,875	13,435	12,900	14,100	11,475	9,575	6,035	8,365	5,685	6,370	68,700	61,300	1130,000
Combined Annual Total	4,130		19,925		29,310		27,000		21,650		16,420		12,555				
Cumulative Total			24,165		53,475		80,475		101,525		117,545		1130,000				

	FY85	FY86	FY87	FY88	FY89
PROJECTED OBLIGATION SCHEDULE	10,140	26,000	35,000	25,000	26,000

41

TABLE 3

PROJECTED EXPENDITURES

GCE FUNDS

(1961-7)

\$1 = LE. 83168

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Total
	LE \$ Equiv.	LE \$ Equivalent						
1. Technical Assistance								
Short Term	75	85	90	90	90	85	85	600
Long Term	75	150	200	225	200	200	150	1,200
Subtotal	150	235	290	315	290	255	235	1,800
2. Training								
Non-degree	100	250	350	350	350	300	300	2,000
Degree	-	-	-	-	-	-	-	-
M.S., Ph.D.	50	100	100	150	150	150	100	800
Post Doctoral	25	50	75	75	75	50	50	400
Subtotal	175	400	525	575	575	500	450	3,200
3. Construction								
Laboratories	50	50	100	100	100	50	50	500
Farm Structures	-	25	50	25	-	-	-	100
Station housing	50	300	600	600	150	-	-	1,700
National Research Library	25	50	100	150	75	-	-	400
Seed Facilities	25	50	25	-	-	-	-	100
Subtotal	150	475	875	875	325	50	50	2,800
4. Commodities								
Lab equip and supplies	50	100	100	150	100	100	100	700
Farm equipment	25	50	75	75	75	50	50	400
National Research Library	25	25	50	25	25	25	25	200
Seed Processing Equipment	25	25	-	-	-	-	-	50
Data Services	-	25	25	-	-	-	-	50
Vehicles	50	100	100	100	100	100	150	700
Administration	25	25	-	-	-	-	-	50
Demonstration Package	25	50	100	100	100	100	75	550
Subtotal	225	400	450	450	400	375	400	2,700

1/2

GOE PROJECTED EXPENDITURES (CONTINUED)

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Total
	LE \$ Equiv.	LE \$ Equivalent						
5. Services								
Salaries	6,000	7,000	8,000	9,500	10,000	10,500	11,000	62,000
Travel	50	75	100	100	100	100	100	630
Administration	25	25	30	30	30	30	30	200
Maintenance	25	75	100	150	150	150	150	800
Printing	10	10	10	10	-	-	-	40
Media	50	50	75	75	50	50	50	400
Research Grants	25	50	75	75	75	50	50	400
Land Preparation	10	10	-	-	10	10	10	50
Subtotal	6,175	7,275	8,395	9,940	10,415	10,890	11,390	64,520
6. Evaluation & Audit								
Evaluation	-	-	20	-	25	-	35	80
Audit	-	-	-	-	-	-	-	-
Subtotal	0	0	20	0	25	0	35	80
7. Contingencies								
	-	-	-	-	-	-	-	4,900
TOTAL	6,895	8,805	10,555	12,155	12,030	12,100	12,560	80,000

6

B. Description of Funding Categories

A description of the principal funding categories follows.

1. Technical Assistance

Short-term technical assistance - will consist of (a) consultancies; (b) development and/or conduct of training programs; and (c) collaborative research. A total of 321 person months will be provided for a total cost of \$5.3 million.

Long-term technical assistance will provide 46.8 person years with emphasis on management and research systems development. The total cost estimate is \$9.4 million with a GOE contribution estimated at \$1.8 million.

2. Training

A total of 2,912 person years of in-country training will be given for all levels of ARC staff including administrative staff, technicians responsible for maintaining equipment and scientists. The USAID contribution is \$24.5 million and the GOE's is \$2 million.

A total of \$6.8 million is available to send 60 candidates to pursue masters degree programs and 40 to pursue doctoral programs. Because of the large number of ARC professionals who have completed their doctoral training, a total of \$3.3 million will be available to provide opportunities for post doctoral work particularly at the IARC's. The GOE contribution will be \$3.2 million.

3. Construction

USAID will fund \$8.0 million for renovating 103 laboratories and greenhouses; \$1.5 million for refurbishing the main ARC library building and 8 branch facilities; \$0.5 million for construction of seed receiving, processing and storage facilities and \$1.8 million for construction of farm structures and for housing at the Shandawe'l, Mataana, Nubaria, Sids and Gemeiza stations. GOE will contribute \$2.8 million for construction.

4. Commodities

The 103 refurbished laboratories will be equipped for a total funding of \$10.5 million, farm machinery will be funded for \$2.5 million; \$3 million for development of reference and

journal collections and equipment for the the NAL; data services, office and administrative equipment for operations for \$3.4 million; seed processing equipment for \$0.5 million; and about 300 vehicles for \$5.1 million. The GOE will contribute approximately \$2.7 million of these costs.

5. Services

The project will make available \$1.1 million in travel funds (air fare and per diem) for invitational travel, attendance at professional conferences and research related events. Other services, including maintenance, administration, land preparation, and printing of extension documents and use of other media, amounts to \$5.7 million.

Of the \$22 million for research grants, \$15 million will be for funding collaborative research efforts with academic institutions. The remaining \$7 million will be used to finance research activities with private sector agribusinesses. The GOE will contribute \$64.5 million to this area.

6/7. Evaluation, Audit and Contingencies

The project provides \$13.4 million from AID and \$5 million from the GOE for evaluation, audit, and contingencies.

V. Implementation Plan

Annual operating plans conforming to the Project's implementation plan will serve as the basis for monitoring project implementation. The first annual plan will be for the Egyptian fiscal year beginning July 1, 1986 to coincide with the arrival of the technical assistance team.

During the initial months of the Project and prior to the arrival of the technical assistance team, the ARC will take an inventory of :

- human resources
- physical plant resources
- laboratory equipment

The human resource inventory will serve as the basis for a long range training plan. The technical assistance team will advise on the preparation of the plan which will be used to select the kinds of candidates for formal training and to identify non-formal training needs.

This does not preclude funding training that have been specifically identified during Project design such as are required for the seed, data collection, and information utilization components. Processing of candidates in these areas will begin as soon as conditions precedent for the initial disbursement are fulfilled.

The physical plant inventory will serve as the basis for developing a long range construction plan. The construction plan is a condition precedent for disbursement of funds for construction. However, specific construction identified in Project design such as the seed receiving and storage structures and the library building will begin once the same condition precedent referred to in the paragraph above is fulfilled.

The inventory of laboratory equipment will be used to determine procurement needs. No new laboratory equipment, however, will be procured until the inventory is completed and a procurement plan prepared.

Successful project implementation will depend on careful planning and execution. Once the technical assistance team is on board, priority will be given to assisting ARC managers at all levels to develop annual operating plans and to use these plans in executing their programs.

A. A.I.D. Overall Responsibility

The Agricultural Office of the USAID Resource Division is responsible for Project management. A USDH Agricultural Development Officer (Backstop 10) will be assigned as Project Officer. The Project Officer will be assisted as required by:

- USDH Project Manager with specific responsibility for monitoring agricultural research activities.
- USDH Project Manager with specific responsibility for monitoring agricultural extension activities.
- USDH Civil Engineer with specific responsibility for monitoring construction.

The Project Officer will have other USAID personnel available for consultation on training, legal and financial matters. The Contracting Office will assist in processing or advising on contractual matters as required.

Implementation will be in accordance with existing Mission Orders and all Handbook procedures. The Project Officer will be responsible for periodically preparing financial and progress reports for review by the USAID Project Review and the Executive Committees as requested.

B. GOE Implementing Responsibilities

The ARC is the GOE agency responsible for implementing the Project in accordance with the Project Paper and the Grant Agreement. The ARC will be assisted by:

- A National Agricultural Research Council (NARC) responsible for overall coordinating and guidance.
- A Coordinating Committee (CC) responsible for advising on policy and planning issues. It will also identify broad areas of agricultural research needs and propose a research agenda for incorporation into annual operating plans.
- An Administrative Unit (AU) responsible for preparing plans and budget and for financial administration.
- A Project Director who will be responsible for managing the Project for the ARC with the assistance of the staff of the AU.

The MOA is responsible for establishing the NARC and CC and for appointing the members to each as well as appointing the person to serve as Project Director. The ARC will assign counterpart personnel to the technical assistance team and administrative staff to assist the Project Director. The ARC will also provide office space and logistical support for the technical assistance team.

The MOA will establish and maintain coordination with USAID/Egypt for the purpose of keeping USAID apprised of the Project activities and evaluating its progress. Where Project redesign or amendments are recommended, the ARC will assist in the development of Project documentation required for USAID review.

C. Technical Services Contractors

The Technical Services Contractor will advise the ARC of all operational aspects of the Project, such as the provision of all advisory technical services, they shall include but are not be limited to; 1) identification and

placing of trainees, 2) preparation of work plans and reports, and participating in project reviews/evaluations. Annex 10-A shows the technical positions to be provided by the contractor and describes the duties and responsibilities of each position.

D. Contracting/Funding Mode

1. Technical Assistance - The bulk of technical assistance will be implemented through a host country or direct AID contract with a U.S. university, consortium, private firm, or other experienced research organization. The Data Collection and Analysis Project (263-0142) currently uses a PASA with the USDA to provide both long and short term technical assistance in data processing and related services to the Ministry of Agriculture. If the use of a PASA continues to be justified, the Project will utilize a similar PASA for its Data Collection and Analysis Component. The technical assistance being provided through ongoing projects directly linked to the ARC is being implemented by host country contracts. The ARC has the capacity to implement the technical assistance of this Project in a similar manner. Therefore, the host country contracting mode will be the preferred method of implementation. Small businesses and minority firms will be utilized to the maximum extent possible. All AID-financed contractors will be encouraged to develop subcontracting plans that provide opportunities for minority participation.

2. Long-term Degree and Short-term Training selection and PIO/P preparation will be implemented during the initial years of the project by the prime technical assistance contractor. Coordination in the U.S. will be by the Egyptian Embassy staff. As the ARC/MOA develop the capability to select and screen participants and to prepare PIO/Ps, the responsibility will shift to the ARC/MOA office responsible.

In-country training will be conducted by the ARC unit designated to manage and implement the project in coordination with the technical assistance team.

3. Construction activities will be implemented by a host country contract between the ARC and a local contracting firm, however, the Fixed Amount Reimbursable (FAR) or modified FAR procedure will be used if preliminary surveys and designs indicate it would be appropriate.

4. Commodities

A procurement services agent will be utilized to procure project commodities from the U.S. On-shelf procurement in Egypt will be managed by the ARC Administrative Unit, and will be funded by a Project Implementation Letter. All procurements will be coordinated by the MOA Procurement Committee.

5. Services

The Research Grants Program will be managed by the ARC Project Management Team and will be funded through a Project Implementation Letter. Other components of this item will be identified and funded by a Project Implementation letter.

6. Evaluation and Audit

These activities will be implemented with an AID direct contract. Small business and minority firms will be utilized to the maximum extent possible. All the earliest stage of planning for the evaluation and audit of the Project, the Section 8(a) Contracting Procedures and Similar Programs will be reviewed and utilized to the maximum extent possible.

E. Implementation Schedule:

8/85 Project Paper approved
8/85 USAID Project Officer appointed
8/85 Grant Agreement signed
8/85 Project Director General and support staff appointed
by MOA/ARC
9/85 Cable requesting approval to purchase appropriate
hardware and software computer packages for the
project sent to SER/COM
9/85 Selection of Procurement Services Agent
9/85 Procedure developed and agreed upon between MOA/ARC
and AID for continuation of priority activities begun
under ongoing projects as they phase out
9/85 USAID submits financial reporting requirements that
will be applicable to monitor U.S. financial inputs
provided for NARP, to GOE Project Director General
(PIL No. 1.)
9/85 Inventory of Physical Plants begin.
10/85 Inventory of Laboratory Equipment begin
11/85 Preliminary submission of list of anticipated vehicle
and equipment needs that will form the basis for
procurement
11/85 Preliminary submission of anticipated renovation and
construction requirements that will form the basis of
A. & E. and construction needs at all appropriate
research station sites
12/85 RFTP's for technical assistance issued
1/86 Procedure for selecting research projects and grants
submitted to USAID for concurrence
1/86 Inventory of human resources begins in collaboration
with MOA Directorate for training
2/86 Submission of IFB by MOA/Procurement Committee for
vehicle and equipment for Mission approval
2/86 A. & E. Firms Prequalified
3/86 Preparation of annual operating plan for ARC begin
Egyptian FY 87
3/86 Priority research projects identified by MOA/ARC
3/86 GOE submits first list of potential long-term
training participants that require intensive English
language training. Nominees tested and placed in
intensive English training
4/86 Technical assistance contractors selected
4/86 Field demonstrations, using improved packages for
summer crops begin on farmers' fields
5/86 A. & E. contractor selected
5/86 List of long-term training nominees who have
successfully met English language minimum
requirements submitted to USAID for processing
6/86 Technical assistance contracts signed
6/86 PASA agreement signed

6/86 Annual operational plan for ARC submitted to USAID for review of those portions for which USAID will provide funding
6/86 Initial data collection and analysis reports released and made available to agricultural researchers
6/86 Preliminary training plan prepared based on findings presented in human resource inventory.
6/86 Training plan reviewed by USAID
7/86 Potential contractors for short-term hands-on training identified
7/86 Technical assistance team leader arrives
8/86 Other team members arrive.
8/86 Resident PASA advisor arrives
8/86 A. & E. contract signed
10/86 Field demonstrations for winter crops begin
3/87 Designs for renovations and construction completed
4/87 IFB for renovation and construction contractor(s) issued
8/87 First external evaluation begin
8/87 Construction contract(s) awarded and signed
10/87 Construction contractor(s) mobilized
12/87 Renovation and construction work at sites begins
2/89 Second external evaluation begin
6/89 Project audit
6/91 All renovation and construction completed
6/92 Project final external evaluation
9/92 Close of project

VI. Evaluation Plan

Evaluation is an ongoing, critical component of this project. Annual internal evaluations and three external evaluations will be conducted to ensure that project objectives and commitments are met.

Critical activities that need special attention are private sector enhancement, pricing policy impact, recurrent costs, and yield increases. The evaluation will use the following bench marks to assess progress in each of these areas

- private sector enhancement: the bench mark will be 1,500 MT of certified hybrid corn seed produced and distributed by the private seed companies.
- pricing policy impact: the bench mark will be the farm gate prices as reported by the MOA for the Egyptian fiscal year ending June 30, 1985.

- recurrent costs: the bench mark will be that which is established in the Project Agreement.
- crop yields: the bench mark will be the national average of the crop for which a technology package is being developed.

A. Internal Evaluations

Annual internal evaluations will be conducted by ARC to measure progress toward objectives listed in their annual operating plan. The evaluation should be conducted so that the findings can be used in preparing the next annual operating plan.

The findings and recommendations of the annual evaluation will be discussed with the USAID project officer. The project officer will then prepare a report containing his comments for the files with copy to the ARC Director.

The Data Collection and Analysis Unit will develop base line data for the Project as requested by the ARC Director and USAID project officer. The unit will cooperate with the internal evaluators by providing data and/or monitoring of specific activities as requested.

B. External evaluations will be contracted during the third, fifth, and final year of the project. The evaluation designs will be based on the Project's Logical Framework. Following the evaluation's recommendations, the Logical Framework will be up-dated by correcting any erroneous assumptions or changes in the project design.

The external evaluation will conduct:

- (a) an economic analysis to determine the extent to which there is any economic impact on farmer beneficiaries;
- (b) a social analysis on adopters to determine how the improved technologies have affected their standard of living; and
- (c) other specific analyses as requested by ARC or the USAID.

The USAID project officer will be responsible for scheduling the external evaluations. USAID will contract directly with a firm.

VII. Conditions, Covenants and Negotiating Status

A. Conditions Precedent

1. Condition Precedent to Initial Disbursement

Prior to any disbursement, or the issuances of any commitment document under the Project Agreement, Grantee shall, except as AID may otherwise agree in writing, furnish to AID in form and substance satisfactory to AID:

evidence that the MOA/ARC has:

- (1) established an Administrative Unit within ARC, responsible for coordinating project implementation;
- (2) appointed a Project Director to head the unit; and
- (3) provided to that unit sufficient operating authority to implement the Project.

2. Condition Precedent to Disbursement for Technical Services

Prior to any disbursement for technical services or to the issuance by AID of documentation pursuant to which disbursement will be made for technical services, the Grantee shall, except as otherwise agreed in writing, furnish to AID in form and substance satisfactory to AID.:

- a. evidence that the MOA/ARC have appointed counterparts for each technical assistance position;
- b. a statement describing the relationships between the staff of the ARC and the long-term technical advisors; and
- c. evidence of the establishment of a National Agricultural Research Council to function as a review and coordinating body and provide directional guidance to all agricultural research in Egypt.

Provided, however, that specific priority research activities initiated under AID-funded projects which are

ongoing but need funding for continuation may, on a case by case basis and subject to the agreement of the Parties, be funded from the Project.

3. Condition Precedent to Disbursement for Architectural and Engineering Services

Prior to any disbursement for architectural and engineering services or to the issuance by AID of documentation pursuant to which disbursement will be made for architectural and engineering services, the Grantee shall, except as otherwise agreed in writing, furnish to AID in form and substance satisfactory to AID:

- a. evidence of the availability of adequate sites for the construction of new Project facilities;
- b. evidence of a signed contract with a contractor acceptable to AID for the architectural and engineering services for the Project, and evidence that Egyptian counterparts have been assigned as part of the Project team in positions corresponding to technical positions of the Technical Services contractor; and

Provided, however, that prior to all of the above listed conditions precedent being met, upon agreement of the Parties an amount up to but not to exceed \$95,000, may be disbursed for architectural and engineering services to begin necessary design work on selected sites, where new buildings or renovation will be necessary to reach Project objectives.

4. Condition Precedent to Disbursement for Construction and Renovation

Prior to any disbursement for construction and renovation or to the issuance by AID of documentation pursuant to which disbursement will be made for the construction or renovation, of a particular facility to be assisted under this project, the Grantee shall, in each case of construction or renovation, except as otherwise agreed in writing, furnish to AID, in form and

substance satisfactory to AID, an implementation plan for construction. This implementation plan shall include among other things, a list in preferential order, of funding options considered, one of which shall be use of the Fixed Amount Reimbursable (FAR) or Modified FAR procedure.

5. Condition Precedent to Disbursement for Commodities

Prior to any disbursement or the issuance by AID of documents pursuant to which disbursements will be made for commodities, with the exception of office equipment and supplies, the Grantee shall, except as the Parties may otherwise agree in writing, furnish to AID, in form and substance satisfactory to AID, an implementation plan for commodity procurement.

6. Conditions Precedent to Disbursement for Training

Prior to any disbursement for training or the issuance by AID of documentation pursuant to which disbursement will be made for training, the Grantee shall, except as the Parties may otherwise agree in writing, furnish to AID, in form and substance satisfactory to AID, a training plan, based on an inventory of training needs, that is projected over the Life of Project, provided, however, that this condition shall not apply to trainees enrolled in AID-funding training.

B. Covenants

Special Covenants

USAID will include in the Grant Agreement the standard Special Covenant as set forth in Handbook 3 with regard to Project Evaluation.

Additionally, USAID will include the following Special Covenants in the Grant Agreement:

1. The Grantee shall submit for AID approval prior to implementation, issuance or execution, all plans, specifications, construction schedules, bid documents, solicitations of proposals and similar Project contract documents, including all modifications to these documents.

55

2. The Grantee shall make available, after the termination of the Project, sufficient resources, including the provision of funds, to support on a continuing basis, the research and information dissemination activities which have been supported by the Project. As part of its preparation of its annual budget, the Ministry of Agriculture shall meet with AID and discuss how the Project will provide for the operation and maintenance of all Project-funded equipment and construction.

3. The Grantee will do its best to institute appropriate pricing policies in order to assist the Project to reach the objective of stimulating agricultural productivity.

4. The GOE shall consult with the Ministry of Agriculture Commodity Procurement Committee to develop prudent commodity procurement planning and to prevent unnecessary duplication of commodities. At least four months prior to the need for specific commodities, the GOE shall furnish A.I.D. with a commodity procurement plan for such commodities. A commodity procurement plan for vehicles shall provide the amount, type and use of vehicles. The plan must certify that adequate maintenance and repair facilities are available and that the GOE has personnel to properly operate, maintain, support and control the vehicles.

5. The Grantee shall, except as the Parties may otherwise agree in writing, furnish to AID, in the form developed by AID and the MOA Commodity Procurement Committee through earlier AID-funded projects, proper tender documentation in a timely fashion.

General Covenants

In addition, the Project Grant Standard Provisions Annex will be incorporated as an Annex to the Grant Agreement, which will provide other necessary assurances to AID regarding implementation of the Project.

		Page
Annex 1	Logical Framework with Addendum	1
Annex 2	Cables	6
	A. PID Approval Cable	
	B. Exchange on NAPP to NARP Change	
Annex 3	Statutory Check-List	14
Annex 4	Request for Assistance	29
Annex 5	611(a) Determination and 611(e) Certification	30
Annex 6	Waiver Justification	32

ANNEX 1

PROJECT TITLE: National Agricultural Research Program

PROJECT DESIGN SUMMARY

PAGE 1

LIFE OF PROJECT:

PROJECT NUMBER: 263-0152LOGICAL FRAMEWORK

From FY 85 to FY 92

Total U.S. Funding \$130 Million

Date Prepared: 7/9/85

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>(A-1) Program or Sector Goal: To increase agricultural productivity by improving the quality of technologies available to farmers.</p>	<p>(A-2) Measures of Goal Achievement: Increased agricultural yields at the demonstration stage of at least 25 percent. Annual increases of affected commodity of at least 2 percent 3 years after release of improved package.</p>	<p>(A-3) Means of Verification: Continuous, accurate sampling of demonstration results by ARC, MOA annual production data reports.</p>	<p>(A-4) Assumptions for Achieving Goal Targets: (1) No major negative shocks to economy (2) Continued movement by GOE toward free enterprise economy (3) Continued access to scientific information by the Egyptian research community</p>
<p>(B-1) Project Purpose: To improve the capability of the Egyptian agricultural research community to provide a continuous flow of improved, appropriate agricultural technology.</p>	<p>(B-2) Achievement of Purpose Conditions: End of Project Status: 1. Research capacity in place, providing a continuous flow of improved technologies. 2. Accurate data available and used by decision-makers for policy and planning purposes. 3. Technical information available to scientists and <u>results of research disseminated to farmers</u></p>	<p>(B-3) ARC reports, Project evaluations, annual Project reviews by ARC and AID.</p>	<p>(B-4) Assumptions for Achieving Purpose: (1) Sustained budgetary and political support to MOA/ARC from GOE/USAID (2) Support throughout GOE (e.g. Customs) for integrity and success of Project (3) Timely and accurate monitoring and evaluation of project status (4) Continued integrity of physical and human capital resource base (f) Continued uninhibited access to intergovernmental data bases</p>
<p>(C-1) Project Outputs: 1. An established management system with trained managers. 2. Improved research methods using an interdisciplinary system approach</p>	<p>(C-2) Magnitude of Outputs 1. Standard management procedures being used in all 11 ARC institutes and 31 experiment stations. 2. Systems approach being used which considers relationships (magnitude) of cropping patterns and incorporates animals in analysis.</p>	<p>1. - 8. Project records, ARC's institutes annual reports, periodic reports from DCA units and NAL newsletters. Evaluation reports.</p>	<p>(C-4) Assumptions for Achieving Outputs: Necessary assumptions with respect to output and input will take the form of an agreement on mutual compliance with conditions essential to the successful implementation.</p>

PROJECT TITLE: National Agricultural Research Program

PROJECT DESIGN - SUMMARY

PAGE 2

ANNEX 1

PROJECT NUMBER: 263-0152

LOGICAL FRAMEWORK

LIFE OF PROJECT:

From FY 85 to FY 92

Total U.S. Funding \$130 Million

Date Prepared: 7/9/85

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>3. Balanced mix of research scientists and of skilled technicians</p> <p>4. Timely and accurate source of agricultural production data</p> <p>5. An extensive and current collection of research documents and a constant diffusion of research results</p> <p>6. Sufficient certified seed available to meet farmers' demands</p> <p>7. Appropriate research facilities adequately equipped and furnished.</p> <p>8. A coordinated and collaborative agricultural research community</p>	<p>3. 100 participants in long-term training; 10,000 participants in short-term training</p> <p>4. Data on production, yields of all crops, number of animals, their production, factor and market prices published regularly</p> <p>5. A collection of no less than 30,000 items and dissemination of 50 specific technical reports per year</p> <p>6. 70 percent of cereal seed demand and 100 percent of hybrid, vegetable and legume seeds demand met</p> <p>7. Laboratories fully equipped and functioning in 31 research stations</p> <p>8. At least 3 professional association related research organized e.g. plant geneticists, veterinarians, and agricultural economists</p>		

5/9

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS						
<p>(D-1) Project Inputs:</p> <ol style="list-style-type: none"> 1. Technical Assistance <ol style="list-style-type: none"> (a) Long-term assistance (b) Short-term assistance in specific, scientific fields 2. Training <ol style="list-style-type: none"> (a) In-country courses (b) International subject matter matter training at <ul style="list-style-type: none"> - non-graduate level - graduate -post-graduate 3. Commodities <ol style="list-style-type: none"> (a) Lab equipment and supplies (b) Farm equipment (c) Library equipment (d) Seed processing equipment (e) Data processing equipment (f) Vehicles (g) Office equipment 4. Construction and Refurbishing <ol style="list-style-type: none"> (a) Laboratories (b) Farm structures (c) Staff housing (d) Library (e) Seed facilities 5. Services <table style="width: 100%; border: none;"> <tr> <td>(a) Travel</td> <td>(d) Media</td> </tr> <tr> <td>(b) Maintenance</td> <td>(e) Grants</td> </tr> <tr> <td>(c) Printing</td> <td>(f) Gas & Oil</td> </tr> </table> 	(a) Travel	(d) Media	(b) Maintenance	(e) Grants	(c) Printing	(f) Gas & Oil	<p>(D-2) Implementation Target:</p> <p>Grant Agreement for \$130 million as specified in Grant Agreement Annex and updated accordingly</p>	<p>(D-3) Contracts and Accounts:</p> <p>MACS System</p>	<p>(D-4) Assumptions for Providing Inputs:</p> <p>See above</p>
(a) Travel	(d) Media								
(b) Maintenance	(e) Grants								
(c) Printing	(f) Gas & Oil								

Logical Framework

Addendum

Additional Indicators for Measuring Outputs

1. Improved Management
 - full complement of approved positions;
 - standard operating procedures being followed;
 - periodically adjusted approved research agenda;
 - operating plan and budget approved prior to initiation of fiscal year;
 - operating within budgetary limitations; and
 - research plans being implemented on schedule.

2. Improved Research Methods
 - use of a farming systems approach to identify constraints to increased production;
 - greater use of appropriate designs for field and station experiments;
 - more effective control of research experiments;
 - reduced time in analyzing and reporting on research findings; and
 - more reliance on computer technology to accelerate research analysis.

3. Personnel Development
 - the establishment of a staff development program;
 - the inclusion of specific training objectives in the ARC's annual operating plans; and
 - the accomplishment of the stated training objectives as found in the annual operating plans.

4. Data Collection and Analysis
 - improved agricultural data base;
 - expanded data processing capability within the MOA;
 - improved agriculture and food policy analysis capability; and
 - regularly scheduled publication of agricultural statistics.

5. Information Utilization and Dissemination
 - a single classification and cataloging system;
 - an efficient circulation system;
 - trained personnel to manage the library collection; and
 - effective mechanisms to disseminate relevant research results to farmers.

6. **Seed Production**
 - a vigorous private sector seed industry for hybrids, vegetables and forages;
 - three seed testing stations properly equipped and sufficiently mobile; and
 - adequate supplies of improved varieties available to farmers.

7. **Improved Facilities**
 - full occupancy and utilization of the completed facilities; and
 - completed facilities being maintained.

8. **Commodities**
 - equipment fully used; and
 - vehicles serviced according to manufacturer's instructions and schedule.

UNCLASSIFIED

STATE 380953/01 OF 02

ACTION: AID-6 INFO: DCM USIS ECON/9
VZCZCCRO107
PP RUEHEG
DE RUEHC 0953/01 3640532
ZNR UUUUU ZZH
P 290427Z DEC 84
FM SECSTATE WASHDC
TO AMEMBASSY CAIRO PRIORITY 6529
BT
UNCLAS SECTION 01 of 02 STATE 380953

AIDAC

E.O. 12356: N/A

TAGS:

SUBJECT: NEAC REPORTING CABLE ON EGYPT'S NATIONAL AGRICULTURE
PRODUCTION PROJECT PID (NO. 263-0152)

REF: NATIONAL AGRICULTURE PRODUCTION PROJECT (NAPP) PID
1. THE NEAC MET ON DECEMBER 18, 1984 AND APPROVED THE PID
PRESENTED BY THE EGYPT MISSION ON THE NATIONAL AGRICULTURE
PRODUCTION PROJECT. THE MISSION IS TO BE COMPLIMENTED ON THE
QUALITY OF THE PID AND THE EXCELLENT PROFESSIONAL SUPPORT
PROVIDED BY DR. DAVID SCHAEER AND DR. KEN WIEGAND AT BOTH THE
PRC AND NEAC. THE PARTICIPATION OF THESE TWO MISSION OFFICERS
GREATLY ASSISTED THE BUREAU'S REVIEW OF THE NAPP FIL.

2. DECISIONS TAKEN AND/OR CRITICAL ISSUES/CONCERNS WHICH
SHOULD BE TAKEN INTO CONSIDERATION DURING THE DEVELOPMENT OF THE
PROJECT PAPER ARE INCLUDED BELOW.

- A. PRIVATE SECTOR STRATEGY: THE FINAL PROJECT PAPER
SHOULD CONTAIN A STRATEGY FOR STRENGTHENING AND EXPANDING
PRIVATIZATION ACTIVITIES IN THE AGRICULTURE SECTOR. THE FINAL
PROJECT DESIGN SHOULD SPECIFY POTENTIAL OPPORTUNITIES FOR
PRIVATE SECTOR INVOLVEMENT. NE/PD AND MISSION REPRESENTATIVES
MET SUBSEQUENTLY TO IDENTIFY INDIVIDUALS WHO COULD ASSIST THE
MISSION IN THEIR EFFORT. IT WAS AGREED THAT THE MISSION COULD
FURTHER DEVELOP THEIR NEEDS AND SHARE THE SOW WITH AID/W IN THE
NEAR FUTURE.

- B. POLICY REFORM: (1) FOREIGN EXCHANGE RATE - IT WAS
AGREED THAT WHILE THIS ISSUE WAS GENERIC TO ALL AID PROGRAMS,
AUTHORIZATION OF THE NAPP WOULD BE CONSIDERED WITHIN THE
CONTEXT OF GOE ACTION ON THIS ISSUE, ESPECIALLY IN LIGHT OF THE
SIGNIFICANT PORTION OF AID DOLLARS BEING CONVERTED TO LC FOR
LOCAL COSTS UNDER THIS PROGRAM.

(2) PRICING - BECAUSE OF THE COMPLEXITY OF EGYPTIAN PRICING POLICIES AND THE DIRECT IMPACT THESE POLICIES CAN HAVE ON THE SUCCESS OF THE NAPP, THE NEAC REQUESTS THAT A STRATEGY AND INDICATORS BE DEVELOPED WHICH WILL ALLOW MONITORING OF PRICING POLICIES DURING PROJECT IMPLEMENTATION. THIS STRATEGY FOR MONITORING AND ANALYSIS SHOULD EXPLICITLY IDENTIFY PRICE POLICY AS A MAJOR TOPIC FOR ANALYSIS, SUBSEQUENT REVIEW, AND NEGOTIATION WITH THE GOE, TO ACHIEVE HIGHER FARMGATE PRICES. STRATEGY SHOULD BE CLOSELY COORDINATED WITH PL 480 SELF-HELP DISCUSSIONS AND MONITORING OF SELF-HELP MEASURES FOCUSED ON SAME ISSUE.

C. RECURRENT COSTS: THE FINAL PROJECT PAPER SHOULD DETAIL AND SPECIFY THE MISSION'S STRATEGY ON HOW TO HAVE THE GOE ASSUME THE FULL RECURRENT COSTS FOR THE NAPP, AND INCLUDE BENCH MARKS FOR INCREMENTAL INCREASES TO CHAPTER II RESULTING IN COMPLETE COVERAGE OF THESE COSTS BY THE END OF THE PROJECT.

D. EVALUATION PLAN AND MONITORING (INFORMATION MANAGEMENT): (1) DURING THE PROJECT PAPER DESIGN, AN EVALUATION PLAN SHOULD BE DEVELOPED WHICH WILL ENABLE THE USAID AND GOE TO CRITICALLY REVIEW THE PROGRESS OF NAPP. THIS PLAN MUST PROVIDE BENCH MARKS FOR:

PRIVATE SECTOR ENHANCEMENT,
PRICING POLICY IMPACT,
RECURRENT COST, AND
AGRICULTURE PRODUCTION YIELDS RESULTS

(2) AN INFORMATION MANAGEMENT SYSTEM SHOULD BE DESIGNED FOR THE NAPP WHICH WOULD PROVIDE A MEANS OF MEASURING INTERIM LEVELS OF PROJECT ACTIVITY STATUS LEADING TO POTENTIAL CHANGES IN IMPLEMENTATION ACTIVITIES. THESE ACTIVITIES COULD INCLUDE SUCH INDICATORS AS: PERCENT OF PLANNED DEMONSTRATION PLOT ACTIVITY ACHIEVED FOR RICE, WHEAT AND MAIZE: NUMBER OF VILLAGE AGENTS TRAINED AND THEIR LEVEL OF EFFECTIVENESS: RATE OF ADOPTION OF IMPROVED PACKAGES OF TECHNOLOGY WITHIN CAMPAIGN TARGET AREAS: ADEQUACY OF THE DATA BASE AND RIGOR OF ANALYSIS DEVELOPED FOR MONITORING AND POLICY DIALOGUE ACTIVITIES: AND THE IMPACT OF TRAINING UPON RESEARCH AND EXTENSION ACTIVITY AND THE LEVEL OF FORWARD PLANNING CAPACITY ACHIEVED.

E. EXTENSION SERVICE COST: THE PROJECT PAPER DESIGN SHOULD TAKE INTO CONSIDERATION A STRATEGY WHICH, OVER THE LIFE-OF-PROJECT, ENCOURAGES BENEFICIARIES (FARMERS) TO PAY DIRECTLY FOR SOME PORTION OF THE SUPPORT SERVICES THEY RECEIVE RATHER THAN THE INTEREST RATE CHARGE AS PROPOSED IN PID SUCH A STRATEGY SHOULD ALLOW THE FARMER AN OPPORTUNITY TO MAKE A DECISION AS TO THE QUALITY AND THEREFORE VALUE OF THIS SUPPORT.

F. MINORITY, SMALL BUSINESS CONCERNS AND HBCUS: THE PROJECT PAPER SHOULD CONTAIN A STRATEGY FOR USING THE SERVICES OF MINORITY AND SMALL BUSINESS FIRMS TO THE NAPP AND HBCUS TO IMPLEMENT THE NAPP. SUBCONTRACTING PLANS SHOULD BE REQUIRED IN ALL APPROPRIATE RFP'S.

G. FUNDING SOURCE: DURING THE NEAC IT WAS AGREED THAT THE NAPP WILL NOT RELY ON INPUTS FROM THE CIP FUNDS.

H. GOAL AND PURPOSE STATEMENTS: THE NEAC REVIEWED AND ACCEPTED THE GOAL AND PURPOSE STATEMENTS AS PRESENTED IN THE PID. HOWEVER, IT WAS NOTED THAT A 50 PERCENT PRODUCTION INCREASE MAY NOT BE FEASIBLE WITHIN A FIVE YEAR TIME FRAME, THEREFORE, MISSION IS ENCOURAGED TO LOOK CLOSELY AT THE NEED TO LENGTHEN THE PROJECT AND/OR MODIFY THE TARGET, BUT A QUANTIFIABLE TARGET SHOULD BE RETAINED.

I. LINKAGES: THE FINAL PP SHOULD CONTAIN A STATEMENT WHICH IDENTIFIES THE LINKAGES BETWEEN THE NAPP, PL480 TITLE I AND OTHER ONGOING MISSION PROJECTS.

3. PLEASE ADVISE AID/W OF THE MISSION'S PLANS AND TIME TABLE FOR PROJECT DESIGN.

DAM
BT
GM

UNCLASSIFIED

STATE 380953/02

VZCZCERI *
 PP RUEHC
 DE RUEHEG #7362/01 184 **
 ZNY CCCCC ZZB
 P 031616Z JUL 85
 FM AMEMBASSY CAIRO
 TO SECSTATE WASHDC PRIORITY 9710
 BT

CHRG: AID 07/03/85
 APPRV: DIR:FBKIMBALL
 DRFTD: ARG/A:JBEAUSOLEIL:LE
 F
 3. FM/FO:HJAMSHED
 DISTR: AID-6 DCM ECON

SECTION 01 OF * CAIRO 17362

AIDAC

FOR: GARRY LEWIS NE/TECH/AD

E.O. 12356: N/A
 SUBJECT: NATIONAL AGRICULTURAL PRODUCTION PROJECT
 (NAPP) 263-0152

SUMMARY: THE SCOPE OF THE NATIONAL AGRICULTURAL PRODUCTION PROJECT (NAPP) 263-0152 HAS BEEN REDUCED TO EMPHASIZE THE RESEARCH ELEMENTS OF THE PROJECT AS DESCRIBED IN THE PID. THE TITLE HAS BEEN CHANGED ACCORDINGLY TO THE NATIONAL AGRICULTURAL RESEARCH PROJECT (NARP). THE PROJECT WILL SUPPORT RESEARCH THROUGH FIELD VERIFICATION AND DEMONSTRATION. THUS, THE RESEARCH EXTENSION LINKAGE REMAINS, BUT NO DIRECT SUPPORT WILL BE GIVEN AT THIS TIME TO THE EXTENSION SERVICE OR TO FINANCE THE PRODUCTION CAMPAIGNS. THESE COSTS WERE TO HAVE BEEN MAINLY BORNE BY THE GOE UNDER NAPP.

1. NARP WILL BE IMPLEMENTED BY THE SAME AGENCY. THE AGRICULTURAL RESEARCH CENTER (ARC). OVER 45 PERSON YEARS OF TECHNICAL ASSISTANCE WILL BE PROVIDED TO THE ARC. NON-DEGREE TRAINING WILL BE PROVIDED ARC'S STAFF FOR A TOTAL OF U.S. DOLS 25 MILLION. ADVANCED DEGREE TRAINING WILL BE PROVIDED FOR A TOTAL OF ALMOST U.S. DOLS 10 MILLION. CONSTRUCTION WILL STRESS REFURBISHING OR REMODELING OF RESEARCH FACILITIES FOR A TOTAL OF U.S. DOLS 11.5 MILLION. COMMODITIES, MOSTLY IN LABORATORY EQUIPMENT AND SOME SEED PROCESSING EQUIPMENT WILL SURPASS U.S. DOLS 25 MILLION. IN ADDITION TO DIRECT ASSISTANCE TO RESEARCH, THE PROJECT WILL DEVELOP ARC'S SUPPORTING SERVICES OF DATA COLLECTION AND ANALYSIS, INFORMATION UTILIZATION AND DISSEMINATION, AND A SEED PROGRAM TO ENSURE PROPER MULTIPLICATION OF BREEDER AND FOUNDATION SEED.
2. THE MISSION HAS SERIOUS PROBLEMS SUPPORTING THE GOE ACROSS THE BOARD PRODUCTION CAMPAIGNS BECAUSE OF PUBLIC SECTOR SUBSIDIZED INPUTS AND DISTORTED CONTROLLED PRICES OF OUTPUT.
3. MAJOR SUPPORT FOR THE GOE EXTENSION FUNCTIONS WILL NOT BE PART OF THE PRESENT PROJECT. SUPPORT TO THE EXTENSION FUNCTION WILL BE DEFERRED UNTIL FY 86 AND INCORPORATED INTO THE AGRICULTURAL PRODUCTION CREDIT PROJECT.

4. BY EMPHASIZING RESEARCH, THE PROJECT DOES NOT DENIGRATE THE NEED FOR EXTENSION. RATHER IT INTENDS TO USE ALL AVAILABLE MEANS TO DISSEMINATE THE FINDINGS OF RESEARCH TO FARMERS. THESE FINDINGS WILL BE MADE AVAILABLE IN EVERY COMMUNICATION FORMAT APPROPRIATE TO THE EGYPTIAN CONTEXT. THE FINDINGS WILL BE MADE AVAILABLE NOT ONLY TO THE EXTENSION SERVICE BUT ALSO TO FARM INPUT SUPPLIERS, AGRICULTURAL CREDIT INSTITUTIONS, AND THE MEDIA IN GENERAL. THE OBJECTIVE WILL BE TO PROVIDE CONTINUOUS EDUCATION TO THE EGYPTIAN FARMER ABOUT IMPROVED AGRICULTURAL PRACTICES WHICH ARE CAPABLE OF INCREASING PRODUCTION AND IMPROVING INCOMES.

5. THE ORIGINAL U.S. DOLS 200 MILLION IN PROJECT GRANT FUNDING IS REDUCED TO U. S. DOLS 130 MILLION MAINLY THROUGH THE FOLLOWING CHANGES:

(A) TECHNICAL ASSISTANCE: BY REDUCING THE LONG TERM RESIDENT ADVISORS AND SHORT TERM CONSULTANTS WITH SPECIALIZATION RELATED TO EXTENSION.

(B) TRAINING: BY ELIMINATING ALL DIRECT TRAINING OF EXTENSION STAFF.

(C) CONSTRUCTION OF STATION STAFF HOUSING REDUCED TO A MINIMUM.

(D) PURCHASE OF MOTORCYCLES FOR EXTENSION AGENTS ELIMINATED.

6. SOME LINE ITEMS IN THE ORIGINAL PID BUDGET HAVE BEEN INCREASED AS FOLLOWS:

(A) DEGREE TRAINING BY ONE MILLION DOLLARS.

(B) THE RESEARCH GRANTS PROGRAM BY OVER U.S. DOLS 12 MILLION TO MAKE IT POSSIBLE TO INVOLVE THE PRIVATE SECTOR, AGRIBUSINESSES AND UNIVERSITIES IN AGRICULTURAL RESEARCH PROJECTS.

7. THE ESTIMATED BUDGET FOR NARP IS AS FOLLOWS:

BT
#7362

NNNN

ESTIMATED BUDGET
(DOLS 000)

COMPONENT	AID	GOE
A. TECHNICAL ASSISTANCE		
- -SHORT TERM	5355	750
- -LONG TERM	9371	1500
SUBTOTAL	14726	2250
B. TRAINING		
- -NON-DEGREE	24463	2500
- -DEGREE		
- - M.S., PHD	6795	1000
- - POST PHD	2831	500
SUBTOTAL	34088	4000
C. CONSTRUCTION		
- -LABORATORIES	8000	600
- -FARM STRUCTURES	208	50
- -STATION HOUSING	1273	2000
- -NAT'L RESEARCH LIB.	1517	500
- -SEED FACILITIES	500	50
SUBTOTAL	11498	2200
D. COMMONITIES		
- -LAB EQUIP AND SUPPLIES	10455	1100
- -FARM EQUIPMENT	4484	500
- -NAT'L RESEARCH LIB.	2000	250
- -SEED PROCESSING EQUIP	500	50
- -DATA SERVICES	759	25
- -VEHICLES	5058	100
- -ADMINISTRATION	2438	50
- -DEMONSTRATION PKG	1707	655
SUBTOTAL	25400	2530
E. MATERIALS		
- -GAS, OIL	3035	750
- -OTHER	2529	1000
SUBTOTAL	5563	1750
F. SERVICES		
- -SALARIES	-	75000
- -TRAVEL	1128	100
- -MAINTENANCE	2038	1000
- -PRINTING	36	20
- -MEDIA	303	500
- -RESEARCH GRANTS	22000	500
- -LAND PREPARATION	1012	50
SUBTOTAL	26517	76770
G. EVALUATION		
- -CONTINGENCIES	506	100
SUBTOTAL	11701	7000
SUBTOTAL	12207	7100
TOTAL:	130000	97000

8. MISSION APPRECIATES THAT ABOVE CHANGES FROM PID MIGHT BE VIEWED AS SIGNIFICANT SINCE PID INCLUDED EXTENSION THROUGH PRODUCTION AS AREAS OF EMPHASIS.

HOWEVER, CURRENT AND FIRM MISSION THINKING IS, THAT ABOVE DESCRIBED CHANGES ARE COMPELLING TO ACCOMPLISH AGRICULTURAL SECTOR STRATEGY. DURING DESIGN OF NAPP, IT BECAME CLEAR THAT EXTENSION WAS NOWHERE NEAR READY FOR IMMEDIATE IMPLEMENTATION, WHILE THE ALTERNATIVE APPROACH OUTLINED ABOVE (RESEARCH) CAN QUICKLY GO FORWARD WITH THE OPTIONAL LINKAGE TO PRODUCTION MADE THROUGH THE SEVERAL MEANS REFERRED TO IN PARA FOUR ABOVE.

9. IN VIEW OF ABOVE CONSIDERATIONS, PLUS OUR DESIRE TO PROCEED WITH FY 85 OBLIGATION, REQUEST THAT NO NEW PID BE REQUIRED. ALL AID/W COMMENTS WOULD NATURALLY BE CONSIDERED AND REFLECTED IN UPCOMING PP AND AUTHORIZATION. PLEASE ADVISE.
VELIOTES

BT

#7362

NNNN

UNCLASSIFIED

ANNEX 2 -- B

STATE 221407

-13-

ACTION: AID-5 INFO: DCM ECON /S

VZCZCC049S
PP RUEHIG
DE RUEHC #1407 2001556
ZNY CCCCC ZZH
P 101559Z JUL 85
FM SFCSTATE WASHDC
TO AMEMBASSY CAIRO PRIORITY 5040
BT

LOC: 2E 524
20 JUL 85 0612
CN: 20974
CHRG: AID
DIST: AID

STATE 221407

AIDAC

E.O. 12356: N/A

TAGS:

SUBJECT: NATIONAL AGRICULTURAL PRODUCTION PROJECT (NAPP)
263-0152

REF: (A) BELL/AIMBALL TELCON 7/15/85; (
) CAIRO 17352

1. IN LIGHT OF MISSION DECISION TO DELETE DIRECT SUPPORT OF EXTENSION AND PRODUCTION CAMPAIGNS FROM SUBJECT PROJECT AND SUBSEQUENT CONCERNS RAISED BY THAT DECISION, REQUEST MISSION SUBMIT PRESENTATION WHICH RATIONALIZES DIFFERENCES BETWEEN APPROVED PID AND REVISED PROJECT WITH SPECIFIC ATTENTION TO THE FOLLOWING: (A) SPECIFIC ELEMENTS OF NAPP THAT HAVE BEEN DROPPED AND REASONS FOR THEIR EXCLUSION; (B) EXPLANATION OF HOW EXISTING AND PROPOSED RESEARCH FINDINGS WILL BE EXTENDED TO FARMERS EITHER IN THE NAPP, THE AG PRODUCTION CREDIT PROJECT OR THROUGH OTHER MEANS; AND (C) HOW THE INSTITUTION(S) IDENTIFIED TO EXTEND TECHNOLOGY PACKAGES WILL BE MATCHED WITH THE NEED TO GET THE TYPE OF PACKAGE TO THE TARGETED FARMERS.

2. AS DISCUSSED IN REF A, IT WOULD BE GREATLY APPRECIATED IF SUPPLEMENTARY INFORMATION OUTLINED ABOVE WOULD BE RECEIVED SOON, BUT SHOULD BE SUBMITTED TO AID/W NO LATER THAN AUGUST 15, 1985.

3. AVE/TR IS PROCEEDING WITH THE CONGRESSIONAL NOTIFICATION (CN) FOR DOLS 130 MILLION LOP AND DOLS 30 MILLION FOR FY 85. THE INFORMATION REQUESTED ABOVE IS NOT A CONDITION TO THE PLANNED FY 85 OBLIGATION OF NAPP.

4. DFCONTROL 7/16/85. SHULTZ
BT
#1407

NNNN

UNCLASSIFIED

STATE 221407

70

-7-

5C(2) PROJECT CHECKLIST

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

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

A. GENERAL CRITERIA FOR PROJECT1. FY 1985 Continuing Resolution Sec. 525; FAA Sec. 634A; Sec. 653(b).

(a) Describe how authorizing and appropriations committees of Senate and House have been or will be notified concerning the project; (b) is assistance within (Operational Year Budget) country or international organization allocation reported to Congress (or not more than \$1 million over that amount)?

(a) Congressional Notification submitted and funds will not be obligated until the CN waiting period has expired.

(b) Yes

2. FAA Sec. 611(a)(1). Prior to obligation in excess of \$100,000, will there be (a) engineering, financial or other plans necessary to carry out the assistance and (b) a reasonably firm estimate of the cost to the U.S. of the assistance?

(a) Yes

(b) Yes

- 3. FAA Sec. 611(a)(2). If further legislative action is required within recipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purpose of the assistance?

Not required

- 4. FAA Sec. 611(b); FY 1985 Continuing Resolution Sec. 501. If for water or water-related land resource construction, has project met the standards and criteria as set forth in the Principles and Standards for Planning Water and Related Land Resources, dated October 25, 1973, or the Water Resources Planning Act (42 U.S.C. 1962, et seq.)? (See AID Handbook 3 for new guidelines.)

N/A

- 5. FAA Sec. 611(e). If project is capital assistance (e.g., construction), and all U.S. assistance for it will exceed \$1 million, has Mission Director certified and Regional Assistant Administrator taken into consideration the country's capability effectively to maintain and utilize the project?

Yes

- 6. FAA Sec. 209. Is project susceptible to execution as part of regional or multilateral project? If so, why is project not so executed? Information and conclusion whether assistance will encourage regional development programs.

Not susceptible to execution as part of a regional or multilateral project.

7. FAA Sec. 601(a). Information and conclusions whether projects will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; and (c) encourage development and use of cooperatives, and credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture and commerce; and (f) strengthen free labor unions.

This project will encourage and strengthen Egyptian private enterprise through (1) local construction contracts, (2) research grants, and (3) seed production.

8. FAA Sec. 601(b). Information and conclusions on how project will encourage U.S. private trade and investment abroad and encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).

U.S. private enterprises will, (1) provide TA and commodities for this project, and (2) participate in joint-venture business activities supported by this project.

9. FAA Sec. 612(b), 636(h); FY 1985 Continuing Resolution Sec. 507. Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized in lieu of dollars.

The GOE will provide a large portion of Egyptian pounds costs.

10. FAA Sec. 612(d). Does the U.S. own excess foreign currency of the country and, if so, what arrangements have been made for its release?

No.

- 11. FAA Sec. 601(e). Will the project utilize competitive selection procedures for the awarding of contracts, except where applicable procurement rules allow otherwise? Yes

- 12. FY 1985 Continuing Resolution Sec. 522. If assistance is for the production of any commodity for export, is the commodity likely to be in surplus on world markets at the time the resulting productive capacity becomes operative, and is such assistance likely to cause substantial injury to U.S. producers of the same, similar or competing commodity? No

- 13. FAA 118(c) and (d). Does the project comply with the environmental procedures set forth in AID Regulation 16. Does the project or program taken into consideration the problem of the destruction of tropical forests? Yes - Tropical Forests N/A.

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

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

No

B. FUNDING CRITERIA FOR PROJECT

1. Development Assistance Project Criteria

a. FAA Sec. 102(b), 111, 113, 281(a). Extent to which activity will (a) effectively involve the poor in development, by extending access to economy at local level, increasing labor-intensive production and the use of appropriate technology, spreading investment out from cities to small towns and rural areas, and insuring wide participation of the poor in the benefits of development on a sustained basis, using the appropriate U.S. institutions; (b) help develop cooperatives, especially by technical assistance, to assist rural and urban poor to help themselves toward better life, and otherwise encourage democratic private and local governmental institutions; (c) support the self-help efforts of developing countries; (d) promote

N/A

75

the participation of women in the national economies of developing countries and the improvement of women's status, (e) utilize and encourage regional cooperation by developing countries?

- b. FAA Sec. 103, 103A, 104, 105, 106. Does the project fit the criteria for the type of funds (functional account) being used? NA

- c. FAA Sec. 107. Is emphasis on use of appropriate technology (relatively smaller, cost-saving, labor-using technologies that are generally most appropriate for the small farms, small businesses, and small incomes of the poor)? NA

- d. FAA Sec. 110(a). Will the recipient country provide at least 25% of the costs of the program, project, or activity with respect to which the assistance is to be furnished (or is the latter cost-sharing requirement being waived for a "relatively least developed country)? NA

- e. FAA Sec. 110(b). Will grant capital assistance be disbursed for project for more than 3 years? If so, has justification satisfactory to Congress been made, and efforts for other financing, or is the recipient country NA

"relatively least developed"? (M.O. 1232.1 defined a capital project as "the construction, expansion, equipping or alteration of a physical facility or facilities financed by AID dollar assistance of not less than \$100,000, including related advisory, managerial and training services, and not undertaken as part of a project of a predominantly technical assistance character."

NA

f. FAA Sec. 122(b). Does the activity give reasonable promise of contributing to the development of economic resources, or to the increase of productive capacities and self-sustaining economic growth?

NA

g. FAA Sec. 281(b). Describe extent to which program recognizes the particular needs, desires, and capacities of the people of the country; utilizes the country's intellectual resources to encourage institutional development; and supports civil education and training in skills required for effective participation in governmental processes essential to self-government.

NA

2. Development Assistance Project
Criteria (Loans Only)

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

N/A

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

N/A

3. Economic Support Fund Project
Criteria

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

(a) By contributing
technologies applicable to
Egyptian farmers, the project
will promote increased
agricultural productivity,
economic growth and stability
and improve prospects for
political stability Yes.

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

(b) No

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

(c) No

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

N/A

5C(3) - STANDARD ITEM CHECKLIST

Listed below are the statutory items which normally will be covered routinely in those provisions of an assistance agreement dealing with its implementation, or covered in the agreement by imposing limits on certain uses of funds.

These items are arranged under the general headings of (A) Procurement, (B) Construction, and (C) Other Restrictions.

A. Procurement

1. FAA Sec. 602. Are there arrangements to permit U.S. small business to participate equitably in the furnishing of commodities and services financed?

Goods and services will be procured to the greatest extent possible through competitive procedures which will encourage participation by U. S. small business.

2. FAA Sec. 604(a). Will all procurement be from the U.S. except as otherwise determined by the President or under delegation from him??

Yes

3. FAA Sec. 604(d). If the cooperating country discriminates against marine insurance companies authorized to do business in the U.S., will commodities be insured in the United States against marine risk with such a company?

Egypt does not so discriminate

4. FAA Sec. 604(e); ISDCA of 1980 Sec. 705(a), If offshore procurement of agricultural commodity or product is to be financed, is there provision against such procurement when the domestic price of such commodity is less than parity? (Exception where commodity financed could not reasonably be procured in U.S.)

No such procurement is planned.

5. FAA Sec. 604(g). Will construction or engineering services be procured from firms of countries which are direct aid recipients and which are otherwise eligible under Code 941, but which have attained a competitive capability in international markets in one of these areas? Do these countries permit United States firms to compete for construction or engineering services financed from assistance programs of these countries?

No such procurement is planned.

6. FAA Sec. 603. Is the shipping excluded from compliance with requirement in section 901(b) of the Merchant Marine Act of 1936, as amended, that at least 50 per centum of the gross tonnage of commodities (computed separately for dry bulk carriers, dry cargo liners, and tankers) financed shall be transported on privately owned U.S. flag commercial vessels to the extent such vessels are available at fair and reasonable rates?

Transportation of goods will be in accordance with regulation.

7. FAA Sec. 621. If technical assistance is financed, will such assistance be furnished by private enterprise on a contract basis to the fullest extent practicable? If the facilities of other Federal agencies will be utilized, are they particularly suitable, not competitive with private enterprise, and made available without undue interference with domestic programs? Yes

8. International Air Transportation Fair Competitive Practices Act, 1974. If air transportation of persons or property is financed on grant basis, will U.S. carriers be used to the extent such service is available? Yes

9. FY 1985 Continuing Resolution Sec. 504. If the U.S. Government is a party to a contract for procurement, does the contract contain a provision authorizing termination of such contract for the convenience of the United States? Yes

B. Construction

1. FAA Sec. 601(d). If capital (e.g., construction) project, will U.S. engineering and professional services be used? Yes

2. FAA Sec. 611(c). If contracts for construction are to be financed, will they be let on a competitive basis to maximum extent practicable? Yes

87

3. FAA Sec. 620(k). If for construction of productive enterprise, will aggregate value of assistance to be furnished by the U.S. not exceed \$100 million (except for productive enterprises in Egypt that were described in the CP)?

Aggregate value of construction will not exceed \$100 million

C. Other Restrictions

1. FAA Sec. 122(b). If development loan, is interest rate at least 2% per annum during grace period and at least 3% per annum thereafter?

N/A

2. FAA Sec. 301(d). If fund is established solely by U.S. contributions and administered by an international organization, does Comptroller General have audit rights?

Yes

3. FAA Sec. 620(h). Do arrangements exist to insure that United States foreign aid is not used in a manner which, contrary to the best interests of the United States, promotes or assists the foreign aid projects or activities of the Communist-bloc countries?

Yes

4. Will arrangements preclude use of financing:

a. FAA Sec. 104(f); FY 1985 Continuing Resolution Sec. 527. (1) To pay for performance of abortions as a method of family planning or to motivate or coerce persons to practice

Yes

- abortions; (2) to pay for performance of involuntary sterilization as method of family planning, or to coerce or provide financial incentive to any person to undergo sterilization; (3) to pay for any biomedical research which relates, in whole or part, to methods or the performance of abortions or involuntary sterilizations as a means of family planning; (4) to lobby for abortion? Yes

- b. FAA Sec. 620(g). To compensate owners for expropriated nationalized property? Yes

- c. FAA Sec. 660. To provide training or advice or provide any financial support for police, prisons, or other law enforcement forces, except for narcotics programs? Yes

- d. FAA Sec. 662. For CIA activities? Yes

- e. FAA Sec. 636(i). For purchase, sale, long-term lease, exchange or guaranty of the sale of motor vehicles manufactured outside U.S., unless a waiver is obtained? Yes

- f. FY 1985 Continuing Resolution, Sec. 503. To pay pensions, annuities, retirement pay, or adjusted service compensation for military personnel? Yes

- g. FY 1985 Continuing Resolution, Sec. 505.
To pay U.N. assessments, arrearages or dues? Yes

- h. FY 1985 Continuing Resolution, Sec. 506.
To carry out provisions of FAA section 209(d) (Transfer of FAA funds to multilateral organizations for lending)? Yes

- i. FY 1985 Continuing Resolution, Sec. 510.
To finance the export of nuclear equipment, fuel, or technology or to train foreign nationals in nuclear fields? Yes

- j. FY 1985 Continuing Resolution, Sec. 511.
Will assistance be provided for the purpose of aiding the efforts of the government of such country to repress the legitimate rights of the population of such country contrary to the Universal Declaration of Human Rights? No, the assistance will not finance the suppression of human rights.

- k. FY 1985 Continuing Resolution, Sec. 516.
To be used for publicity or propaganda purposes within U.S. not authorized by Congress? Yes



MINISTRY OF Planning AND
INTERNATIONAL COOPERATION

ANNEX 4

July 28 , 1985

Mr. Frank B. Kimball
Mission Director
USAID/CAIRO
Egypt

Dear Mr. Kimball:

This is to request USAID funding in the amount of \$130 million for the National Agricultural Research project (263-0152).

We anticipate \$30 million being funded in FY 85 is an initial tranche against this seven year project.

The Government of Egypt (GOE) contribution of inkind assistance to this project totals 66.5 million Egyptian Pounds with 10 million Egyptian Pounds being contributed to the first phase of the project.

This joint effort should increase agriculture production by developing the capability of the Egyptian agricultural research community and providing a continuous flow of improved agricultural technology.

Sincerely,

Ahmad Abdel Salam.

Ahmad Abdel Salam Zaki
Administrator

26

611(a) Determination

The Project requires the refurbishment of 91 laboratories and 12 greenhouses, a main library facility and eight branch libraries, and farm structures at five research stations. Only the libraries will be refurbished during the first phase of the Project. The estimated cost to refurbish the library is \$500,000 for main facility and \$125,000 for each of the eight branch facilities. In addition, construction of seed receiving, processing and storage facilities is required with an estimated cost of \$300,000.

The cost estimates are based on site visits to the research stations by the team of consultants working on pre-project design and by the USAID/Egypt engineer familiar with construction costs in Egypt. An A. & E. firm will be employed to prepare plans and specifications and final costs estimates as well as to provide site inspection and supervision in accordance with H.B. 11. Subsequent funding for construction will be based on the cost estimates of A. & E. firms developed during the first phase of the Project. These A. & E. services are estimated to cost \$2,000,000.

Short-term technical assistance will require 321 person months of consultants. The average monthly cost of short-term technical assistance is estimated at \$16,500.

Long-term technical assistance will require 46.8 person years of resident advisors. The estimated cost of the technical assistance is \$200,000 per year which includes salaries, benefits, allowances and overhead. The total cost of the technical assistance contract is estimated at \$14,700,000.

Long-term training will require \$2,000,000 and short-term training an additional \$1,300,000 during the initial phase.

Equipment and supplies for the laboratories will be ordered during the first phase. The estimated cost for each laboratory is \$250,000. This estimate is based on consultant's calculations on the type of equipment and supplies required for agricultural research. The total amount required for these commodities is \$5,000,000.

Other funding requirements are for the research grants program. Collaborative research with U.S. universities is estimated at \$250,000 for each study and at \$50,000 with local institutions. Ten grants are planned with U.S. universities and 14 with local institutions during the initial phase for a total of \$3,200.

87.

611 (e) Certification

Background

The National Agricultural Research Project is authorized for \$130 million to be programmed over seven years. These funds will finance training, construction, commodities and equipment, and both long and short-term technical assistance. The goal of this project is to increase the quantity and quality of improved agricultural technology available to farmers.

Major components of the Project include support for Data Collection and Analysis, a National Agricultural Library, Seed Research Center, university and private sector agricultural research. Laboratories will be refurbished and equipped, computers and software will be provided for data analysis and information cataloging and retrieval. Printing services and multimedia will be used in the National Agricultural Library to facilitate rapid dissemination of research findings.

Maintenance for both buildings and vehicles has been budgeted. Degree and non-degree training will provide the manpower training necessary to staff research stations and support institutions. The maintenance and utilization of projects previously financed by AID in Egypt has been satisfactory and support the conclusion that the GOE has the capacity to install, maintain and utilize the Project.

CERTIFICATION PURSUANT TO SECTION 611(e)
of FAA 1961 as Amended

I, Frank Kimball, Director, the principal officer of the Agency for International Development in Egypt, having taken into account, among other things, the maintenance and utilization of projects in Egypt previously financed or assisted by the United States and technical assistance and training planned under this Project do hereby certify that in my judgment Egypt has both the financial capability and the human resources to effectively install, maintain and utilize the National Agricultural Research Project.

Frank Kimball
Mission Director

88

ANNEX 6

WAIVER JUSTIFICATION

Request for Waiver of Source and Origin Requirements for
procurement of Commodities

Background: The Project plans to provide up to 225 motorcycles to selected extension agents and technical subject matter specialists to enable them to deliver the Project's new technologies to farmers: The Project will establish a loan fund to be used for motorcycle purchases by employees. The loan fund will be established at the governorate Banks for Development and Agricultural Credit in those governorates affiliated with the research center. This fund will allow the agents and specialists to buy and use their own motorcycles to carry out the Project extension function. Agents will be reimbursed from the Project based on service to farmers and will use that reimbursement to repay the loan. It is planned that the loan fund will operate as an intermediate credit institution and that the motorcycles will be excluded from AID's source-origin requirements. However, some motorcycles may be needed prior to the establishment of the loan fund and it may be necessary for the Principal Bank for Development and Agricultural Credit (PBDAC) to import the motorcycles for the Project, in which case the source-origin rules would apply.

No U.S. manufacturer offers the lightweight motorcycles required for the Project. Chapter 4 of Handbook 1 B specifically lists lightweight motorcycles as an example of a commodity for which a motor vehicle waiver is justified because of the inability of U.S. manufacturers to supply the needed commodity.

Authority: Under Paragraph 11 of Redlegation of Authority No. 113.8 and Section 4C2(d)(1)(A) of Handbook 1 B the Mission Director has the authority to waive the requirement that motor vehicles be manufactured in the United States in cases where U.S. manufacturers are unable to provide a particular type of needed vehicle.

Recommendation: That you sign the Project authorization containing a waiver of the requirement that motor vehicles be manufactured in the United States and authorize the procurement of up to \$350,000 of lightweight motorcycles from Geographic Code 935 countries. Your signature of such authorization will certify that, "exclusion of procurement from Free World countries other than the cooperating country and countries included in Code 941 would seriously impede attainment of U.S. foreign policy objectives and objectives of the foreign assistance program."

89

ANNEX 7

PROJECT EVALUATION SUMMARIES

1. Rice Research & Training	263-0027	11-14-84
2. Agricultural Mechanization	263-0031	6-25-83 11-04-84
3. Agricultural Development Systems	263-0041	6-05-85
4. Major Cereals Improvement	263-0070	2-28-84

DD-AAA-640

CLASSIFICATION
PROJECT EVALUATION SUMMARY (PES) - PART I

Report Code -1-
Symbol U-44

1. PROJECT TITLE Rice Research and Training	2. PROJECT NUMBER 263-0027	3. MISSION/AID/W OFFICE USAID/Cairo
	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.) <input type="checkbox"/> REGULAR EVALUATION <input type="checkbox"/> SPECIAL EVALUATION	

5. KEY PROJECT IMPLEMENTATION DATES			6. ESTIMATED PROJECT FUNDING		7. PERIOD COVERED BY EVALUATION	
A. Firm PRO-AG or Equivalent FY	B. Final Obligation Expected FY	C. Final Input Delivery FY	A. Total	\$ 21,767,000	From (month/yr.)	9/79
			B. U.S.	\$ 21,767,000	To (month/yr.)	10/84
					Date of Evaluation Review	
					October, 1984	

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., airgram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
1. Promote institutionalization of National Rice Institute to insure that rice research and training continues to receive GOE support.	Project Officer/ MOA	February 1985
2. Decide whether to narrow the scope of the project's mechanization component or to eliminate it completely.	USAID/MOA	January 1985
3. Consider an extension of the technical assistance contract to insure that laboratory and seed processing equipment is properly installed.	USAID/MOA	April 1985
4. Improve coordination with other related projects.	Contractor/MOA	October 1985
5. Continue and expand research activities in areas identified in report with particular emphasis on blast control.	Contractor/MOA	February 1985
6. Continue policy dialogue on rice pricing and the supply of agricultural inputs.	Program Officer	N/A

9. 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 checked="" 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 Titles)

SBowers, AGR/A *S. G. Bowers*
 ARadi, AGR/DAD *Aradi*
 DSchaer, AGR/AD *D. Schaefer*
 GLaudato, DPPE/AD *G. Laudato*

12. Mission/AID/W Office Director Approval

Signature: *[Signature]*
 Typed Name: DD, AHandlv
 Date: NOV 14 1984

91

PROJECT DESCRIPTION

This project provides new information and knowledge on rice production, seed processing and storage by increasing research, extension and training capabilities in Egypt through the establishment of a National Rice Institute.

AUTHORIZATION DATE AND U.S. LOP FUNDING AMOUNT 09/29/79 US\$21,767,000	PES NUMBER .85-1	PES DATE October 1984	PES TYPE <input checked="" type="checkbox"/> Regular <input type="checkbox"/> Other (Specify)
ABSTRACT PREPARED BY, DATE Nemat Shafik, DPPE/PAAD October 1984	ABSTRACT CLEARED BY, DATE <i>S.A. Bowers</i> Sidney A. Bowers, AGR/A October 1984		<input type="checkbox"/> Special <input type="checkbox"/> Terminal

The evaluation was conducted in the fourth project year by a team of five individuals from an IQC firm and two from the Ministry of Agriculture. The teams' expertise included administration, agronomy, breeding, seed production, mechanization, extension, economics, and plant protection. The team concluded that overall progress has been "impressive" and, barring a few problems, the project would achieve its intended purpose. The project encountered many common problems in the early stages - finding trainees with acceptable English language skills, providing adequate transportation for extension activities, processing commodities through customs, and securing full-time permanent Egyptian counterparts. However, many of the problems have been overcome and project outputs have been high. The extension component, called "Mabrouk 4", has directly assisted over 90,000 farmers cultivating 46,500 feddans to achieve yields that are 59% higher than the national average. Financial analysis reveals that the Mabrouk 4 Program is most beneficial to small farmers whose crop is less than one feddan. Registered seed, free from red rice, has been produced for three years. Certified Giza 173 seed, a new variety, was produced in sufficient quantity to plant 50% of the land planted in rice in 1984. Project training activities have included 63 extension field personnel, 26 national rice advisors, two doctoral candidates, five post-doctorate and five others in nondegree academic studies. The report identifies several issues that need to be addressed if the project is to have a lasting effect on rice production in Egypt. The establishment of the National Rice Institute as a permanent entity of the Agricultural Research Center was a primary concern. Since the project mechanization component has not progressed significantly, the team suggested that rice mechanization efforts focus on one machine, probably a thresher, or be eliminated altogether. The severity of the blast problem justifies the hiring of an additional consultant for blast screening. The report discussed the need for an extension of the technical assistance contract to insure that laboratory and processing equipment is properly installed. Greater coordination with other projects was recommended. The report also suggested an acceleration or expansion of ongoing project activities in rice breeding, direct seeding methods, extension training and incentives, seed certification and research in pathology, mechanization, marketing, agronomy, and on-farm resource allocation. The team identified rice pricing and the lack of timely provision of input supplies as external factors that have limited the project's impact. In general, the team concluded that the project has made a significant contribution to the institutionalization of research and a major impact on production technologies in Egypt.

Lessons Learned: (1)The endowment of a permanent status to a new institution, along with its own budget and staff, is essential to assure the continued impact of research and training programs beyond the end of a project. (2)A realistic attempt should be made to address generic implementation problems; such as customs, English language skills, etc.; at the design stage. In many ways, the resolution of these problems has become a necessary stage that projects must pass through prior to the achievement of their planned objectives. (3)The establishment of quantifiable targets during the design stage can help prevent project components from lagging. In this case, the absence of clear objectives contributed to the poor performance of the project's mechanization activity. (4)This project reflects the potentially high returns that can result from production-oriented research and active extension, particularly with a favorable agricultural environment.

PROJECT EVALUATION SUMMARY (PES) - PART I

Form O-4
Symbol U-4

1. PROJECT TITLE AGRICULTURAL MECHANIZATION			2. PROJECT NUMBER 263-0031	3. MISSION, AID/W OFFICE USAID/Cairo
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.) 83-7			<input type="checkbox"/> REGULAR EVALUATION <input type="checkbox"/> SPECIAL EVALUATION	
5. KEY PROJECT IMPLEMENTATION DATES			6. ESTIMATED PROJECT FUNDING	
A. First PRO-AG or Equivalent FY 79	B. Final Obligation XXXXXX COM - FY 80 Completed	C. Final Input Delivery FY 84	7. PERIOD COVERED BY EVALUATION	
			From (month/vr.) September, 1979	
			To (month/vr.) January, 1983	
			Date of Evaluation Review February, 1983	

B. 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., airgram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
1. Increased effort to: a) equalize the performance across subprojects and b) draw the work of the subprojects more closely together into a more coherent whole.*	MOA/Louis Berger Int'l, Inc.	on-going
2. Focus a separate evaluation specifically on the individual subprojects' progress, in order to arrive at more substantive recommendations. Based on these recommendations, improve the performance of each subproject, particularly those that have fallen behind the others.* (This action will serve to support and enhance the achievement of action #1 ABOVE.)	USAID/MOA	February, 1984

* The Mission, the MOA and the TA Contractor all note that this evaluation tends to focus on project implementation to date rather than on changes required for improved performance in the future. This is particularly true regarding coverage of the outputs (subprojects). As a result, the evaluation was not as useful to project management as it might have been. The Mission therefore requests that the MOA/TA prepared addendum (attached) be considered an official part of this evaluation report.

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

11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles)		12. Mission/AID/W Office Director Approval	
J. Lee, AGR/A <i>[Signature]</i> J. Swanson, AGR/A <i>[Signature]</i> R. Fort, AD/AGR <i>[Signature]</i> R. Fraenkel, DPPE/PAAD <i>[Signature]</i> N. Sweet, AD/DPPE <i>[Signature]</i>		Signature <i>[Signature]</i>	
		Typed Name M.P.W. Stone, Director	
		Date 6-25-83	

TITLE(S) AND NUMBER(S)

AGRICULTURAL MECHANIZATION (263-0031)

REGION/COUNTRY OFFICE

USAID/Cairo

SUBJECT DESCRIPTION

The project's stated purpose is: Build Egyptian capabilities to plan, support and carry out appropriate mechanization efforts. From the achievement of this purpose, a somewhat ambiguous subgoal is to be achieved: Provide Egyptian farmers with adequate power to carry out needed agricultural operations in a timely, effective and economic manner.

AUTHORIZATION DATE AND U.S. LOP FUNDING AMOUNT 9/79 \$40 million	PES NUMBER 83-7	PES DATE June, 1983	PES TYPE <input type="checkbox"/> Regular <input type="checkbox"/> Other (Specify) <input type="checkbox"/> Special <input type="checkbox"/> Terminal
ABSTRACT PREPARED BY, DATE Emily Baldwin, DPPE/PAAD <i>EB</i> June 23, 1983		ABSTRACT CLEARED BY, DATE <i>Jeffrey Lee</i> Jeffrey Lee, AGR/A Richard Fraenkel, DPPE/PAAD	

This mid-term evaluation was performed by a three person team (one AID/W direct hire and one American and one Egyptian contractor) in order to assess project progress toward its originally stated objectives. The project has been under implementation for three years, with technical assistance provided through a host country contract by Louis Berger International, Inc. The team's basic finding is that "the Project is not on schedule if measured by the PP implementation plan or the contractor's inception report...It is moving forward, however, with coherence and at an ever increasing rate" (para 2). In its conclusion, the team finds that the project's "contribution to the mechanization of Egyptian agriculture will be substantial" (page 40): increased agricultural mechanization, in turn, is expected to contribute to the goal of increased agricultural production and incomes over time.

In order to achieve the stated purpose (see above), six subprojects (the outputs) must be completed successfully. At the project's current (mid-term) stage of implementation, the focus of activity is on these subprojects. The evaluation report points out that each subproject is developing in large part in isolation from the others, with varying rates and levels of success between them; it goes on to note that, while this has not been a particular problem to date, it will become one as the project moves from an output to a purpose level focus, if the subprojects' progress is not equalized and coordinated more closely soon. Unfortunately, the report is relatively silent on the status of each of these subprojects and especially mute on recommendations of how to improve each or drawing them closer into the whole (toward achievement of the purpose). The team's primary recommendation is "to bring about more equal progress among the various subprojects" (page 40), in order to enhance the potential achievement of the purpose. While seemingly a valid and useful recommendation, the report lacks the specificity needed to guide the MOA and the TA contractor in acting on this recommendation with an degree of confidence or certainty.

The team finds that the project is reaching the targetted small farmers in project areas with field trials and demonstrations of appropriate mechanical equipment. In addition, much of the mechanization being developed by the project is resulting from farmers' own explicitly articulated needs and priorities.

Lessons Learned

Where successful implementation and completion of several subprojects are required to achieve the project's objectives, care must be taken to ensure that these subprojects are timed and coordinated effectively so that slower progress in one subproject does not inhibit the progress of the others.

PROJECT EVALUATION SUMMARY (PES) - PART I

Reporting Unit Symbol U-44 -5-

PROJECT/TITLE Agricultural Mechanization	2. PROJECT NUMBER 263-0031	3. MISSION AID/W OFFICE USAID/Cairo
	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) <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	B. Final Obligation Expected FY	C. Final Input Delivery FY	A. Total \$	47M	From (month/yr.)	September 1979
			B. U.S. \$	40M	To (month/yr.)	July 1984
					Date of Evaluation Review	
					August 1984	

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

A. List decisions and/or unresolved issues; cite those items needing further study. (NC) E: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., airgram, SPAR, PIO, which will present detailed request.	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
--	---	--------------------------------

- | | | |
|--|-----------------------------|------------|
| 1. The Project should focus on developing its management structure to facilitate institutionalization of the Agricultural Mechanization Institute. This should include streamlining its organizational structure, coordinating project components, improving reporting channels, and using internal evaluations. | Project Officer/ Contractor | March 1985 |
| 2. USAID should consider extending the PACD or incorporating project activities into other programs in order to allow for additional extension. | USAID/GOE | July 1985 |
| 3. The Land Improvement Subproject should focus more on soil analysis. | Project Officer/ Contractor | March 1985 |
| 4. Loan procedure should be simplified and a continuation of mechanization credit activities, particularly water lifting, should be considered. | Contractor/ USAID | March 1985 |

9. NUMBER OF DOCUMENTS TO BE REVISED PER ABOVE DECISION:			10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT		
<input type="checkbox"/> Project Paper	<input type="checkbox"/> Implementation Plan e.g., CPI Network	<input type="checkbox"/> Other (Specify)	A. <input type="checkbox"/> Continue Project Without Change		
<input type="checkbox"/> Financial Plan	<input type="checkbox"/> PIO/T		B. <input type="checkbox"/> Change Project Design and/or		
<input type="checkbox"/> Logical Framework	<input type="checkbox"/> PIO/C	<input type="checkbox"/> Other (Specify)	<input type="checkbox"/> Change implementation Plan		
<input checked="" type="checkbox"/> Project Agreement	<input type="checkbox"/> PIO/P		C. <input type="checkbox"/> Discontinue Project		

11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles)		12. Mission/AID/W Office Director Approval	
JLee, AGR	AHandly, DD	Signature	<i>M.P.W. Stone</i>
ARadi, AGR		Typed Name	M.P.W. Stone
DShaer, AD/AGR		Date	NOV 04 1984
GLaudato, AD/DPPE			

DESCRIPTION This project is designed to support the development of agricultural mechanization in Egypt with particular focus on a sound planning, implementation and support base. The Agricultural Mechanization Group established in the Ministry of Agriculture is conducting work in five subproject areas: (1) planning and evaluation, (2) soil improvement, (3) machinery management extension, (4) service center development, and (5) equipment research and development.

AUTHORIZATION DATE AND U.S. LOP FUNDING AMOUNT September 1979 \$40M	PES NUMBER 84-15	PES DATE August 1984	PES TYPE <input checked="" type="checkbox"/> Regular <input type="checkbox"/> Other (Specify) <input type="checkbox"/> Special <input type="checkbox"/> Terminal
ABSTRACT PREPARED BY, DATE NShafik, DPPE/PAAD <i>NS</i>		ABSTRACT CLEARED BY, DATE <i>A. Radi</i> 2/20/84 ARadi, AGR/A	

This second evaluation of the Agricultural Mechanization Project was conducted by a four person external team during June-July 1984. An earlier evaluation of this project was "not considered adequate to assess overall project progress or to identify possible problems and solutions." Another evaluation was requested reflecting an additional year of implementation. This second evaluation was conducted in the 45th month of the project life.

The evaluation team found that, after a slow start, the project has accelerated its progress in achieving its objectives. The Planning and Evaluation Subproject has conducted surveys; prepared 22 technical reports, trained counterparts in data collection, compilation and analysis; and established a small computer hardware unit. Land leveling has been the focus of the Soil Improvement Subproject. Precision leveling of 1000 feddans should be completed by the end of 1984. The Machinery Management Extension Component has trained fifty mechanization extension specialists; 1362 demonstrations/short courses were given to 18 farmers and MOA staff; the project extension information unit has produced 10,000 posters, 120,000 extension folders, 18 television programs, 15,000 slides and 20 video tapes; and technical support has been provided to recipients of equipment loans from the Principal Bank for Development and Agriculture Credit (PBDAC). The Service Center Development activity has provided credit to six private sector service centers and twenty three workshops through the PBDAC. The water lifting credit fund has assisted approximately 10,000 farmers in replacing the animal drawn sakia with motor driven pumps. The Research and Development unit has funded nine research grants, conducted machinery tests, developed a prototype thresher, modified machinery, and conducted several in-country training programs. Overall, the project is expected to directly benefit approximately 25,000 farmers through demonstration and training courses. The service center/village workshop fund and the machinery introduction fund will indirectly benefit over 24,000 farmers within the project area. Additional beneficiaries include the university community and MOA staff.

The original project design was ambitious both in terms of the speed of implementation and the scope of the activity. The Project Paper did not allow for start-up time in the implementation plan - consequently the Project seems behind schedule. The Project Paper also envisioned that the Project would be the nexus for planning, implementation, and support for Egypt's mechanization effort. This has proven to be unrealistic given funding limitations and the involvement of other actors in agricultural mechanization. However, the evaluation team concludes that the project will contribute to the goal of increasing production and incomes within the project area, particularly if additional time is allowed for extension of selected activities. The team also recommends that greater priority should be given to improving organizational and monitoring capability, clarifying institutional responsibilities, expediting customs clearance, emphasizing the importance of soil data, and simplifying loan procedures.

Lessons Learned: (1) Implementation plans should include start-up time in order to be realistic. (2) Projects must be flexible enough to allow for adjustment to external factors in the course of implementation. (3) The inavailability of much of the basic research on mechanization constrained the project in the early stages. Where feasible, basic data should be available prior to investment in a project. This would also insure that the results of extension would be felt during the life of the activity.

PROJECT TITLE

Symbol 1-47

Agricultural Development System

2. PROJECT NUMBER

263-0041

3. MISSION/AID/W OFFICE

USAID/Cairo

-7-

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

REGULAR EVALUATION SPECIAL EVALUATION

5. KEY PROJECT IMPLEMENTATION DATES

A. First PRO-AG or Equivalent FY
B. Final Obligation Expected FY
C. Final Input Delivery FY

6. ESTIMATED PROJECT FUNDING

A. Total \$4.9 million
B. U.S. \$

7. PERIOD COVERED BY EVALUATION

From (month/yr.) 1/81

To (month/yr.) 6/83

Date of Evaluation Review

May, 1985

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., airgram, 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

Complete

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.)

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS

Project Paper Implementation Plan e.g., CPI Network Other (Specify)
 Financial Plan PIO/T
 Logical Framework PIO/C Other (Specify)
 Project Agreement 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 Titles)

J. Lee, AGR
J. Beausoleil, AGR 5/13/85
D. Schaer, AD/AGR PHS 5/16/85
J. Conly, DPPE/PO QMC 5/15/85
G. Laudato, AD/DPPE J.M.C. 7/16/85
A. Handly, DD

12. Mission/AID/W Office Director Approval

Signature: Frank B. Kimball

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 -8-
5. 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)	
6. KEY PROJECT IMPLEMENTATION DATES		<input type="checkbox"/> REGULAR EVALUATION <input type="checkbox"/> SPECIAL EVALUATION	
A. First PRO-AG or Equivalent FY _____	B. Final Obligation Expected FY _____	6. ESTIMATED PROJECT FUNDING	7. PERIOD COVERED BY EVALUATION
C. Final Input Delivery FY _____		A. Total \$ _____	From (month/yr.) _____
		B. U.S. \$ _____	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., airgram, 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> <p>F. A plan for orderly transition of project activities to the GOE is essential to project sustainability</p>	<p>AGR/A MOA</p> <p>AGR/A MOA</p>	<p>6/86</p> <p>6/86</p>
<p>G. A decision making structure should be established in the Agricultural Research Institute to coordinate research activities.</p> <p>H. Training in research methods, proposal development, and research management and administration, particularly for young scientists, should be initiated.</p>	<p>MOA/A</p>	<p>6</p>

9. 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"/> Other (Specify) _____
<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 Titles)

12. Mission/AID/W Office Director Approval

Signature _____

Typed Name _____

Date _____

98

NEAR EAST EVALUATION ABSTRACT

PROJECT TITLE(S) AND NUMBER(S) Agricultural Development Systems (203-0041)	REGISTRATION OFFICE USAID/Cairo -9-
---	--

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"/> Teratral

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.

99

CLASSIFICATION
PROJECT EVALUATION SUMMARY (PE) - PART I

Report Control
Symbol U-447

1. PROJECT TITLE Major Cereals	2. PROJECT NUMBER 263-0070	3. MISSION/AID/W OFFICE USAID/Cairo
	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) 83-10	
<input type="checkbox"/> REGULAR EVALUATION <input type="checkbox"/> SPECIAL EVALUATION		

5. KEY PROJECT IMPLEMENTATION DATES			6. ESTIMATED PROJECT FUNDING equiv. approx.	7. PERIOD COVERED BY EVALUATION	
A. First PRO-AG or Equivalent FY 79	B. Final Obligation Expected FY 80	C. Final Input Delivery FY 85		A. Total \$66.8 m	From (month/yr.) July, 1979
			B. U.S. \$47 m	Date of Evaluation Review February, 1984*	

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., airgram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
1. Review and reach agreement on a comprehensive Project Logical Framework to be followed by all parties in the implementation of the remainder of the project.	USAID/MOA/CID	November, 1983 (completed as a part of Amendment #4 to the CID contract)
2. Strengthen and institutionalize the integration of research and extension work.	MOA/CID	June, 1985 (PACD) action underway as part of overall MOA efforts to draw research and extension more closely together
3. Improve statistical analysis capabilities and establish a utilizable data base.	CID/MOA	June, 1985 (PACD) action underway - computing center established, staff being trained, data base being planned
4. Emphasize improved management skills in technical assistance.	CID/MOA	June, 1985 (PACD) to date, TA team has been increased and MOA has assigned a counterpart to each TManagement:

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS			10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT	
<input checked="" type="checkbox"/> Project Paper	<input type="checkbox"/> Implementation Plan e.g., CPI Network	<input checked="" type="checkbox"/> Other (Specify) CID contract	A. <input type="checkbox"/> Continue Project Without Change	expert
<input type="checkbox"/> Financial Plan	<input type="checkbox"/> PIO/T	<input type="checkbox"/> Other (Specify)	B. <input checked="" type="checkbox"/> Change Project Design and/or (agree on logframe)	
<input checked="" type="checkbox"/> Logical Framework	<input type="checkbox"/> PIO/C		<input type="checkbox"/> Change Implementation Plan	
<input type="checkbox"/> Project Agreement	<input type="checkbox"/> PIO/P		C. <input type="checkbox"/> Discontinue Project	

11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles)	12. Mission/AID/W Office Director Approval
Sidney Bowers, AGR/A <i>led</i> Arnold Radi, AGR/A <i>em</i> Raymond Fort, AD/AGR <i>2/26</i> Norman Sweet, AD/DPPE <i>ms 2/27</i> Arthur Handly, DD <i>CHM</i>	Signature <i>M.P.W. Stone</i>
	Typed Name M.P.W. Stone, Director
	Date 2-28-84

AID 1330-15 (3-78)
*USAID/Cairo delayed in reviewing and approving this evaluation in anticipation of further revisions of the report by the team. These revisions were not forthcoming.

CLASSIFICATION
PROJECT EVALUATION SUMMARY (PES) - PART I

Report Control
Symbol U-447

-11-

PROJECT TITLE <p style="text-align: center; font-size: 1.2em;">Major Cereals (con't)</p>	2. PROJECT NUMBER 3. MISSION/AID/W OFFICE	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) <input type="checkbox"/> REGULAR EVALUATION <input type="checkbox"/> SPECIAL EVALUATION
---	--	--

5. KEY PROJECT IMPLEMENTATION DATES A. First PRO-AG or Equivalent FY _____ B. Final Obligation Expected FY _____ C. Final Input Delivery FY _____	6. ESTIMATED PROJECT FUNDING A. Total \$ _____ B. U.S. \$ _____	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., airgram, SPAR, PIC, which will present detailed request.)

A. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
5. Complete construction as soon as possible.	MOA	To date, all project construction contracts have been signed and construction initiated; seed processing building completed; all other construction to be completed in 14 mths.
6. Establish inventory and receiving system for commodities.	CID	completed and functioning
7. Establish a financial status reporting system for the project budget.	CID	completed and functioning for both dollar and LE budgets
8. Complete current seed processing and production activities; increase efforts to strengthen seed production and distribution systems within project purview.	MOA/CID	Seed building complete; equipment being installed; staff being trained in U.S.

9. 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 Titles)

12. Mission/AID/W Office Director Approval

Signature _____

Typed Name _____

Date _____

101

NEAR EAST EVALUATION ABSTRACT

MISSION/AID/Office

-12-

PROJECT TITLE(S) AND NUMBER(S)

Major Cereals (263-0070)

USAID/Cairo

PROJECT DESCRIPTION

The purpose of this project is to establish a capacity to develop and provide to the farmers of eight pilot governorates the technology needed to increase cereal, forage and grain legume production. This purpose is to be achieved through strengthened research and extension skills and improved links between research and extension that will in turn demonstrate increased yields to farmers and policy makers.

AUTHORIZATION DATE AND U.S. LOP FUNDING AMOUNT

7/79 \$47 million

PES NUMBER

83-10

PES DATE

February, 1984*

PES TYPE

Regular Other (Specify)

ABSTRACT PREPARED BY, DATE

Emily Baldwin, DPPE/PAAD
January 29, 1984

ABSTRACT CLEARED BY, DATE

Arnold Radi, AGR/A
Sidney Bowers, AGR/A

Special

Terminal

This evaluation was performed in May, 1983 by a four member team (two Egyptians from the Ministry of Agriculture, plus an AID TDY and a Personal Service Contractor from a U.S. university). This is the first AID-sponsored evaluation (although the TA contractor, CID, had sponsored an "internal" evaluation six months earlier), and represents the mid-term evaluation as called for in the project design.

Overall, the team found the project to be making "excellent technical progress," although they acknowledge that "much remains to be done." A number of delays in implementation have occurred, many of them not unique to this project: construction, commodity procurement, customs clearance, and insufficient numbers of participant trainees due to lack of adequate English language capability. Despite these delays, however, significant progress has been made on research results. While the report seems to indicate that progress has not been as good in strengthening the extension aspects of the project and in bringing the research work more meaningfully and productively to the farmer, the team did find that the links between research and extension have been strengthened by the project and that there is considerable enthusiasm for these links among participating staff and farmers. As a result, at the time of the evaluation, the project was reaching 2,025 villages with over 12,000 farmers. In addition, small farmer demonstration fields have shown significant yield increases.

Unfortunately, the report is long on reporting the technical, research aspects of the project and rather short on detailing specific project problems and proposed solutions. It also is weak on making connections between aspects of the project. As a result, it is difficult to derive an overall sense of eventual project impact and the means to enhance that impact in the remaining life of project.

Lessons Learned

The report does not detail any lessons learned and does not seem to be comprehensive enough to yield meaningful lessons with any certainty. Nonetheless, improved links between extension and research in an effort to reach farmers with better, more relevant and timely information is obviously an important means by which to increase crop yields as well as to increase the enthusiasm and interest of all participants.

*Although this evaluation was performed in May, 1983, USAID/Cairo did not finalize the report until January-February, 1984. This was because there were several points of clarification that had been requested of the team in the draft report; these clarifications were not forthcoming, and, after many months, the USAID decided to go ahead with the report as it was in draft.

METHODOLOGY

	Page
A. Economic and Financial Analysis	1
B. Social Soundness Analysis	16
C. Technical Analysis	23
D. Administrative & Institutional Analysis	26
E. Environmental Analysis	35

Financial and Economic Analysis

Since the mid-1950s, numerous studies* of agricultural research have shown that the economic returns to public sector investment in agricultural research have been very high in comparison to almost any other investment available to society. These studies estimated economic returns to investment in agricultural research well above 10 to 15 percent (above inflation). Most of the studies computed rates of return by measuring aggregate increases in national production per dollar invested over the period studied.

It is still too early to measure aggregate effects of AID-funded research on agricultural productivity in Egypt. However, farm management data from three ongoing projects indicate that recently developed yield-increasing and/or cost-reducing technologies show great potential to increase on-farm income and production. These technologies have proven profitable on the fields of farmers participating in the demonstration programs organized under each project.

The following summary (see Tables 8B through 8L) is based upon the diffusion of technologies which have been demonstrated under the major cereals (EMCIP), rice (RRT) and agricultural mechanization (AMP) projects. They cover the three most important cereals: rice, wheat, and maize. These three crops together account for over four million feddans, or more than one-third of the entire cropped area of Egypt. Diffusion is based on an assumed level of six feddans copied for every feddan demonstrated.

Based upon data from farmers inside and outside demonstration programs under the three projects, crop budgets were constructed showing total and incremental financial benefits and costs from the adoption of the new technologies. Financial values were then converted to their "shadow" economic equivalents (see Table 8I for conversion factors) to compute per feddan economic incremental benefits and costs. Economic rates of return to farm resources engaged in each enterprise are in excess of 50 percent (see Table 8B).

*Vernon W. Ruttan, Agricultural Research Policy, 1982.

Incremental farm benefits and costs were then aggregated, based upon assumptions made about national rates of adoption of the improved technologies over ten years. The potential benefits in terms of national income from the adoption of improved technologies are shown in Table 8L. Net increase in value of incremental increases in production is based upon the assumption that improved technologies are adopted on 70 percent of the area under the three program crops. It is easy to see why the returns to the proposed investment are so high; the annual AID/GOE program costs written off against the four million feddans devoted to wheat, maize and rice amount to about LE 14 per feddan. As against this, the expected net incremental benefits per feddan derived from the national application of the improved technologies packages average substantially more than LE 114.

These are robust figures. They justify the proposed investment not merely in terms of improving the agricultural sector, but in terms of the development of the national economy of Egypt.

125

Table 8A

Financial Crop Budget Summary: Return Over All Costs, per Feddan,
Egypt, 1984

Crop	Before Adoption (a)	Low Response (b)	Average Response (c)	High Response (d)	Percent Increase (d-a)/a
-----LE (rounded)-----					
Catch Crop Berseem	32	39	34	48	50
Full Term Berseem	144	173	193	271	88
Broadbeans	15	26	40	56	273
Wheat	201	225	235	272	35
Tomatoes	144	238	336	491	241
Cotton	68	99	112	142	109
Rice	90	129	191	266	195
Maize	121	149	185	217	79
Vegetables	5	33	70	121	2320
Maize-Nili	47	105	118	175	272

Source: World Bank, Second Agricultural Development Project
Project, Annex 7, 1984.

Notes: Based upon before development yields reflecting average national and IBRD project area yield levels, and the results of intensive farmer surveys conducted by the USAID financed Egyptian Water Use and Management Project (EWUP). High response yields are justified by practical experience of various projects including USAID's Rice Research and Training Project and EMCIP.

Table BB - Summary Financial and Economic Returns for all Crops With and Without Small Scale Mechanization, Egypt, 1985, Per Feddan.

	Financial			Economic		
	Incremental Costs (LE)	Incremental Benefits (LE)	Rate of Return %	Incremental Costs (LE)	Incremental Benefits (LE)	Rate of Return %
Wheat						
Without Small Scale Mechanization	45.64	262.28	574.68 %	82.94	248.28	299.36 %
With Small Scale Mechanization	4.97	465.83	9369.44 %	58.38	403.68	691.46 %
Maize						
Without Small Scale Mechanization	49.38	184.04	372.67 %	92.44	206.72	223.63 %
With Small Scale Mechanization	33.64	201.44	598.74 %	77.96	217.33	278.78 %
Rice						
Without Small Scale Mechanization	31.20	169.48	607.24 %	71.72	249.73	348.21 %
With Small Scale Mechanization	(72.47)	231.48	(1)	(13.89)	275.35	(1)

Notes: Incremental costs and benefits are incremental to "without project" situation. Incremental benefits and costs with small scale mechanization are drawn from accompanying tables, "Farm Level Analysis" for Wheat, Maize and Rice. Incremental costs with small scale mechanization are computed by adding increased costs and subtracting reduced costs computed in accompanying tables, "Farm Level Incremental Analysis of Small Scale Mechanization". resources engaged is computed by dividing incremental benefits by incremental costs.

(1) Not applicable, as incremental cost is negative.

Table EC - Farm Level Incremental Benefit Cost Analysis for Wheat, in Egypt, Per Feddan

-5-

Income	Unit	Without Project			With Project		Incremental Financial Benefit or Cost	Incremental Economic Benefit or Cost
		Value Per Unit (LE)	Number of Units	Income or Cost (LE)	Number of Units	Income or Cost (LE)		
Grain (Free Market) NT	NT	143.00	0.94	134.42	1.90	271.70	137.28	218.28
(Quota)	NT	120.00	0.60	72.00	0.60	72.00	0.00	0.00
Straw		100.00	2.25	225.00	3.50	350.00	125.00	30.00
Total Income				431.42		693.70	262.28	248.28
Costs								
Land Preparation								
Leveling	Tract.Hour	3.00	0.00	0.00	3.00	9.00	9.00	20.07
Plowing	Tract.Hour	3.00	3.00	9.00	4.00	12.00	3.00	6.69
Labor	MHE	0.40	4.50	1.80	5.50	2.20	0.40	0.40
Planting								
Seed	KG	0.17	70.00	11.90	50.00	8.50	-3.40	-3.40
Labor	MHE	0.40	5.50	2.20	5.50	2.20	0.00	0.00
Irrigation								
Lifting	Sakia Hour	0.50	27.00	13.50	35.00	17.50	4.00	4.00
Labor	MHE	0.40	13.50	5.40	17.50	7.00	1.60	1.60
Fertilization								
Actual N	KG	0.26	46.00	11.96	75.00	19.50	7.54	18.85
P205	KG	0.19	0.00	0.00	15.00	2.85	2.85	7.13
Labor	MHE	0.40	1.50	0.60	2.00	0.80	0.20	0.20
Weed Control								
Herbicide	Litre	5.00	0.00	0.00	1.00	5.00	5.00	10.00
Labor	MHE	0.40	0.00	0.00	3.00	1.20	1.20	1.20
Sprayer	Hour	0.50	0.00	0.00	3.00	1.50	1.50	1.50
Insect Control								
Insecticide	Litre	3.00	0.00	0.00	1.00	3.00	3.00	6.00
Labor	MHE	0.40	0.00	0.00	3.00	1.20	1.20	1.20
Sprayer	Hour	0.50	0.00	0.00	3.00	1.50	1.50	1.50
Harvest/Threshing/Transplanting								
Labor	MHE	0.40	95.00	38.00	110.00	44.00	6.00	6.00
Short Term Interest								
				1.67		2.72	1.05	
Total Costs				96.03		141.67	45.64	82.94
Farm Net Benefits				335.39		552.03	216.64	165.34
Rate of Return to Farm Resources Engaged							574.68 %	299.36 %

Note: MHE= Man hour equivalent= 2 women/child hours. Incremental economic benefits or costs computed by multiplying incremental financial benefits or costs by accounting ratios in accompanying table, "Factors used to convert financial to economic values". Rate of return is the incremental benefit divided by incremental net cost. Based upon data from ENCIP, EWUP and Mechanization projects.

Table 8D - Farm Level Incremental Analysis of Small Scale Mechanization For Wheat, In Egypt, 1985, Per Feddan.

Unit	Value Per Unit of (LE)	Number of Units	Financial			Economic			
			Increased Costs (LE)	Reduced Costs (LE)	Increased Benefits (LE)	Increased Costs (LE)	Reduced Costs (LE)	Increased Benefits (LE)	
Seed Drill, Tractor Drawn									
Labor (By Hand)	MHE	0.40	5.00	0.00	2.00	0.00	0.00	2.00	0.00
Labor (By Seed Drill)	MHE	0.40	1.50	0.60	0.00	0.00	0.60	0.00	0.00
Net Yield Increase (Grain)	KG	0.13	585.00	0.00	0.00	76.05	0.00	0.00	120.92
Net Yield Increase (Straw)	MT	100.00	1.17	0.00	0.00	117.00	0.00	0.00	28.08
Net Seed Recovery	KG	0.17	33.37	0.00	5.67	0.00	0.00	5.67	0.00
Depreciation (Drill)	Hour	1.31	1.50	1.97	0.00	0.00	1.97	0.00	0.00
Interest (Drill)	Hour	0.20	1.50	0.30	0.00	0.00	0.00	0.00	0.00
Tractor	Tract.Hour	3.00	1.50	4.50	0.00	0.00	10.04	0.00	0.00
Sub-Total				7.37	7.67	193.05	12.60	7.67	149.00
Self Propelled Mower, 4 Wheels, 15 HP (Olympia Type)									
Labor (By Hand)	MHE	0.40	56.00	0.00	22.40	0.00	0.00	22.40	0.00
Labor (Mower)	MHE	0.40	1.50	0.60	0.00	0.00	0.60	0.00	0.00
Depreciation	Hour	1.35	1.50	2.03	0.00	0.00	2.03	0.00	0.00
Interest	Hour	0.12	1.50	0.18	0.00	0.00	0.00	0.00	0.00
Energy	Hour	0.06	1.50	0.09	0.00	0.00	0.63	0.00	0.00
Lubricants	Hour	0.04	1.50	0.06	0.00	0.00	0.06	0.00	0.00
Maintenance	Hour	1.21	1.50	1.82	0.00	0.00	1.82	0.00	0.00
Sub-Total				4.77	22.40	0.00	5.13	22.40	0.00
Stationary Drum Thresher, IRRI Type With Winnowing (Tractor-Powered)									
Labor (By Hand)	MHE	0.40	38.60	6.00	15.44	0.00	0.00	15.44	0.00
Labor (Drum)	MHE	0.40	2.51	1.00	0.00	0.00	1.00	0.00	0.00
Depreciation	Hour	1.46	2.51	3.66	0.00	0.00	3.66	0.00	0.00
Interest	Hour	0.10	2.51	0.25	0.00	0.00	0.00	0.00	0.00
Tractor PTO	Tract. Hour	3.08	2.51	7.73	0.00	0.00	17.24	0.00	0.00
Sub-Total				12.65	15.44	0.00	21.91	15.44	0.00
Irrigation Water Pump, 5-7 HP Diesel									
Animal Lifting	Sakia Hour	0.50	35.00	0.00	17.50	0.00	0.00	17.50	0.00
Labor (By Hand)	MHE	0.40	17.50	0.00	7.00	0.00	0.00	7.00	0.00
Labor (Pump)	Hour	0.40	6.00	2.40	0.00	0.00	2.40	0.00	0.00
Heat Recovery	Hour	0.11	35.00	0.00	0.00	3.85	0.00	0.00	1.93
Milk Recovery	Hour	0.15	35.00	0.00	0.00	5.25	0.00	0.00	3.78
Calf Recovery	Hour	0.04	35.00	0.00	0.00	1.40	0.00	0.00	0.70
Depreciation	Hour	0.20	6.00	1.20	0.00	0.00	1.20	0.00	0.00
Interest	Hour	0.03	6.00	0.18	0.00	0.00	0.00	0.00	0.00
Energy	Hour	0.04	6.00	0.24	0.00	0.00	1.68	0.00	0.00
Lubricants	Hour	0.06	6.00	0.36	0.00	0.00	0.36	0.00	0.00
Maintenance	Hour	0.03	6.00	0.18	0.00	0.00	0.18	0.00	0.00
Sub-Total				4.56	24.50	10.50	5.82	24.50	6.41
Grand Total				29.35	70.01	203.55	45.46	70.01	155.40

Table BE - Farm Level Incremental Benefit Cost Analysis for Maize, in Egypt, 1985, Per Feddan

Income	Unit	Without Project			With Project		Incremental Financial Benefit or Cost	Incremental Economic Benefit or Cost
		Value Per Unit (LE)	Number of Units	Income or Cost (LE)	Number of Units	Income or Cost (LE)		
Grain	MT	178.00	2.02	359.56	3.00	534.00	174.44	197.12
Straw	MT	12.00	1.80	21.60	2.60	31.20	9.60	9.60
Total Income				381.16		565.20	184.04	206.72
Costs								
Land Preparation								
Leveling	Tract.Hour	3.00	0.00	0.00	1.80	5.40	5.40	12.04
Plowing	Tract.Hour	2.00	3.00	6.00	4.00	8.00	2.00	4.46
Labor	MHE	0.40	3.00	1.20	4.80	1.92	0.72	0.72
Planting								
Seed	KG	0.20	30.00	24.00	20.00	16.00	-8.00	-8.00
Labor	MHE	0.40	1.00	0.40	1.10	0.44	0.04	0.04
Irrigation								
Lifting	Sakia Hour	0.50	29.00	14.50	29.00	14.50	0.00	0.00
Labor	MHE	0.40	14.50	5.80	14.50	5.80	0.00	0.00
Fertilization								
Actual N	KG	0.26	69.00	17.94	100.00	26.00	8.06	20.15
P205	KG	0.19	15.00	2.85	20.00	3.80	0.95	2.38
Labor	MHE	0.40	1.00	0.40	2.00	0.80	0.40	0.40
Weed Control								
Herbicide	Litre	8.00	0.00	0.00	0.60	4.80	4.80	9.60
Labor	MHE	0.40	0.00	0.00	0.50	0.20	0.20	0.20
Sprayer	Hour	0.50	0.00	0.00	0.00	0.00	0.00	0.00
Insect Control								
Insecticide	Litre	3.00	0.00	0.00	5.75	17.25	17.25	34.50
Labor	MHE	0.40	0.00	0.00	7.50	3.00	3.00	3.00
Sprayer	Hour	0.50	0.00	0.00	7.50	3.75	3.75	3.75
Harvest/Threshing/Transplanting								
Labor	MHE	0.40	46.00	18.40	69.00	27.60	9.20	9.20
Short Term Interest								
				3.14		4.75	1.61	0.00
Total Costs				94.63		144.01	49.38	92.44
Farm Net Benefits				286.53		421.19	134.66	114.28
Rate of Return to Farm Resources Engaged							372.67 %	223.63 %

Note: See additional notes to accompanying table, "Farm Level Analysis: Wheat".
Based upon data from EMPIC, EWUP and Mechanization Projects

Table 8F - Fara Level Incremental Analysis of Small Scale Mechanization For Maize, In Egypt, 1985, Per Feddan.

	Unit	Value Per Unit of (LE)	Number of Units	Financial			Economic		
				Increased Costs (LE)	Reduced Costs (LE)	Increased Benefits (LE)	Increased Costs (LE)	Reduced Costs (LE)	Increased Benefits (LE)
Animal Lifting	Sakia Hour	0.5	29	0.00	14.50	0	0.00	14.50	0.00
Labor (By Hand)	MHE	0.4	14.5	0.00	5.80	0	0.00	5.80	0.00
Labor (Pump)	Hour	0.4	6	2.40	0.00	0	2.40	0.00	0.00
Meat Recovery	Hour	0.11	58	0.00	0.00	6.38	0.00	0.00	3.19
Milk Recovery	Hour	0.15	58	0.00	0.00	8.70	0.00	0.00	6.26
Calf Recovery	Hour	0.04	58	0.00	0.00	2.32	0.00	0.00	1.16
Depreciation	Hour	0.2	6	1.20	0.00	0.00	1.20	0.00	0.00
Interest	Hour	0.03	6	0.18	0.00	0.00	0.00	0.00	0.00
Energy	Hour	0.04	6	0.24	0.00	0.00	1.68	0.00	0.00
Lubricants	Hour	0.06	6	0.36	0.00	0.00	0.36	0.00	0.00
Maintenance	Hour	0.03	6	0.18	0.00	0.00	0.18	0.00	0.00
Total				4.56	20.3	17.4	5.82	20.30	10.61

Table 66 - Farm Level Incremental Benefit Cost Analysis for Rice, in Egypt, 1985, Per Feddan

Income	Unit	Without Project			With Project		Incremental Financial Benefit or Cost	Incremental Economic Benefit or Cost
		Value Per Unit (LE)	Number of Units	Income or Cost (LE)	Number of Units	Income or Cost (LE)		
Grain (Free Market)	MT	164.00	0.93	152.52	2.00	328.00	175.48	245.67
(Quota)	MT	130.00	1.50	195.00	1.50	195.00	0.00	0.00
Straw		28.00	3.00	84.00	3.50	98.00	14.00	4.06
Total Income				431.52		621.00	189.48	249.73
Costs								
Land Preparation								
Leveling	Tract.Hour	3.00	1.40	4.20	2.00	6.00	1.80	4.01
Plowing	Tract.Hour	1.50	2.80	4.20	2.60	4.20	0.00	0.00
Labor	MHE	0.40	10.00	4.00	10.00	4.00	0.00	0.00
Planting								
Seed	KG	0.18	60.00	10.80	40.00	7.20	-3.60	-3.60
Labor	MHE	0.40	43.00	17.20	43.00	17.20	0.00	0.00
Irrigation								
Lifting	Sakia Hour	0.50	156.00	78.00	140.00	70.00	-8.00	-8.00
Labor	MHE	0.40	78.00	31.20	70.00	28.00	-3.20	-3.20
Fertilization								
P2O5	KG	1.19	0.00	0.00	15.00	2.85	2.85	7.13
Actual N	KG	1.26	46.00	11.96	45.00	11.70	-0.26	-0.65
ZnSO4	KG	1.00	0.00	0.00	2.00	8.00	8.00	20.00
Labor	MHE	0.40	4.00	1.60	2.00	0.80	-0.80	-0.80
Weed Control								
Herbicide	Litre	6.00	0.00	0.00	1.23	7.38	7.38	14.76
Labor	MHE	0.40	25.00	10.00	1.80	0.72	-9.28	-9.28
Sprayer	Hour	0.50	0.00	0.00	1.80	0.90	0.90	0.90
Insect Control								
Insecticide	Litre	3.00	0.00	0.00	5.75	17.25	17.25	34.50
Labor	MHE	0.40	0.00	0.00	7.50	3.00	3.00	3.00
Sprayer	Hour	0.50	0.00	0.00	7.50	3.75	3.75	3.75
Harvest/Threshing/Transplanting								
Labor	MHE	0.40	58.00	23.20	81.00	32.40	9.20	9.20
Short Term Interest								
				1.59		3.81	2.21	0.00
Total Costs				197.90		229.16	31.20	71.72
Farm Net Benefits				233.57		391.84	158.28	178.01
Rate of Return to Farm Resources Engaged							607.24 %	348.21 %

Note: See additional notes to accompanying table, "Farm Level Analysis: Wheat".
Based upon data from ENCIP, ENUP, and Mechanization Projects.

112

Table BH - Farm Level Incremental Analysis of Small Scale Mechanization For Rice, In Egypt, 1985, Per Feddan.

	Unit	Value Per Unit of (LE)	Number of Units	Financial			Economic		
				Increased Costs (LE)	Reduced Costs (LE)	Increased Benefits (LE)	Increased Costs (LE)	Reduced Costs (LE)	Increased Benefits (LE)
Labor (By Hand)	MHE	0.40	43.00	0.00	17.20	0.00	0.00	17.20	0.00
Labor (Transplanter)	MHE	0.40	8.00	3.20	0.00	0.00	3.20	0.00	0.00
Depreciation	Hour	0.09	8.00	0.72	0.00	0.00	0.72	0.00	0.00
Interest	Hour	0.01	8.00	0.08	0.00	0.00	0.00	0.00	0.00
Sub-Total				4.00	17.20	0.00	3.92	17.20	0.00
Self-Propelled Mower, 4 Wheel, 15HP (Olympia Type)									
Labor (By Hand)	MHE	0.40	46.00	0.00	18.40	0.00	0.00	18.40	0.00
Labor (Mower)	MHE	0.40	1.13	0.45	0.00	0.00	0.45	0.00	0.00
Depreciation	Hour	1.35	1.13	1.53	0.00	0.00	1.53	0.00	0.00
Interest	Hour	0.12	1.13	0.14	0.00	0.00	0.00	0.00	0.00
Energy	Hour	0.06	1.13	0.07	0.00	0.00	0.47	0.00	0.00
Lubricants	Hour	0.04	1.13	0.05	0.00	0.00	0.05	0.00	0.00
Maintenance	Hour	1.21	1.13	1.37	0.00	0.00	1.37	0.00	0.00
Sub-Total				3.59	18.40	0.00	3.86	18.40	0.00
Stationary Drum Thresher, IRR1 Type With Winnow (Tractor-Powered)									
Labor (By Hand)	MHE	0.40	47.00	0.00	18.80	0.00	0.00	18.80	0.00
Labor (Drum)	MHE	0.40	2.93	1.17	0.00	0.00	1.17	0.00	0.00
Depreciation	Hour	1.45	2.93	4.28	0.00	0.00	4.28	0.00	0.00
Interest	Hour	0.10	2.93	0.29	0.00	0.00	0.00	0.00	0.00
Tractor PTD	Tract. Hour	3.00	2.93	8.79	0.00	0.00	19.60	0.00	0.00
Sub-Total				14.53	18.80	0.00	25.05	18.80	0.00
Irrigation Water Pump, 5-7 HP Diesel									
Animal Lifting	Sakia Hour	0.50	140.00	0.00	70.00	0.00	0.00	70.00	0.00
Labor (By Hand)	MHE	0.40	70.00	0.00	28.00	0.00	0.00	28.00	0.00
Labor (Pump)	Hour	0.40	35.00	14.00	0.00	0.00	14.00	0.00	0.00
Meat Recovery	Hour	0.11	140.00	0.00	0.00	15.40	0.00	0.00	7.70
Milk Recovery	Hour	0.15	140.00	0.00	0.00	21.00	0.00	0.00	15.12
Calf Recovery	Hour	0.04	140.00	0.00	0.00	5.60	0.00	0.00	2.80
Depreciation	Hour	0.20	35.00	7.00	0.00	0.00	7.00	0.00	0.00
Interest	Hour	0.03	35.00	1.05	0.00	0.00	0.00	0.00	0.00
Energy	Hour	0.04	35.00	1.40	0.00	0.00	9.80	0.00	0.00
Lubricants	Hour	0.06	35.00	2.10	0.00	0.00	2.10	0.00	0.00
Maintenance	Hour	0.03	35.00	1.05	0.00	0.00	1.05	0.00	0.00
Sub-Total				26.60	98.00	42.00	33.95	98.00	25.62
Grand Total				48.73	152.40	42.00	66.79	152.40	25.62

113

Table 81 - Factors Used to Convert Financial to Economic Values

Item	Conversion Factor
Wheat (Free Market)	1.59
Wheat (Quota)	1.89
Maize	1.13
Rice (Free Market)	1.40
Rice (Quota)	1.63
Rice Straw	0.29
Wheat Straw	0.24
Tractor Hour	2.23
Seed	1.00
Insecticide	2.00
Herbicide	2.00
Bulk Fertilizer	2.50
Energy (Fuel)	7.00
Meat/Calf	0.50
Milk	0.72

Source: IFAD, Second Agricultural Development Project
Annex 7, 1984.

114

Table 8J - Expanded Area Under Improved Methods - Wheat

Year	(1) Area in On-Farm Demonstrations Stage C	(2) National Application Stage D b	(3) Drop- Outs	(4) Net Carry Over From Previous Year	(5) Area Under Improved Practices	(6) Area Under Improved Practices As % of Total Area in Crop 1,178,372 FD
1	10,600	0	0	0	10,600	0.9 %
2	11,000	63,600	0	10,600	85,200	7.2 %
3	21,800	66,000	0	95,200	173,000	14.7 %
4	32,600	130,800	0	173,000	336,400	28.5 %
5	41,850	195,600	0	336,400	573,850	48.7 %
6	0	251,100	0	573,350	824,950	70.0 %
7	0	0	0	824,950	824,950	70.0 %
8	0	0	0	824,950	824,950	70.0 %
9	0	0	0	824,950	824,950	70.0 %
10	0	0	0	824,950	824,950	70.0 %
Total	117,650	707,100	0	4,478,650	5,303,600	

Note: In any given year, area under improved practices (column 5) = Area in On-Farm demonstrations in the given year (column 1), plus number of feddans copied from the previous year's demonstrations (column 2), plus net carry over from the previous year (column 4). The net carry over is the area under improved practices (column 5) in the previous year by the % drop-outs (column 3).

Table 8K - Expanded Area Under Improved Methods - Maize

Year	(1) Area in On-Farm Demonstrations Stage C	(2) National Application Stage D b	(3) Drop- Outs	(4) Net Carry Over From Previous Year	(5) Area Under Improved Practices	(6) Area Under Improved Practices As % of Total Area in Crop 1,945,279 FD
1	19,800	0	0	0	19,800	1.0 %
2	23,000	118,900	0	19,800	161,600	8.3 %
3	39,500	138,000	0	161,600	339,100	17.4 %
4	52,300	237,000	0	339,100	628,900	32.3 %
5	59,400	316,800	0	628,900	1,005,100	51.7 %
6	0	356,400	0	1,005,100	1,361,500	70.0 %
7	0	0	0	1,361,500	1,361,500	70.0 %
8	0	0	0	1,361,500	1,361,500	70.0 %
9	0	0	0	1,361,500	1,361,500	70.0 %
10	0	0	0	1,361,500	1,361,500	70.0 %
Total	194,500	1,167,000	0	7,600,500	8,962,000	

Note: see footnote table 8J.

1/10

Table 3L - Expanded Area Under Improved Methods - Rice

Year	(1) Area in On-Fare Demonstrations Stage C	(2) National Application Stage D 5	(3) Drop- Outs	(4) Net Carry Over From Previous Year	(5) Area Under Improved Practices	(6) Area Under Improved Practices As % of Total Area in Crop 1,004,693 FD
1	13,000	0	0	0	13,000	1.3 %
2	15,500	78,000	0	13,000	106,500	10.6 %
3	19,800	93,000	0	106,500	219,300	21.8 %
4	25,100	118,900	0	219,300	363,200	36.2 %
5	27,000	150,600	0	363,200	540,300	53.8 %
6	0	152,000	0	540,600	702,600	70.0 %
7	0	0	0	702,800	702,800	70.0 %
8	0	0	0	702,300	702,800	70.0 %
9	0	0	0	702,800	702,800	70.0 %
10	0	0	0	702,800	702,800	70.0 %
Total	100,400	602,400	0	4,054,000	4,756,300	

Note: see footnote table 3J.

**Table 8M - Economic Analysis for National Agricultural Research Project, Egypt, 1985,
Wherein 6 Feddans Copied for Each Feddan Demonstrated.**

	1	2	3	4	5	6	7	8	9	10	Total
	-	-	-	-	-	-	-	-	-	-	-----
Costs											
AID Costs	35,000,000	30,000,000	20,000,000	20,000,000	10,000,000	8,000,000	7,000,000	-	-	-	130,000,000
Farm Costs	2,619,165	21,052,153	42,746,743	83,121,412	141,793,170	203,837,720	203,837,720	203,837,720	203,837,720	203,837,720	1,310,521,246
Total Costs	37,619,165	51,052,153	62,746,743	103,121,412	151,793,170	211,837,720	210,837,720	203,837,720	203,837,720	203,837,720	1,440,521,246
Benefits											
Farm Benefits	7,470,079	60,042,519	121,917,321	237,069,288	404,406,097	581,362,394	581,362,394	581,362,394	581,362,394	581,362,394	3,737,717,273

Without Mechanization

IRR 160.67%

NPV of Benefits at 15% 1,437,571,977
NPV of Costs at 15% 592,809,999

Difference 844,762,978

B/C Ratio 2.43

With Mechanization

IRR 267.05%

NPV of Benefits at 15% 1,828,496,624
NPV of Costs at 15% 338,537,655

Difference 1,489,958,969

B/C Ratio 5.40

Table 8N: Project Internal Rate of Return to Changes in Agricultural Value Added, Egypt, 1985.

Year	Costs (A)	Change in Agricultural Value Added		Rate of Increase In Benefits With Project*
		Without (B)	With Project (C)	
		\$ million		%
1	30.0	4999.0	4901.0	0
2	35.0	5099.0	4901.0	0
3	45.0	5200.9	4901.0	0
4	40.0	5305.0	4901.0	0
5	33.0	5411.1	4901.0	0
6	0.0	5519.3	4999.0	2
7	0.0	5679.7	5198.9	4
8	0.0	5742.3	5510.9	6
9	0.0	5857.2	5951.8	8
10	0.0	5974.3	6546.9	10
11	0.0	6093.8	7201.7	10
12	0.0	6215.7	7921.8	10
13	0.0	6339.9	8714.0	10
14	0.0	6466.8	9585.4	10
15	0.0	6596.1	10543.9	10
16	0.0	6728.0	11598.4	10
17	0.0	6862.6	12758.2	10
18	0.0	6999.8	14034.0	10
19	0.0	7139.8	15437.4	10
20	0.0	7282.6	16981.2	10
TOTAL	183.0	121463.0	167488.8	

IRR = 202%

* Rate of Increase in Benefits Without Project = 2% year

SOCIAL SOUNDNESS ANALYSIS

The Project is socially sound. It is compatible with the sociocultural environment in that it reinforces and supports what farmers are already doing--maximizing their production opportunities. It involves farmers in the process of developing innovations thereby assuring that farmers will adopt these innovations which they have had a part in developing. And finally, society as a whole benefits and no one group is favored or bears a disproportionate burden.

A. Compatibility with the Sociocultural Environment

Egypt has some of the highest crop yields in the world. This is attributable in part to favorable agroecological conditions but also to the attitude of the Egyptian farmers. With a limited arable land base, the Egyptian farmer's primary concern is maximizing income. Egyptian farmers are continuously looking for ways to use the limited resources available to them to produce more food and fiber for consumption or for sale.

The purpose of the NARP is to increase the capability of the agricultural research community to provide a continuous stream of improved site-specific agricultural technologies. These technologies are being developed for Egyptian farmers. The Project reinforces what the farmers are already doing independently by trial and error. The Project does this by marshalling resources of the agricultural research community to generate technologies using scientific methods and by transferring these technologies to farmers using modern communication techniques.

Technologies that take farmers generations to develop can be developed in a few years through a well managed and adequately supported agricultural research program. Farmers need the support of an effective agricultural research program if they are going to keep production in line with a growing population's demand for food.

There are less than 5,600,000 feddans^{1/} of arable land in Egypt with a cropping intensity of around two. Slightly over 50 percent of the land is owned by 95 percent of the farmers. Thirty-five percent is owned by less than 5 percent of the farmers. The remaining land, about 15 percent, is owned

^{1/} One feddan equals 1.038 acres.

mainly by large corporations (See Table 1). However, two-thirds to three quarters of the land is farmed in small plots by owners or tenants. The average farm operation (owned plus rented land) is less than two feddans.

Table 1
DISTRIBUTION of LAND OWNERSHIPS in EGYPT^{1/}

Feddans	Land Owners ('000)	Area Owned ('000 feddan)	Land Owners %	Area Owned %
Less than 5	3,223	2,834	95.0	51.3
5 to 10	93	609	2.7	11.0
10 to 20	44	569	1.3	10.3
20 to 50	23	663	0.7	12.0
50 to 100	7	482	0.2	8.7
Over 100 ^{2/}	1	373	0.1	6.7
Total	3,391	5,530	100	100

^{1/} State lands, desert prairie and land under distribution are not included.

^{2/} Includes organizations, companies and individuals.

Source: CAPMAS, Statistical Yearbook, 1982.

The agrarian reform which began in the fifties took land from the large land holders and distributed this mainly to small holders to increase their total holdings to about three feddans. It did little to help the landless. Those with over five feddans and less than 50 were virtually untouched by the reform.

The agrarian reform also organized cooperatives to provide services such as land preparation and spraying and to channel credit, mostly in-kind, to farmers. Each farmer was assigned a cropping pattern and a three year crop rotation plan. Block farming was introduced which enabled many small holders of contiguous land to carry out mechanized activities in common while still allowing individual farmers to cultivate their own land.

The cooperative system with established cropping assignments for each member, initiated in the agrarian reform areas, spread to the entire country during the sixties. By the

late seventies, there were approximately 4,000 cooperatives in Egypt with a total membership of about 3,000,000 farmers. Thus, for many crops, Egyptian farmers are told what to produce and when to produce it. The government sets the price for these crops and controls the inputs needed to produce these crops.

The list of controlled crops has always included cotton. Wheat, barley, rice, maize, lentils, fava beans and sugarcane have been added or deleted at different times. Recently lentils and maize were dropped.

Enforcement of government production plans has been erratic and differs by areas of the country. Fines for non-compliance depend on a particular crop which in the case of cotton is LE 200 per feddan and rice LE 25 per feddan. Farmers can pay the fines rather than produce what is not of an economic benefit to them. In general, "Farmers have been relatively effective in exercising their judgment concerning what the economic opportunities are given the bounds of what commodity allocation he has to accept within a given area."^{2/}

Cooperatives continue to be used to implement the government's production plan. They have lost almost all their autonomy and now serve primarily as the governments contact point with farmers at the village level. The Principal Bank for Production and Agricultural Credit (PBDAC), for example, uses the cooperatives to deliver agricultural inputs (seeds, fertilizer, chemicals) on credit and to collect the production as payment. The government subsidizes the interest rate on the loan and the price on the inputs to compensate for the low farmgate prices.

Although farmers are not entirely free to produce what they want, over 65 percent of the crop area under production is at their discretion (See Table 2). The farmers options will continue to improve as prices fixed by government are raised, the number of controlled crops lessened and government monopoly on hybrid seed production/distribution ends. The availability of improved technologies will further improve the farmers' options with respect to their production decisions.

The research method currently being used is also compatible with the sociocultural environment. This method

^{2/} Yohe, John "Crop Production" in Strategies for Accelerating Agricultural Production Annex A, MOA/USAID/IADS Report. Cairo, Egypt, July 1982

Table 2
 PLANNED CROP AREA 1984/5
 (000 fed.)

<u>Controlled Crops</u>	<u>Area</u>	<u>Percent</u>
Wheat	1,300	
Rice	1,007	
Cotton	1,034	
Sugarcane	265	
Subtotal	3,606	32
<u>Other Crops</u>		
Beans	300	
Barley	130	
Berseem (full term)	1,800	
Berseem (seasonal)	833	
Onions	55	
Vegetables (winter)	315	
Others (winter)	314	
Maize	1,800	
Sorghum	400	
Vegetables (summer & Nili)	602	
Soybeans	160	
Others (summer & Nili)	409	
Fruits	448	
Crops in Association	278	
Subtotal	7,844	68
Total	11,450	100

Source: Agricultural Data Base
 Compiled by AGR/PAD, USAID, Cairo

consists of conducting verification of station research results on farmers fields and then demonstrating the technologies with full participation of the farmers before a technological package is released. This assures that the recommendation of the technological package conforms with the sociocultural environment of the farmers. Farmers' opinions are listened to and acted upon before a technology passes from verification to demonstration and from demonstration to release as an improved package.

This method will be refined during the coming years to include a systems approach. Feedback mechanisms from farmer to researcher will be improved to help identify constraints to production which research should address. The relationship of specific crops to the cropping pattern and to the socioeconomics conditions of the farm household will also be factored into the research method.

The Project makes no assumptions as to what the benefits will be other than increased production and improved incomes for farmers. The specific technologies resulting from the research will be accepted by the recipients if they themselves consider them beneficial. No assumptions are made such as mechanization is the answer or a certain seed variety must be grown, or even specific agronomic practices used.

The same can be said with respect to participation in the Project. Participation of farmers in the verification and demonstration phases is essential for the success of the project. Farmers who participate will do so voluntarily. To compensate for the time involved and the use of the farmers' land, the package of inputs (seed, fertilizer, chemicals), however, will be given to the farmer.

Communication techniques developed under the Rice and EMCIP Projects have proven effective in obtaining participation of beneficiaries. The method is essentially a person to person five-tiered system which links researchers with farmers through extension workers, trainers, and technical advisors.

This system encourages farmer participation because it allows the farmer quick access to knowledgeable research or extension staff when problems develop or when questions arise regarding recommended practices. The system also allows farmers to communicate with one another and compare experiences.

B. Spread Effects - The Diffusion of Improved Technologies

The Project does not limit itself to one beneficiary group but rather aims at serving the entire farming community. The goal will be reached when increased agricultural productivity results from the adoption by farmers of improved technologies. The diffusion of these technologies is a critical element of the Project.

An improved technology can be a high yielding variety or it can be a technological package. If it is merely an improved variety, the diffusion process is fairly simple. If it is a total package, the diffusion process usually requires various mechanisms.

High yielding varieties are readily adopted by farmers. The demand quickly exceeds the supply as farmers hear or see the results. The Project anticipates meeting the demand by completing the seed processing facilities of the ARC and by encouraging private sector involvement in seed production (especially hybrid, vegetables, and legumes).

Mass media (television, radio, billboards), will be used to diffuse the information regarding the use of the technological packages. Since the technological package consists of inputs which require specific application, input suppliers will be used to inform farmers on the proper application. For example, the village bank agencies or cooperatives distribute farm inputs. Printed instructions on how to use the inputs will be made available to them as well as training so that they can advise farmers in their application. The same assistance will be accorded village storekeepers who handle farm inputs.

Based on the experience of the Rice and EMCIP Projects, wide and rapid diffusion of the technological package is not a problem. The involvement of farmers in the demonstration phase, the training of field extension works, and the available mass media channels serve to diffuse the information quickly. The constraint to adoption of the technologies is not informational but rather the timely availability of inputs required by the technologies. This constraint is beyond the scope of the present Project, but will be dealt with in future related agricultural projects.

C. Social Consequences and Benefits

The Project makes available technical information that can be used by large and small farmers equally irrespective of their land tenure situation. Generally speaking, technology has been found to be scale neutral. ARC's present method of technology generation which involves small farmers in the verification and demonstration phases, however, may result in a small farmer bias. This, of course, would not be considered negative since 95 percent of the Egyptian farmers farm less than five feddans of land.

Consumers will also benefit from increased food supplies. Since the research envisioned will include pest management and post-harvest handling, the quality of the food that reaches the consumer is also expected to improve.

The introduction of improved technologies that require or include mechanization of some of the farming activities could have an adverse effect on employment. This has been the experience in many developing countries as machinery replaced laborers. So far, Egypt has avoided this problem. A recent study of landless laborers revealed that 82 percent felt there

was more work available than five years prior.^{3/} One explanation is that most of the mechanization has replaced animal power and, therefore, has created employment to run and maintain the machinery.

Mechanization is expected to have a positive effect on women's work. Some of the machinery recently introduced is geared to meet peak labor demands or to replace activities performed by unskilled laborers. Women often perform these tasks as unpaid family labor. Replacing them with machinery usually means that women are freed to do their preferred work, attending household needs or caring for animals.

Mechanization that replaces animal power can have a positive affect on food production. Land that is used for feed crops can be used for food crops. Or, animals can be raised for food rather than as beasts of burden.

Social impacts could be significant at the village level if farmers' incomes were increased. Given a high propensity to consume, a high proportion of additional income would be used to purchase consumer goods and services. In conjunction with the multiplier effect this would impact upon the rural communities and the social conditions, especially through investment in housing.

An improved balance of trade could result in improved social conditions as financial resources are freed from purchase of imports. Improved roads, communication systems and educational facilities could be the result of savings from reduced food imports, assuming the benefits of agricultural research can be translated into increased production.

Besides the farmer beneficiary, the personnel of the ARC in particular and Egyptians involved in research in general will benefit from the NARP training program. Over 25 percent of the AID funds will be invested in human resource development. The training program will provide multi-year opportunities for scientists as well as short courses for technicians. The bulk of the funds is expected to provide skill training for employees of the ARC.

^{3/} Reiss, Peter et al, Agricultural Mechanization and Labor, A Look at the Demand and Supply Side, Egypt Mechanization Project Paper #9, April 1983.

125

TECHNICAL ANALYSIS

When AID renewed an active developmental program in Egypt in the late 1970's agriculture was one of the areas receiving emphasis. Eleven discrete projects supporting activities of the Ministry of Agriculture (MOA) and its affiliate the Agricultural Research Center (ARC) were developed and implemented. Eight are presently active, and seven of the eight are in their final year of implementation.

Research was a major component in eight of the projects. Numerous significant accomplishments resulted from the research components of these projects.

The Rice Research and Training Project developed and selected several new varieties (strains) of rice, identified the importance of zinc in increasing yields and introduced extensive use of selective herbicides resulting in a large cost reduction to producers. A large modern rice research facility with laboratories supporting greenhouses, and a seed cleaning plant is under construction at Sakha; they will serve as the focal point for rice technology improvement in Egypt.

The Agricultural Mechanization Project has tested a wide array of agricultural equipment under Egyptian conditions. Studies into the replacement of labor and animal power by machines have been useful to the MOA in policy planning.

The Agricultural Development Systems Project conducted research on the production and marketing of numerous horticultural crops. Working closely with the Horticulture Research Institute of the ARC and several Egyptian universities, significant contributions were made in tomato production, cucurbits (squash, melons, and cucumbers), mangoes, olives, grapes, deciduous fruits, garlic and bananas. The project also conducted over 180 research studies in Agricultural Economics which were extremely valuable to Egyptian policy makers.

The Poultry Improvement Project conducted a large number of studies describing various components and constraints affecting poultry production in Egypt. It also provided improved genetic material by importing young chickens and turkeys. Three hatchery building complexes were constructed by the project to accelerate the multiplication of the imported birds.

12/6

The Aquaculture Development Project when completed in mid 1986 will leave in place a modern research laboratory and training facility and supporting ponds. This center will serve as the center for aquaculture in Egypt. A number of staff for the center are being trained by the project.

The Egyptian Major Cereals Improvement Project is continuing to conduct extensive plant breeding and agronomic research throughout Egypt. The project focuses on improving and increasing the production of four cereal crops, edible legumes, and forages. A large number of junior research staff are presently receiving training at American universities. Significant contributions by the project include the identification of the obstacle to obtaining good nitrogen fixation bacteria populations in soybeans, and a number of new varieties of crops from the breeding program. A program granting funds to Agricultural Faculties of Egyptian universities to conduct commodity specific priority research was established thereby achieving a linkage between ARC and university professionals which had not previously existed. An extensive construction program built five modern laboratory and administrative complexes--four with seed cleaning facilities, at central points in the Delta, Giza and Upper Egypt.

The Small Scale Agricultural Activities Project focused on the introduction, testing design and fabrication of small machines, equipment and tools appropriate to agriculture in Egypt. Several items developed by the project such as banana de-suckering knives, are now being widely used by farmers. The search for new, and the adaptation of internationally developed, appropriate mechanical technologies continues under the guidance of the Agricultural Mechanization Research Institute, a part of the ARC.

The Agricultural Management Development Project has focused on improving the managerial skills of mid-level managers of the Ministry of Agriculture in Dokki as well as those in the governorates. Over 2100 persons have presently benefited from this training. A range of courses from a basic three week core course to shorter workshops and executive development courses. The Center for Agricultural Management Development (CAMD), implementing agency for the Project, is located at the Barrages, a short distance from Cairo. Special courses have been provided to improve the managerial capabilities to staff members of the Small Farmer Production and Agricultural Mechanization Projects. The Project constructed new and upgraded existing facilities at the CAMD site.

127

The Data Collection and Analysis Project is assisting the MOA in strengthening its capacity to collect and analyze the full spectrum of agricultural data. Statistical sampling and analysis techniques have received special attention and numerous commodity specific policy issues have been researched by the Project. The MOA undersecretariate for Economic Affairs is collaborating with the Agricultural Economics Research Institute of the ARC to implement the Project. Staff development and computer capabilities have also been strengthened by the Project.

The results of all of these discrete projects have been to improve a part of the agricultural research capacity of Egypt. Some new facilities exist, staff have been trained, and research quality has improved. A beginning has been made to link research of the Egyptian universities to that of ARC. It is a highly significant beginning, but much more remains to be done.

This Project will complete the task of developing an agricultural network with the capacity to carry out basic applied and demonstrative research on a national level.

The Project will achieve this by building on the base of the existing ARC System as strengthened under previous and on-going projects. It will fill in some blank spots not previously covered and will strengthen the coordination of agricultural research efforts nationwide.

128

ADMINISTRATIVE AND INSTITUTIONAL ANALYSIS

I. Introduction

The Agricultural Research Center (ARC), which is semi-autonomous but administratively responsible to the Minister of Agriculture, is the largest and most important of several Egyptian organizations working in agricultural research. The ARC was initiated in 1960 with the founding of the Cotton Research Institute and has gradually grown to its presents 15 Institutes and Central Laboratories. Since that date there have been notable achievements in the agricultural sector through the application of agricultural research results. From 1950-1980 cotton production increased 29 percent despite a 40 percent reduction in the planted acreage; the national average wheat yield increased 90 percent while corn production increased 110 percent. Similar increases occurred in vegetable production, poultry production, etc.

Despite these achievements food imports have greatly increased; due to increased consumption, rapid population increases, and changes in food preferences. During the period 1970-1980, despite a production increase of 2.6 percent per year, the increasing population and food consumption rates increased the overall food gap from 1.7 million tons to 7.4 million tons per year. Present estimates are that the food gap, which costs \$2.3 billion in 1982/83, will cost \$3.8 million in 1986/87.

To prevent further deterioration of the national food situation and to reduce the nations dependence on food imports, the Government of Egypt formulated a "Production Proposal (1982/83 - 1986/87)" based on recommendations by an Interministerial Committee. The assigned ARC role in this production program is two fold:

1. "Generate a flow of applied research results to formulate appropriate agricultural technology for attaining the objectives of the existing development plan and to develop the qualified staff to fulfill the objectives of the following phases to ensure the continuous development of agricultural production."
2. "To ensure the transfer and extension of such technology as far as possible among farmers to achieve higher yields and better income; and to follow up the economic and social effects of those new technologies and propose solutions to perceived problems of application."

The ARC has made valuable contributions to increasing food and crop production and retarding the widening gap between food production and consumption. However, the ARC has noted areas in which it requires additional strengthening to improve its role in increasing crop production. Thus, ARC, being entrusted with these important responsibilities needs to improve its capacity to formulate, manage and support:

1. Strong integrated programs in various agricultural research disciplines.
2. A strong extension service down to the village level.
3. A sound system for producing and marketing certified seeds of field and horticultural crops.

Through a process of self assessment ARC has recognized the need to strengthen its management and planning capabilities.

II. Description

The ARC is a very large research organization comprising 15 separate institutes and central laboratories as described below. The reported number of staff totals approximately 24,000 persons including 700 Ph.D's, 1,300 M.S. and 3,000 B.S. degree holders in agriculture and veterinary science.

The institutes and central laboratories of the ARC are described briefly as follows:

Cotton Research Institute (CRI): This is a large, well-established institute is heavily oriented to breeding and has developed most varieties grown in Egypt. The technology section conducts extensive evaluation tests on hybrids and new lines. Tests include fiber color, strength, and elongation, and various yarn characteristics.

Field Crop Research Institute (FCRI): This institute conducts research on various field crops including maize and sorghum, wheat and barley, legumes, rice, oil-crops, fiber crops, forages, and onions. It also includes seed technology and plant physiology sections. The FCRI has received considerable assistance through the AIL-funded Egyptian Major Cereals Improvement Project (263-0070) and the Rice Research and Training Project (263-0027).

Sugar Research Institute (SRI): SRI concentrates on the breeding and testing of exotic sugar cane varieties with some agronomic research being conducted in Upper Egypt. SRI also conducts research on sugar beets.

Horticultural Research Institute (HRI): HRI has the largest staff at ARC; over 3000 persons. It has research sections working on citrus, grapes, pomology, tropical fruits, mineral nutrition, olives, cucurbits, tomatoes, forestry, ornamentals, potatoes, fruit handling etc. Additionally, there are large seed and vegetable seed production units. This institute received some assistance through the AID-funded Agricultural Development Systems Project 263-CC41.

Plant Pathology Research Institute (PPRI): This institute consists of two main divisions; Field Crops Research and Horticultural and General Research. The former division covers various diseases of field crops, cotton, and sugar-cane. The latter division covers the broad groups of horticultural crops diseases and discipline oriented research virus diseases, bacterial diseases and biological control, nematology, post-harvest diseases, mycology and disease survey, fungicides and seed pathology.

Plant Protection Research Institute (PPRI): This institute is concerned with insect and weed control, bee and silkworm culture. The institute consists of 20 sections. Some such as cotton leafworm relate to specific problems while others, such as the field crops and vegetable crops insect sections, are broader in scope.

Soil and Water Research Institute (SWRI): SWRI has two major divisions, soil research and soil technology which addresses problems in soil physics, chemistry, soil survey and classification, microbiology, soil fertility, plant nutrition water requirements, saline and alkaline soils, etc.

Animal Production Research Institute (APRI): There are 10 research sections concerned with dairy technology, chemistry, microbiology, animal and poultry nutrition, sheep, cattle, buffalo, rabbits, poultry, and poultry breeding. The cattle and buffalo programs emphasize milk production and dairy technology rather than meat production.

Animal Reproduction Research Institute (ARRI): The ARRI has sections concerned with interfertility field investigations, biology of reproduction, pathology of reproduction, reproductive diseases, etc.

Animal Health Research Institute (AHRI): This institute is primarily concerned with diagnosis and research with animals and poultry with particular emphasis on vaccination for disease control.

Serums and Vaccines Research Institute (SVRI): While this institutes conducts some research, most of its activities involve the production of animal serums and vaccines for use in Egypt and other Arab countries.

Agricultural Economics Research Institute (AERI): This institute is primarily responsible for long-term policy analysis, but also provides enumerators in the governorates for the national crop reporting surveys carried out by the Undersecretariat for Agricultural Economics.

Agricultural Mechanization Institute (AMRI): This institute develops farming equipment and methods for small Egyptian farms. It currently cooperates with the AID-funded Agricultural Mechanization Project in land improvement and the development of farm machinery.

Central Pesticides Laboratory (CPL): This laboratory analyzes pesticides, fertilizers and herbicides for purity and the efficacy of various materials. CPL coordinates its activities with both the Plant Protection and Plant Pathology research institutes.

Central Statistical Laboratory (CSL): The functions of CSL are experimental design, statistical analysis, development of arithmetic models for statistical analysis, and research in applied statistics.

In addition to the various institutes whose headquarters are primarily located in Cairo, the ARC has responsibility for 31 research stations located throughout Egypt. Twelve are animal production stations, six horticulture stations, and agricultural research stations.

The land on which the research stations are located is owned and operated by the General Authority for Agricultural Production which does the actual farming for the research program including land assignments, land preparation, cultivation and harvesting. The Center pays for this service.

This inability of the ARC to control its own land, farming schedule or equipment constitutes a serious system defect. The present arrangement places the emphasis on the economic returns from the sales of products rather than achieving the objectives of the experiment. Furthermore, having land allocated for research without knowing the history may actually invalidate the experimental results. This problem will be one of the priority issues targeted through the improved research management initiated by the project.

Most of the above institutes and their associated field stations, require upgrading of facilities and/or equipment in order to accomplish their assigned goals. However, some, such as the Field Crops Research Institute, have through donor assistance, facilities and equipment in excess of their ability to effectively utilize.

The ARC annual budget totals approximately \$40 million of which more than half is salaries. Its provision for construction, equipment, maintenance, etc. is inadequate for the upkeep of ARC facilities. However, the budget does not reflect donor assistance channeled to the ARC. Over the past five years USAID has granted approximately \$140 million in assistance through projects administratively under the ARC control. Much of this assistance was used for construction of facilities, procurement of vehicles and equipment, training, etc.

III. Administrative/Institutional Constraints

Based on organizational responsibilities, staff size, facilities, local budgets and donor assistance, the organizational administrative and management skills and institutional capabilities required to effectively administer the ARC are equivalent to those of larger industrial, business, and international organizations. ARC, by its own acknowledgement, is deficient in this area. Management capabilities can be enhanced through a program of training, technical assistance, data collection, monitoring and evaluation.

The ARC as a research organization has emphasized the hiring and training of technical personnel. Most of their upper echelon staff apparently reached their present positions via the scientist route, i.e. via training as a plant breeder, soil scientist, etc. with upward promotion within the ARC based largely on service time. Donors assistance, including USAID, has also stressed technical training.

Egypt, with its agricultural universities, obviously has the capacity to provide technical training. It has not recognized, to the same degree, the need for management training for research organization. This lack of management capability is continually reflected in the lack of timeliness in planning and implementation of agricultural research projects. The size of the organization, the money involved, the complexity of research operations, and particularly the seasonal requirements of crops research dictate a need for capable, timely management.

Since graduate training is less expensive in Egypt, except for particular skills, only post doctoral training should be given in the U.S. Of the participant selected, a large portion should specialize in organization management with formal coursework in Business and Public Administration and other course work as appropriate. Both management and technical training should be supplemented with an intern training program at appropriate international, USDA, and university research centers. The numbers of post doctoral participants and the area of training should be based on ARC needs assessment.

The traditional system of organizational authority and decision-making in Egypt, which refers most decisions to top levels of management for action, is time consuming and inefficient. The delegation of responsibility to middle-level management is crucial for a rapid and effective response to continuously emerging organizational bottle-necks. This is especially required in an agricultural research organization where particular actions are dictated by seasonal requirements and the lack of a timely response delays implementation. Observations from various projects show numerous examples where the lack of decision-making authority by mid level managers constrained the effective use of technical assistance or the timely procurements of inputs and commodities such as seed, herbicides, etc.

The decentralization of decision making authority can be partially affected by the above recommended training technical assistance but it depends upon a management decision to delegate more responsibilities to managers closest to the source of the need. The task of this design effort should be to ensure that middle level managers acquire the competency and opportunity to make these kind of decisions.

The recent IAES reports noted the critical need to strengthen technical support services of ARC; that includes library and statistical services; laboratory, grounds and

building maintenance, procurement and inventory control. This could be accomplished by both local training, short term TDY, and possibly short term non-academic U.S. training. The importance of such services are frequently ignored particularly in the budgeting processing; however, these are the services that physically implement programs and as such are invaluable to the development process.

IV. Technical Assistance:

Within the ARC there has developed a desire to limit project technical assistance to short term TDY's in priority areas. This approach is justified on the basis of cost and the abundance of Egyptians with advanced degrees in most technical disciplines. Unfortunately, this approach overlook one of the most valuable contribution of technical assistance, i.e. the inputs and transference of new ideas, new approaches, and a new enthusiasm into a research organization which has stagnated under its own organizational and cultural constraints. The strength of international research centers stems from the divergent sources and exchange of ideas, concepts, and experiences.

Similarly the ARC can benefit from outside inputs and concepts by the placement of a few long-term working directly in the research program. These individual should be carefully selected for both their scientific and technical competence and leadership ability.

As discussed in training above, other sources of ideas and innovative approaches are post doctoral training and research fellowships at recognized research centers.

V. Monitoring and Evaluation:

A component of good research management is the monitoring and evaluation of project implementation. In AID assisted projects the design is usually a cooperative endeavor between the AID Mission, and the host government with design assistance frequently provided by a team of contracted experts. Included in the design is an implementation schedule to be used as a guide in timely project implementation. Unfortunately, timeliness, as discussed above, is a weakness in the ARC management and present monitoring procedures generally report problems after they develop.

Thus, within the ARC, there should be established a monitoring and reporting unit which continuously monitors implementation progress for the purpose maintaining timely and purposeful implementation.

135

VI. Facilities:

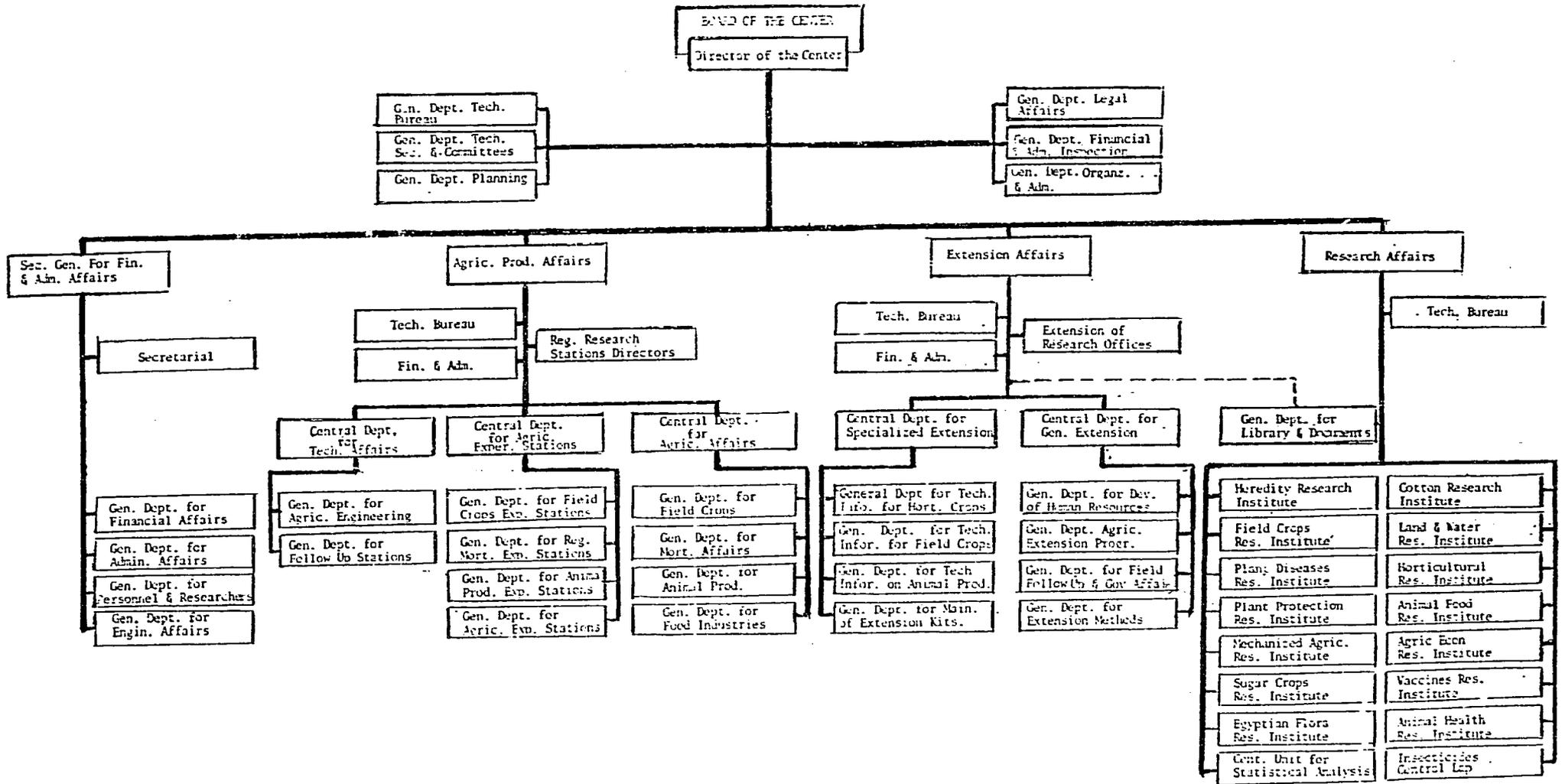
All recent studies of the ARC note that the facilities and equipment of most Institutes are inadequate and insufficient for achievement of institutes intended purpose. At the same time facilities built for both the EMCIP (263-0070) and the Rice Research and Training (263-0027) Projects seem adequate to meet the needs of the Field Crops Research Institute.

Prior to committing AID funds for additional construction of ARC facilities the ARC will assess the status and utilization of present facilities and the need for additional facilities. They shall further consider the reassignment of all underused present facilities to assure their maximum utilization by and benefit to the ARC. Only after maximum utilization of present facilities is achieved will USAID provide funding for additional construction.

The present condition of ARC facilities indicates a lack of maintenance; a review of prior budgets substantiates this finding. Additional construction will be contingent on the ARC provision of adequate resources for long term maintenance.

AGRICULTURAL RESEARCH CENTER

Organizational Chart



137

ENVIRONMENTAL ANALYSIS

Discussion

The existing pest control system in Egypt imports as much as 30,000 tons of pesticides every year at a cost of over \$100 million.

This system needs modifications for the use of chemicals and other pest control measures. The first step in improving the pest control system is to identify areas that need changes in Pesticide Management. Some of these areas are:

- I. Legislative regulations
- II. MOA pesticide procurement policy
- III. Representation for all pest management and crop protection disciplines on the MOA Recommendations Committee
- IV. Establishing economical thresholds for pest infestation for each major crop
- V. Providing education channels for farmers through extension
- VI. Initiating Crop Loss Assessment effort

It is evident that postharvest food losses alone contribute 25 percent - 40 percent of the total crop yield loss, due to a number of factors which occur during preprocessing, transporting, storing, processing and packing and marketing before the product reaches the consumer. A substantial research effort should be directed to postharvest food losses as a part of the National IFM and Crop Protection System.

In the event of a change in AID policy towards participating in pesticide procurement activities in developing countries, it is vital to adopt an effective and realistic monitoring mechanism to ensure the soundness of procedures and actions taken to protect the users, the general public and the environment. This can be realized by imposing improved legislative regulations of (A) pesticide registration, certification and record keeping, (B) updated quarantine measures, (C) improved means of pesticide transportation, handling, storage and application safety and (D) improved ways of disposing of dead chemicals and empty containers.

The importance of upgrading the existing facilities (equipment and personnel) to take on such a vital task of

improving the system should be recognized. Lab equipment, chemical storage facilities and disposal dumps are a few examples.

Economical Rationale

The economical rationale behind this concept is:

1. Reducing use of chemicals, therefore reducing pesticide importation
2. Reducing postharvest food losses
3. Increasing productivity by better pesticide selection and application
4. Reducing time losses due to illness through better handling of pesticides

Technical Assistance

Creating an Integrated Pest Management (IPM) and Crop Protection system will be realized through several steps under the NARP.

1. Short and long-term technical assistance in areas needed and recognized by MOA
2. Short and long-term participant training on the subject of IPM and Crop Protection
3. An updated information distribution network will be created to provide access to applied research, conferences and workshops on the subject.

Policy Issues

It is the responsibility of the ARC to secure ways to provide proven successful pesticides and pest control techniques to the farmers, which help them achieve production increases.

New pesticides and new pest control techniques will be tested in technology packages developed for research and demonstration purposes during project implementation.

COMPONENTS

	Page
A. Data Collection	1
B. Information Utilization and Dissemination	15
C. Seed Production	21
D. Applied Research Grants	27

DATA COLLECTION AND ANALYSIS COMPONENT

I. Background

The problem which will be addressed by this project component is the lack of a thorough and systematic analysis of economic issues and identification of agricultural growth opportunities and the actions which will be necessary to sustain long run growth. A system needs to be further developed to continuously analyze changing consumption requirements and production possibilities. While there are clearly identified technological and economic potentials in field crops which can now be exploited, there are continuing needs to evaluate the economics of other production potentials within the total cropping and livestock patterns. Marketing issues for inputs and products also need to be addressed.

II. Purpose and Level

The purpose of this component is to further develop the MOA's system of crop reporting and its capability for economic and policy analysis. The goal is to consolidate, continue and expand improvements effected under the Data Collection and Analysis Project (0142) and the policy analysis component of the Agricultural Development Systems Project (0042).

III. Rationale

Government interventions of the past several decades have created a mixed market orientation for agriculture. There are the relatively free livestock and horticultural sectors coupled with a set of government administered prices and controls part offset by heavy government subsidies for irrigation, fertilizer, farm credit and diesel fuel. In return for these subsidized inputs, the farm prices of cotton, wheat and rice have been controlled at less than international levels. Various food prices are subsidized at the consumer level, particularly bread, rice, sugar, cooking oil, tea and meat. In addition to direct food subsidies, the government also maintains a large import program for poultry and cattle feed, for wheat and wheat flour, for meat, milk and dairy products. Temperate fruit is also imported, as are oilseeds and sugar.

The policy of providing essentially low cost food to consumers has become an institutionalized fact of social/political life in Egypt. Rural and farm families also benefit from these programs (as they do from subsidized

production inputs). "Expert" studies conclude that productivity can be increased under open market pricing. Under this scenario, there would obviously be price increases for the subsidized staples and perhaps lower prices for some items such as milk, meat and poultry products which receive a degree of protection through restriction on imports.

In the case of any country with a large and growing food deficit, there is an added burden to provide sector-wide analysis for both the agricultural production and consumption sectors. For example, Egypt has historically had a comparative advantage in production of long staple cotton. Whether this crop - with its very long growing season - will remain a prime crop is a classic example of the need for analysis.

The point to all of the above is that there is the usual need for agricultural economists and crop and livestock experts to provide farm management information to producers. A very large set of direct market intervention exists, as well as regulatory decrees which affect resource allocations in one way or another. These also need to be analyzed as they affect productivity.

In recognition of the important role of economic analysis, the Ministry of Agriculture (MOA) has two primary units which address the problem. These units are the Agricultural Economics Research Institute (AERI), a part of the Agricultural Research Center, and the second is the Office of the Undersecretary for Agricultural Economics, a part of the central MOA structure.

AERI is primarily responsible for agricultural economic analysis and the MOA unit is primarily responsible for data collection, the agricultural census and foreign market studies. The relation between the two organizations is analogous to that between the Statistical Reporting Service and the Economic Research Service of the USDA. The former collects the data with field enumerators, and the latter performs policy analysis with the data.

IV. Program Description

This component has been designed taken into account the steps previously taken to improve the data collection and analysis capability within the Ministry of Agriculture. Principal activities under the proposed program will be:

142

1. Agricultural Data Management.

This component will improve the system of collection, processing, storage, retrieval and dissemination of needed agricultural and food consumption data. This component will:

(a) Continue to refine crop yield estimates, area estimates of land in various uses and publish general production statistics.

(b) Continue to establish sampling frames for both routine and special studies on such items as farm input use, food consumption, income, farm labor, and marketing surveys.

(c) Refine national agricultural income estimates (particularly the livestock production and feed accounts).

(d) Refine short-term policy analysis.

2. Agricultural and Food Issues Policy Analysis

This component will improve the economic and farm management requirements of NARP, the analysis of alternative economic policies and supporting information necessary to meet the objectives of the Agricultural Development Plan. Based upon data collected in the improved crop reporting system described above, the component will produce the following studies:

- a. Costs of production of various crops and livestock
- b. Simple sector modeling--in addition to cropping pattern formulation already being done
- c. Estimates of food consumption requirements
- d. Investigations of effectiveness of existing regulations and government decrees as they promote or inhibit agricultural growth
- e. Alternatives to the existing mix of public sector/private sector roles in the agricultural and food sector
- f. Synthesis and up-date, where necessary, the policy studies produced under the Agricultural Development Systems Project (0041).

V. Project Inputs for Data Collection and Analysis Component

The location of the component will be the offices of the Undersecretary for Agricultural Economics and the Agricultural Economics Research Institute of the ARC, which both share office space and personnel in the central Ministry building.

1. Technical Assistance

It is planned that U.S. technical assistance will be provided through a series of contractual arrangements drawing on experience gained under the existing data collection and analysis project. These are:

(a) A PASA arrangement for assistance in data processing and related services with the Undersecretariat

Long term technical assistance (6.5 person years) and a considerable amount of short-term technical assistance (164 person months) in data collection, processing, dissemination and analysis. A USDA/PASA arrangement has been in place for technical assistance in primary data collection, processing and dissemination. This arrangement will be continued under the proposed component. Assistance will also be provided in processing trainees for the overall component and bringing in specialists (not otherwise provided for) in economic analysis. The arrangement would provide a long term technical expert to give advice on the data collection set of responsibilities and to provide administrative support, as required.

There are certain short-term personnel assignments, equipment procurements, and technical implementation assignments that correspond with strong capabilities in the private sector. These aspects of the project will be advertised and contracted by USDA to the most highly qualified responding persons, firms and organizations.

(b) An institutional technical assistance contract with the AERI

This might be a university, or private firm, or a joint venture. This institution will provide expert assistance (82 person months) not readily available from the data collection contractor and primarily for the policy analysis services. This contract would provide access to private sector consultants, agribusiness firms or specialists from Egypt or third countries.

The contractor will assist the AERI to meet long-term research needs for agricultural policy and food consumption. The contractor will also assist the professional development of Egyptian agricultural economists, both within the MOA and the Egyptian Universities, as well as the Ministries of Investment, Supply, Planning and Economy, through the vehicle of collaborative research by US and Egyptian agricultural

economists, by some post-doctoral training, informal training by a series of seminars, short-term visits to U.S. Universities, practical training workshops, and so forth.

2. Commodities

Most project commodities will be procured by the MOA utilizing AID procurement procedures established in handbook 11. Specialized data processing commodities will be procured by the contractor(s). Prior AID approval will be required for all procurements and awards in excess of \$50,000 or the Egyptian pound equivalent. Contracting procedures will also be approved by AID for those host country procurements of either goods or services in excess of \$10,000.

3. Training

Arrangements for offshore training will be the responsibility of both contractors in collaboration with USAID. The training activities would be carried out by universities, USDA or the private sector as appropriate and decided upon by the component managers. In-country training will be coordinated by the MOA through appropriate existing training facilities, e.g. CAMD, AMRI and NRI in collaboration with the technical assistance contractors. Disbursement will also be the subject of a condition precedent in the Grant Agreement, in order to assure development of effective training plans. Funds for in-country training will be released directly to the MOA on the basis of agreed upon training plans.

VI. Responsibilities

1. Specified AID Responsibilities

The USAID/Egypt Associate Director for Agriculture or his designee, will have AID management responsibility. Day-to-day monitoring will be performed by an appointed USAID Project Officer. Project implementation plans, and annually up-dated plans, prepared by MOA, and contractor staff will facilitate management and monitoring. Technical backstopping will be provided by the USAID, the Project Officer and other USAID offices as required.

2. GOE Responsibilities

The MOA will be responsible for making necessary internal organizational adjustments for the component to allow the data collection assistance and economic advisory assistance to be carried out and to set up the channels for their effective

145

use. This will include arranging for cooperative efforts with individuals or groups outside the MOA, and particularly with the Agricultural Research Center.

The MOA will carry out its role through the cooperative efforts of the Undersecretary for Agricultural Economics and Statistics and the Agricultural Economics Research Institute (AERI). These units will have the direct responsibility for data management and economic analysis. Specifically they will (a) develop implementation plans for the project component; (2) fully implement the data collection activities and economic analysis and policy/planning work; (c) maintain necessary records; (d) arrange for the procurement of certain commodities; (e) identify training participants and (f) monitor and assist in evaluating their own and NARP project activities. In addition, the groups designated, will establish and maintain channels of communication with USAID/Egypt.

3. USDA Responsibilities (FASA)

Under a seven year FASA, USDA will be responsible for providing short-term expertise on a regular basis and one resident expert to enable the development of a more comprehensive and effective data collection, processing, storage, retrieval and dissemination effort. This will involve preparation, with the MOA, of a schedule of activities and assistance to implement these activities as well as overall guidance on agricultural statistics programs and, as requested by MCA, on project monitoring activities. USDA will also assist in the implementing of a training program for Egyptian personnel in this area. This will include both degree and non-degree programs and the placement of individuals identified in appropriate institutions. USDA will also procure certain materials not otherwise available in the private sector (objective yield manuals, etc.) and provide short-term consultants in economic analysis.

The long-term individual will provide assistance in Egypt to the MOA, in the area of data collection and the identification of short term consultants needs for this portion of the project, in participant selection and processing and in commodity procurement. The technical specialist will oversee the monitoring and evaluation progress. He or she will also act as the contractor's on-the-ground representative in dealing with AID and the MOA. The specialist will also become substantively involved in the development of scopes of work, preparation of analysis, or in advising on areas of his particular competence and expertise.

4. Technical Services Contractor Responsibilities
(The institutional contract).

The technical services contractor, including any sub-contractors, will be responsible for providing the necessary short-term personnel and training to work on particular areas of immediate policy or planning interest.

In collaboration with the MOA, the contractor will prepare a schedule of assistance, including priorities, and develop scopes of work for short-term contractor personnel. In addition the contractors may provide an Egyptian specialist for policy work. Briefly, this individual will be responsible for stimulating, coordinating and guiding analysis and planning activities with the objective of developing local capabilities. Thus, in addition to being an experienced analyst, the individual must also understand personnel motivation and institutional development techniques. The long term staff member together with other Egyptian professionals will also assist in developing scopes of work for studies. The contractor will also be expected to assist data collection contractor personnel in placing participants in U.S. training facilities.

VII. Project Outputs

1. Agricultural Data Bank. A capacity will be developed to computerize all data for the MOA. This system will be integrated into the other MOA organizations to allow ready access to current agricultural data.

2. Improved Short- and Long-term Agricultural Policy Analysis. Short-term analysis will be carried out by the Undersecretariat using the USDA "Staff Analysis" methods. Most long-term analysis will be carried out by the AERI with assistance from an institutional technical contractor.

3. A program of current, regularly scheduled agricultural statistics. National crop and livestock surveys will be regularly scheduled. Annual surveys which provide the basic crop area estimates will serve as a base for future sub-samples which can be used for objective yield surveys, agricultural inputs and farm labor surveys. Other surveys include: marketing channels; cost of production; farm income; crop forecasting; milk production; and area frame sampling.

4. Expanded data processing capability in MOA. Starting from a base of microcomputers, the MOA will have computer capacity that will allow them to process the data for all national agricultural surveys, handle the requirements for major economic studies and maintain project monitoring and management information.

147

5. Implementation of crop yield modeling. Objective yield surveys provide crop yield information for estimates (at harvest) or forecasts (prior to crop maturity) based directly on counts, measurements, and weights of the crop made from small randomly selected plots in a probability selection of random fields. The system to be improved under this project will vastly increase the reliability of yield estimates for major crops. It will also permit earlier estimates and forecasts of production.

6. Models for analyzing agricultural data. Under the AERI several models will be developed to analyze specific agricultural phenomena or problems. These will be drawn from the studies mandated under the Five-Year Plan or from others as required by the government. In most cases these models will be developed to permit regular (annual, semi-annual) situation reports to be produced.

7. Adapted project monitoring and evaluation systems employed on development projects. The systems designed should permit the MOA to have current status reports on the implementation status of development projects in the agricultural sector. Impact evaluation systems will also be developed.

VIII. Flow of Funds

With respect to flow of funds the economic units will receive their regular budgets in the normal manner. For the incremental funds under this project, either of US origin or Egyptian government funds, the funds will flow to the operating units based upon approved plans of work, budget requests and protocols agreeing to the budget and level of effort.

Justification for PASA (A-76 Determination)

Under Project 0142 there is currently a Participating Agency Service Agreement (PASA) relationship with the Economic Research Service (ERS) and Statistical Research Service (SRS) of the USDA. It is strongly recommended that this relationship be continued under the proposed program.

The United States government has one of the best systems of crop reporting in the world. The needs and functions of a national government crop reporting system--data collection and short-term policy analysis--can neither be met by the private

sector nor the U.S. university system. Few private companies can provide technical assistance for limited areas of expertise e.g. area frame construction, data processing procedures, etc. However, none possess the reputation, the depth, the breadth or the resource capability of the USDA. Hence, they do not have the ability to respond to requests for technical expertise in a variety of subject areas in relative short response times, as is currently done under Project 0142. It is appropriate that the data collection and analysis component be essentially a government to government program. The U.S. university system is oriented towards longer-term policy analyses, which is why it is recommended (above) that an institutional contract, possibly with a US University, be used to provide technical assistance to the AERI. Professional relationships between the USDA and GOE counterpart agencies have grown over the four years of Project 0142 and should continue uninterrupted through the PASA relationship.

Administrative and technical support for USDA personnel is unparalleled by any private or public enterprise worldwide. The USDA can respond quickly to usaid requests with high caliber personnel in any agricultural discipline and in large numbers. This quick responsiveness results from USDA's history of having to respond immediately to urgent production problems caused by new diseases and pests or by improper soil and water management. The USDA supports its personnel with the largest agricultural library and research facilities in the world, through scientific and technical exchanges with scores of bilateral and multilateral agricultural and rural development organizations, and through the resources of land grant universities and state cooperative extension services and experiment stations. USDA provides its staff, and agencies with whom it deals, with comprehensive worldwide and up-to-the-minute coverage of agricultural technologies and development.

For the reasons cited above, it has been determined that the facilities and resources of the USDA are particularly and uniquely suitable for the technical assistance requirements of this activity and not competitive with private enterprise. This is in accordance with HB 12, Section I. B. 2 and controlling OMB circular A-76.

Table 1
Summary AID Costs for
Data Collection and Analysis Component

Year	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>Total</u>
Technical Assistance	740	740	740	740	740	740	550	4,990
Training	357	387	377	367	357	346	171	2,362
Commodities	<u>493</u>	<u>373</u>	<u>122</u>	<u>155</u>	<u>75</u>	<u>55</u>	<u>55</u>	<u>1,328</u>
Total	1590	1500	1239	1262	1172	1141	776	8,680

Excludes inflation and contingencies

Table 2
AID Costs for Technical Assistance
Data Collection and Analysis Component
 (000 dollars)

Year	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>Total</u>
<u>Long Term 1/</u>								
Resident Advisor	200	200	200	200	200	200	100	1,300
<u>Short Term 2/</u>								
Agricultural data management	360	360	360	360	360	360	300	2,460
Policy Analysis	180	180	180	180	180	180	150	1,230
Total	740	740	740	740	740	740	550	4,990

1/ Long term resident \$16,667/month.

2/ Short term TDY \$15,000 person/month.

Based upon Table 3.

Excludes inflation and contingencies.

152

Table 3
Technical Assistance Requirements for
Data Collection and Analysis Component
(person months)

Year	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>Total</u>
<u>Long Term</u>								
Resident Advisor	12	12	12	12	12	12	6	78
<u>Short Term</u>								
Agricultural data management <u>1/</u>	24	24	24	24	24	24	20	164
Policy Analysis <u>2/</u>	12	12	12	12	12	12	10	82

1/ Two person-months per year per each of the following activity areas: computer programming; census sampling; area frame; staff analysis; labor statistics; marketing channels; cost of production; farm income; crop forecasting; objective yield; livestock production; and other.

2/ Twelve persons per year for one month each in activity areas of sector modelling, food consumption, and macro-studies.

51

Table 4
AID Cost of Training Requirements for
Data Collection and Analysis Component
 (000 dollars)

Year	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>Tot.</u>
<u>Analysis</u>								
<u>Staff Analysis (short-term)</u>								
U.S.	18	18	18	18	18	18	9	117
In-country	45	45	45	45	45	45	30	300
Post Doctoral	0	20	20	20	20	0	0	80
Cost of Production (Horticulture)	18	18	18	18	18	18	5	113
<u>Statistics</u>								
U.S. Academic (continuing)	20	20	20	0	0	0	0	61
Objective Yield Forecasting	10	10	10	10	10	10	5	66
Farm Income	18	18	18	18	18	18	5	113
Oasis	72	72	72	72	72	72	45	477
In-Country	36	36	36	36	36	36	18	234
<u>Auto. Data Processing</u>								
In-Country (Academic)	3	3	3	3	3	3	1	19
U.S. Academic Short Course	61	61	61	61	61	61	31	398
Non-Academic Short Term	54	54	54	54	54	54	23	347
<u>Conferences</u>								
	0	10	0	10	0	10	0	30
<u>Publication Prizes</u>								
	<u>1</u>	<u>7</u>						
Total	357	387	377	367	357	346	171	2362

Source: Table 5

Assumed monthly costs are the following:

- Ph.D. doctoral training = \$1,700/month
- short courses = \$3,400/month
- observational on-hand training = \$4,500/month
- in-country = \$3,000/month
- in-country academic = \$500/month

Based upon Table 5

Excludes inflation and contingencies.

152

Table 5
Training Requirements for
Data Collection and Analysis Component
 (person months)

Year	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>Total</u>
<u>Analysis</u>								
Staff Analysis (short-term)								
U.S.	4	4	4	4	4	4	2	26
In-country	15	15	15	15	15	15	10	100
Post Doctoral	0	12	12	12	12	0	4	52
Cost of Production (Hort.)	4	4	4	4	4	4	1	25
<u>Statistics</u>								
U.S. Academic (continuing)	12	12	12	0	0	0	0	36
Objective Yield Forecasting	6	6	6	6	6	6	3	39
Farm Income	4	4	4	4	4	4	1	25
Other <u>1/</u>	16	16	16	16	16	16	10	106
In-Country	12	12	12	12	12	12	6	78
<u>Auto. Data Processing</u>								
In-Country (Academic)	6	6	6	6	6	6	2	38
U.S. Academic Short Course	18	18	18	18	18	18	9	117
Non-Academic Short Term	<u>12</u>	<u>12</u>	<u>12</u>	<u>12</u>	<u>12</u>	<u>12</u>	<u>5</u>	<u>77</u>
Total	109	121	121	109	109	97	49	719

1/ 2 person-months in U.S. each for census, area frame, labor statistics, marketing, crop forecasting, livestock and others.

153

Table 6
AID Costs for Commodities Under
Data Collection and Analysis Component
 (000 dollars)

Year	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>Total</u>
ADP Equipment <u>1/</u>	200	200	0	0	0	0	0	400
Software Purchase	100	0	0	100	0	0	0	200
Maintenance	50	50	50	50	50	50	50	350
Operating Supplies	5	5	5	5	5	5	5	35
Textbooks, course materials, pamphlets, etc.	50	50	50	0	0	0	0	150
Vehicles (9) <u>1/</u>	68	68	17	0	0	0	0	153
Copying Machines <u>1/</u>	20	0	0	0	20	0	0	40
	493	373	122	155	75	55	55	1,328

1/ ADP equipment, software maintenance and operating supplies to complement installation of minicomputer currently being carried out under Project 0142. Based upon cost estimates in T. Sturdevant, "Justification and Cost Projection for ADP Acquisition", Agriculture Data Collection and Analysis Project, May 29, 1985.

Vehicles \$17,000/each
 Copying Machines \$ 5,000/each.

Excludes inflation and contingencies.

154

INFORMATION UTILIZATION AND DISSEMINATION COMPONENT

I. Background

A plethora of agricultural, and agriculturally related libraries exist in Egypt. There are at least 33 libraries and documentation centers serving agriculture and related sciences. Many are poorly organized, badly housed, and lack proper equipment and collections. In many cases the staffs are not trained in library management techniques and few libraries have modern equipment such as microfilm or microfiche.

In 1980, a team from the Agricultural Development Systems Project spent a month visiting these 33 libraries ranging from the National Library and the National Information and Documentation Center to the smallest specialized library. Their recommendations are summarized in this paper.

II. Statement of the Problem

The lack of adequate library services for agricultural material hampers the research of agricultural scientists and the training of agricultural students in Egypt. Insufficient organization of existing material prevents many governmental officials from making the best use of these materials. Extension personnel, particularly those in the field, have little or no access to documents and references necessary for their job.

The Ministry of Agriculture's own library and documentation services are administratively and physically fragmented; complicating the problem and setting a style that is replicated in other, more specialized collections in the country. In addition, funds for journals and books have been drastically cut in recent years. For instance, no funds have been received for journals in the Ministry's Central Library and the various branches since 1974. As a result, library use has dwindled dramatically.

Agricultural researchers, students, and professionals need quick access to agricultural information. A National Agricultural Library (NAL) should be established to serve as the central unit for agricultural information utilization and dissemination.

The information needs of agricultural personnel may be summarized as follows; it is obvious that the heaviest users of

155

agricultural literature are the agricultural research scientists, particularly those working on basic scientific problems. In this respect, their needs are not very different from their colleagues working in the natural sciences. For this reason a special effort should be made to develop an adequate central literature collection in the basic scientific disciplines as well as agriculture and to make library services accessible to research scientists. Those items most frequently used should be duplicated in satellite units. It is necessary to disseminate information to extension workers at widely scattered locations. This might be achieved through regular circulation of small mobile collections to field personnel.

III. Purpose

To establish a National Agricultural Library and Technical Information Service.

The chief purpose of the service will be to support the work of the staff of the Ministry of Agriculture and others working in agriculture in Egypt. It should be the central unit of a network of agricultural libraries and technical information centers in Egypt. It should be an active information service rather than an older passive type library organization.

The information service should be immediately adaptable to the requirements of the organization of which it is a part and should use the best and most modern techniques. It should provide a full range of services--access to library collections, listing and indexing of important material, information retrieval services, audio visual equipment, and other services as the need develops.

Project Inputs for Information Utilization and Dissemination Component

The project will provide funds and resources for this component as follows (see Table 1 for summary of costs).

- (1) Five years of long-term technical assistance and 10 months of specialized short term technical assistance.
- (2) Thirty-two years of degree training in library science; 16 months of short term U. S. training and an array of in-country seminars and short courses
- (3) Refurnishing and equipping both the National Agricultural Library and satellite units.
- (4) Mobile information units to making material available to agricultural workers and MOA staff.

- (5) Computers and programs for data searches.
- (6) Photo copying, printing and audio visual equipment to facilitate information dissemination on a nation-wide scale.

National Agricultural Library Outputs

IV. Project Outputs for Information Utilization and Dissemination Component

A functioning library system, with an updated catalog and classification system will be established to provide ready access to technical information. Mobile units and satellite libraries will be organized in such a way as to provide information services to users nation-wide.

The National Agricultural Library will provide administration and coordination for a national agriculture information dissemination program. Specifically, the National Agriculture Library will establish and maintain information and reference services, bibliographic and indexing services, loan and photocopying services, technical services, and systems and automation services. Mass media programs will be designed to present farmers with information on new technologies and their application.

Specific tasks of the NAL would include:

Administrative and Coordinative: The NAL and technical information service should be given the authority and responsibility to coordinate the activities of all library and documentation centers in the Ministry of Agriculture and to supervise their organization and staffing. Agreement between agricultural colleges and other institutions outside the Ministry of Agriculture with the National Agricultural Library and Technical Information Service will permit the coordination and joint sharing of services. Such a network arrangement should greatly improve the potential for the dissemination of agricultural information.

Informational and Reference Services: The center should be a central source for Agriculture information available in printed literature and in other material. Some of the tasks are already performed, however, a more coordinated approach would make it possible to extend and improve services.

Bibliographical and Indexing Services: This would involve the preparation of bibliographies from machine-readable data banks and from conventional printed sources. As a rule,

157

bibliographies listing material published from the 1970's (when many data banks such as AGRICCLA, CAB, and BIOSIS were started) to date would be computer-generated. This type of service is currently available through EDICA. Such bibliography searches would either be prepared regularly for individual researchers based on profiles of their current research interests (SDI or Selective Dissemination of Information) or on specific demand. The preparation of indexes, such as Egyptagri, concerning Egyptian agricultural literature now handled most ably by EDICA, would presumably be continued if EDICA becomes a part of a larger unit.

Additional bibliographies on topics of current interest to Egyptian agriculture should be prepared and be published and distributed as needed. The preparation of lists of recent accessions and union lists (now prepared by the Central Library) should be considered a part of the normal work load. Arrangements should also be made for the distribution of "current contents" lists which usually consist of photocopies of the title pages of current journals received. This might best be done through cooperation with NIDOC or by subscribing to and distributing multiple copies of Current Contents publications issued by ISI - International Scientific Service.

A printed description and analysis of current agricultural experimental work and new projects in the planning stage in Egypt should also be prepared by this unit.

Reference Services: This service involves obtaining needed facts and information from printed and other sources such as certain computer-generated data bases. This is a part of normal service in most modern libraries and is usually handled by a "reference" department staffed by librarians trained in appropriate disciplines. It might include obtaining statistical data about crop production, biographies and literature searches, the boiling point of a liquid, a formula for pesticide, the name and address of a specialist in a certain field, or the name of a botanical garden where rare seeds can be obtained. To obtain this information for its clientele, the "reference" staff would depend on its own collections and would also access the resources of other libraries and agencies such as NIDOC.

Loan and Photocopying Services: This activity involves the maintenance and servicing of all collections in the NAL. It will include the location of items wanted by the clientele

and the lending of the material itself or photocopies of it. The inter-library loan, if it can be developed in Egypt, involves the loan of material to other institutions in Egypt and abroad and the borrowing of items from them. A photocopying and photographic laboratory should be a key factor in the loan service. It should have the best equipment available and should be operated by a technician.

Technical Services: This involves the selection, acquisition, cataloging, and organization of material for use. The preparation of catalogs listing material by author, subject, and title is a major assignment. Such catalogs might eventually be in machine readable form i.e, "bar-code." Internationally accepted standards for cataloging and classification should be used. Employment of the Anglo-American cataloging code and either the Universal Decimal, the Dewey Decimal, or the Library of Congress Classification System is recommended. The coordination of cataloging activities with NIDOC, The Cairo University Library, and perhaps the National Library should be carefully considered so as to cut back on duplication of effort.

Systems and Automation Service: This service should involve a trained systems analyst, a programmer, and key punch operators plus the necessary machinery to permit the automation of routine record keeping for loan, acquisitions, and cataloging work and the transfer to machine readable form of information about the various collections. It is recommended, however, that detailed plans for such a unit not be considered until a later date, after normal and standard library and documentation services have been established.

Staff and Training Needs

Training - Eight B.Sc. holders will be trained in the U.S. to the M.S. level in Library Science, technology transfer, and Mass Media.

Two months of short-term training at the U.S. National Agriculture Library at Beltsville, Maryland will be available for another eight Egyptian librarians.

A wide range of seminars and in-service courses will be offered to library staff, MOA personnel and other information users. Course content will focus on computer usage for data retrieval, mass media techniques, information dissemination and technology transfer techniques and related topics. Ten months of short-term TA will provide the flexibility to design courses and seminars based on user needs.

Staffing - A short-term Information Systems Specialist with previous experience developing document services and systems will be brought in to determine hardware needs (computer, data filing and retrieval equipment, microformat equipment, etc.) and provide sufficient technical specifications to initiate purchase orders.

A long-term (approximately 5 years) Library Systems Specialist will be contracted to work directly with the library staff establishing the computer system, supervising the installation of equipment, setting up seminars or short courses on equipment use, and accessing materials for library staff and extension trainers, and establishing links with the University of Cairo Library Science Dept.

Various short-term specialists will be used to assist with the library, mass media, and related areas.

National Agricultural Library Budget is as follows:

Item	Totals (in "000's")
1) Technical Assistance (Long-term, Short-term)	1,150
2) Training (degree, in-country)	1,000
3) Construction (upgrading and refurnishing facilities)	1,500
4) Commodities (equipment, furnishings, acquisitions)	3,000
6) Services (printing, media)	1,500
Total	8,150

Seed Production Component

Background

Deficiencies in the seed production and supply systems have been spotlighted as constraints on crop production and agricultural development in numerous studies and reports on the agricultural sector in recent years. Projects that evolved out of these studies generally included some resources for improvements of seed production and supply. The seed constraint was most recently highlighted in the IADS Report and the appraisal report of the World Bank's Second Agricultural Development project.

Purpose and Goal

The purpose of this component is to assure adequate supplies of seeds. The goal is to consolidate, continue and expand improvements initiated and effected under previous projects and to integrate these and complementary measures to be taken in concurrent projects (World Bank, IFAD) into a responsible seed program/industry fully adequate for agricultural production and development well into the future.

Rationale

The adverse effects of late plantings, poor emergence, varietal impurities, seedborne diseases and weeds on crop yields, have been well established. Major causes of these situations are untimely seed supply and poor quality seed. Experiences in most developing countries indicate that seed supplies sufficient for planting 25 - 33 percent of area in crops under improvement are adequately supportive (i.e. seed resupply to farmers every three to four plantings). Egyptian agriculture, however, is not characteristic of that found in most developing countries; rather, it is representative of elite but limited, fully irrigated arid areas where conditions permit and support a very intensive, high yielding crop agriculture. Under these conditions productivity demands are placed on the biological "systems" in crop plant populations that can only be met through elimination or at least minimization of limiting factors. In Egypt, therefore, a much higher order of seed supplies of major crops (70 - 100 percent) will be needed to support the thrust of current strategies for development.

Previous Steps and Pending Measures

This seed component has been designed taking into account the steps previously taken to improve seed production and

supply and measures that will be taken under projects by others concurrently with this project. These can be summarized as follows.

(a) Encouragement of private sector participation in the production and supply of hybrid, vegetable and forage crop seeds and its rapid emergence following suspension of maize and sorghum seed production in the public sector.

(b) Improvements in foundation and registered seed production and supply and establishment of five major seed processing centers.

(c) The establishment of a large seed processing/storage center (Tanta) and refurbishment and re-equipping of two of the three major seed testing stations (Giza and Tanta) under the World Bank financed Second Agricultural Development Project to come on-stream in 1986.

(d) The programmed establishment of a seed processing center and renovation of the Minya seed testing station under the Minya Agricultural Development Project (IFAD).

Project Inputs for Seed Component

The project would provide funds and resources for the seed component as follows (see Table 1 for summary of costs):

- (1) Long term technical assistance and (5 person years) specialized short term technical assistance.
- (2) Degree training in seed technology: (14 person years) short term training off-shore; post doctoral training for seed researchers (2 years); and a wide array of periodic in-country training courses.
- (3) Seed receiving facilities and storage for the four seed plants constructed under the Major Cereals Project (0070) operational capacity.
- (4) Construction and equipping of three new seed processing/storage centers to replace some of the remaining antiquated, worn-out seed facilities (probable location in Kafr El Sheikh, El Mansura and Middle Egypt).
- (5) Construction of two satellite seed testing centers with probable location in Kafr El Sheikh and Zagazig.
- (6) Trucks to permit expeditious lifting of raw seeds from contract seed producers, and pick-ups/motorcycles to mobilize field inspectors and supervisors and improve certification procedures.
- (7) Modest research grants to selected universities and seed production firms for collaborative research to resolve seed quality problems and identify needed improvements.

Outputs of Project Component

The major outputs of project activities would be: an improved organizational structure for seed production and control in ARC; more active participation of the private sector in suitable areas, i.e. hybrids, vegetables, forages; a corps of trained seed technologists and an established in-country seed training capacity; facilities to produce, process, store and test ample quantities of seed of major crops; timely supplies of good quality seeds of major crops sufficient for planting 70 to 100 percent of area in crops; research information to permit resolution of outstanding seed problems and further improvements in seed quality.

Private Sector Participation

Policy decisions by the MOA favorable for private sector participation in seed production and supply have resulted in the emergence of several private seed companies for production/supply of maize and sorghum seeds with growing attention to forage and vegetable seeds as well. These developments have been greatly aided and abetted by MOA action several years ago suspending production of "certified" maize and sorghum seeds by the public sector (i.e., CAS). The probability is now very high that given a continuation of favorable MOA policy and technical assistance in form of training opportunities and technical advice, the private sector seed companies will produce all the maize and sorghum seeds (mostly hybrid), and most of the forage and vegetable seeds needed in Egypt.

This component would provide technical assistance and training opportunities to private seed companies and encourage by all means even more favorable policies for private sector operations in the input supply system in coordination and harmony with the private sector initiatives. It should be recognized, however, that private sector involvement in the production and supply of seeds of self-pollinated crops such as wheat, barley, rice and fava bean is highly improbable. There is simply no opportunity for profitable operations based on these kinds of seeds in the context of small farms, price and planting controls and lack of plant variety protection laws that characterize the agricultural economies of most developing countries. Thus, seeds of these important crops will have to be supplied by the public sector for the foreseeable future.

Policy issues

The main policy issues that will be addressed prior to and during implementation include:

- (1) Need for a clear separation of seed certification responsibilities and operations from production and processing so that the certification group will not be put in a position to certify its own works.
- (2) Assignment of clear responsibilities for foundation seed production, and for production, processing and storage of registered and certified seeds. The present dispersal of the control of seed testing and processing facilities among CAS, Egyptian Agriculture Organization, and more recently, ARC, needs to be discontinued and facilities/resources concentrated in one agency.
- (3) Need to revise policies so as to facilitate the introduction of crop breeding lines into Egypt by private companies under secure conditions.

Benefit and Beneficiaries

The benefits of the seed component are these: yield improvements on order of 10 percent due to improved seed quality alone; capability for rapid change of varieties that need to be withdrawn due to serious disease epidemics (e.g. the Reiho rice variety); a capability for the orderly and periodic change of varieties vital in modern agriculture. The beneficiaries will be the farmers and their families.

Table 1

NARP Project Seeds Component: Summary of Costs (\$ 000)

Item	Totals	P r o j e c t Y e a r s				
		1	2	3	4	5
1. Technical Assistance	<u>1240.0</u>	<u>272.0</u>	<u>260.0</u>	<u>248.0</u>	<u>236.0</u>	<u>224.0</u>
Long Term	(1000.0)	(200.0)	(200.0)	(200.0)	(200.0)	(200.0)
Short Term	(240.0)	(72.0)	(60.0)	(48.0)	(36.0)	(24.0)
2. Training (degree, non-degree, in-country)	<u>565.0</u>	<u>112.0</u>	<u>179.0</u>	<u>147.0</u>	<u>88.0</u>	<u>39.0</u>
3. Construction (plants, storage, labs, offices)	<u>3251.0</u>	<u>800.0</u>	<u>1564.0</u>	<u>887.0</u>		
4. Commodities	<u>4240.0</u>	<u>611.0</u>	<u>2510.0</u>	<u>1119.0</u>		
-Seed Equipment	(3490.0)	(428.0)	(2013.0)	(1049.0)		
-Furnishings	(170.0)		(100.0)	(70.0)		
-Vehicles	(580.0)	(183.0)	(397.0)			
5. Materials (fuel, seed treatments)	<u>600.0</u>	<u>46.0</u>	<u>116.0</u>	<u>146.0</u>	<u>146.0</u>	<u>146.0</u>
6. Services (University Grants)	<u>670.0</u>	<u>130.0</u>	<u>135.0</u>	<u>135.0</u>	<u>135.0</u>	<u>135.0</u>
	(320.0)	(80.0)	(60.0)	(60.0)	(60.0)	(60.0)
Totals	10,566.0	1971.0	4764.0	2682.0	605.0	544.0

105

Table 2

Projected seed supplies required to support the production campaigns for target and selected high value crops and are agricultural development in general.

Crop Kind	Area Planted FD (000)	Present Seeding Rate KG/FD	Total Seed Needs MT (000)	Seed Supply Targets %	Seed Supply Targets MT (000)	New Seeding Rate KG/FD*	Seed Supplies Needed MT (000)
<u>Winter Season Crops</u>							
Wheat	1,400	70	98.0	70	68.6	60	58.8
Barley	350	70	24.5	70	17.1	60	14.7
Fava Bean	300	66	19.8	70	13.9	66	13.8
Lentils	20	80	1.6	70	1.0	70	1.0
Onions**	20	70	1.1	100	1.1	70	1.1
Misc.			<u>5.0</u>	<u>50</u>	<u>2.5</u>	—	<u>2.5</u>
Subtotals			150.0		104.2		88.3
<u>Summer Season Crops</u>							
Maize**	1,850	15	27.8	100	27.8	12	22.2
Rice	1,100	60	66.0	70	46.2	40	30.8
Soybean	150	40	6.0	100	6.0	30	4.5
Sorghum**	425	10	4.2	100	4.2	10	4.2
Misc.			<u>5.0</u>		<u>5.0</u>		<u>5.0</u>
Subtotals			109.0		89.2		66.7
Totals			<u>259.0</u>		<u>193.4</u>		<u>155.0</u>

*Estimated seeding rates with new production technology and better quality seed.

** Maize, sorghum and onion seed will be produced by private sector except for breeder and basic (or parental line) seeds as needed.

Applied Research Grants

Background

Through earlier agricultural projects funded by USAID, several university grants were provided to tie research at universities to that conducted at the ARC research stations. The purpose of these grants was to focus all research on MOA's priority areas.

The ARC wishes to establish linkages between Egyptian universities and those U.S. universities, international applied research centers and selected foreign private sector companies that are involved in relevant applied agricultural research. To address this need, the NARP will support a limited grant program, so that significant research proposals concerning varietal resistance enhancement, improved animal food rations, pesticides, herbicides, plant genetics, etc., can be funded. The ARC will implement this program in a manner similar to that used in the EMCIP Project.

Research proposals submitted by the universities or private sector companies will be reviewed by a joint committee appointed by the ARC. This committee will have adequate representation from the university community. The proposal will be reviewed for its relevance to Egyptian agricultural needs, its relevance to the Ministry's Five Year Development Plan; unnecessary duplication will be avoided. All decisions on levels of funding for approved research proposals will be made by the joint committee.

Objectives:

The objectives of this element of the project will be:

(1) to enhance the flow of information and data on relevant applied research between Egyptian scientists and other international scientific bodies;

(2) to strengthen the linkage between the ARC, Egyptian universities, U.S. universities, international agricultural research centers and private sector companies doing relevant research in agriculture that is applicable to Egyptian agricultural needs; and

(3) to provide a mechanism that will foster closer exchanges between Egyptian scientists and other experts, directed towards solving common or similar agricultural problems.

Outputs

The outputs expected from the Grant program in the NARP are:

- (1) Increased collaboration, reduced duplication of activities among scientists affiliated with research organizations not under the jurisdiction of the ARC;
- (2) better data on which agricultural policy can be formulated;
- (3) the development of a strong data base for economic forecasting on critical factors that influence agricultural production in Egypt;
- (4) the provision of a forum at which Egyptian scientists can exchange views on common or similar agronomic problems with international experts; and
- (5) the exchange of applied research technology.

Budgetary Requirements:

The amount of \$22.0 million will be required for this element of the NARP. It is anticipated that as much as up to \$7 million may be available for private sector participation.

168

ANNEX 10

MAJOR INPUTS

	Page
A. Technical Assistance	1
B. Training	11

TECHNICAL ASSISTANCE

The technical assistance (TA) provided by USAID to the Agricultural Research Center (ARC) of the MOA will consist of 12 long-term personnel for a total of 65.5 person months and 450 person months of short-term assistance over seven years.

I. Long Term Technical Assistance

The long term technical personnel to assist the Ministry of Agriculture and the Agricultural Research Center are listed in the attachment.

All long term personnel will be provided through direct contracts. The ARC, in collaboration with the MOA and USAID/CAIRO, will select the long-term personnel. Long-term personnel for private sector development will be provided through individual personal service contracts by USAID in collaboration with the MOA.

The Contractor will serve as coordinator for long as well as short-term personnel in the U.S.

All long-term personnel are expected to possess the following general qualifications and experiences:

- a. Broad skills and experience in systems organization and program management in their professional fields.
- b. A strong technical background is important, but all personnel should have practical experience in applied research, in training, and in managing large research programs or projects.
- c. Proven ability to work with many individuals and types of institutions; with management and technicians; and in the office and field is essential.
- d. Work experience in a developing Arab country is preferred; work experience in commercial agriculture is also preferred.
- e. A Ph.D. in an applied agricultural science is preferred; a M.Sc. in an applied agricultural science is acceptable for certain positions if the incumbent has sufficient experience.

Brief descriptions of the general responsibilities and line authority for each long-term TA is provided:

1. Chief of Party, NARP, This is the project administrator responsible to the Contractor, to the ARC, and to USAID for: short and long term TA; budget; procurement; planning; reporting; coordinating; and monitoring the project activities. The Chief-of-Party(COP) is responsible for ensuring that all project activities conform to the Contract, Workplan, and USAID and GOE statutes and regulations. This person will work closely with the Director of the ARC.

The COP will assist the ARC Director in establishing an efficient central administrative and financial management system through various internal studies and inservice management training courses for senior ARC and other GOE administrators connected with agriculture. Previous experience in agricultural research, extension, and commercial farming or agri-related industries is highly desirable. This Coordinator should possess a strong academic background and numerous successful consultancies in organizational development; and/or experience as a senior manager for an agricultural firm. The use of short-term TA by the COP and the ARC Director to conduct some of the management functions listed above is acceptable.

2. Financial/Business Manager. The Financial/Business Manager will assist the Deputy Director for Administrative Affairs of the ARC develop and implement an accounting control system that includes the following elements: inventory control; budgeting and forecasting procedures; procurement procedures; and a coordinated system for tracking expenditures. The Manager will assist the ARC in developing a decentralized accounting and budgeting system, working with the Research Station Directors and Accountants. The Manager will serve as the financial liaison officer between the ARC and USAID/CAIRO. The Manager will collaborate with the Deputy Director of the ARC in preparing and utilizing an Accounting Guidelines Manual for use by the ARC in working with USAID and other donors.

The incumbent for this position should have extensive controlling and accounting experience with agricultural projects in developing countries. He should possess

knowledge of USAID accounting procedures and standard accounting procedures. A degree in accounting is required. The ability to speak Arabic and read Arabic financial statements is desirable, but not required.

3. Field Research Systems Coordinator. This person is responsible for coordinating all basic, applied, and adaptive research activities of NARF and assisting the ARC and other pertinent GOE research organizations in planning, implementing, and monitoring field research programs. Principal responsibility includes assisting the ARC in its mission to strengthen the management and coordination of the research systems in Egypt towards redirecting research to increase agricultural production. A principal task will be to assist the ARC and the MOA establish seven effective Regional Research Committees. These Committees will link on-station research with field demonstrations and also communicate information back to the MOA and the ARC that will guide policy-makers and key research managers.

This Coordinator will work directly with the Directors of ARC Research Institutes; various GCE Ministries that conduct agricultural research projects; the Applied Research Grants Program; The Academy of Scientific Research and Technology; other GOE committees and advisory groups involved with agricultural field research in Egypt; and, other donors conducting agricultural field research in Egypt.

4. Multidisciplinary Research Systems Coordinator. This person will assist the ARC in developing a system to recruit, train, and coordinate multidisciplinary research teams from the ARC Research Institutes and universities at the regional and central levels.

Sixteen National Research Programs (e.g., the National Rice Improvement Program) requiring multidisciplinary research to develop and improve technical packages have been identified by the Director of the ARC. The Coordinator will develop the system for multidisciplinary research teams to serve the National Research Programs. The goal is to improve the collaboration and quality of basic, applied and adaptive research that occurs in the ARC.

The person nominated for this position should have a strong background in applied, interdisciplinary research that is production oriented. A Ph.D. in an applied agricultural science is required.

5. Demonstration Training Coordinator(s). Two Coordinators will assist the ARC in planning, implementing, and evaluating the use of technical packages in demonstration blocks. The Coordinators work in the field approximately one-half time. They will assist in mobilizing the research program resources for demonstrations on farmers fields. Demonstration activities center around deployment of the technical package for different crop and livestock enterprises. Regular activities would include: amassing inputs for the technical packages; coordinating the media campaign; recruiting and selecting cooperating farmers; and, training the Subject Matter Specialists. Their work will involve inter-ministerial coordination in the field; strengthening management in the public sector input supply organizations; involvement of private businesses in agricultural development; and, soliciting the advice and consent of various government officials at the governorate, district, and local levels.

Persons nominated for Demonstration Training Coordinator must have a strong technical background in applied and adaptive research. They must also possess commercial farming or agri-industry experience, which must include management responsibilities of substantial field operations. Persons nominated for these positions should realize that working conditions will be arduous, requiring long hours. Patience and skill in negotiation and ingenuity in dealing with people at different levels are mandatory qualifications.

6. Research Station Coordinator. This person will assist the ARC in strengthening the management of 31 Research Stations and 41 Production Farms located in 7 regions throughout Egypt. Primary activities will include coordinating the improvement of research station facilities, management, procedures, and training. The Research Station Coordinator will assist the ARC in developing a Training Plan for each Research Station and Production Farm which includes the efficient use and scheduled maintenance of station facilities and equipment. The Coordinator will also work with the ARC

and Directors of the Research Stations in developing inventory control and cost accounting systems for reporting and budgeting purposes. Field work and in-country travel is required. Extensive research station management experience, which includes knowledge of construction requirements, is necessary.

7. Information Systems Management Coordinator. This Coordinator will be chiefly responsible for strengthening the agricultural information systems in Egypt.

This person will assist in the development of these ARC services: the National Agricultural Library and Documentation Service; and, the design, preparation and distribution of promotional and technical information materials used by the public and private sectors in extending information to farmers. Other major activities include assisting in development of an agricultural information network for agricultural scientists, technicians, and public and private sector managers.

A strong background in library services and management is required, but a good portion of this experience must be in technical agricultural information services. Experience in public radio/television production of agricultural programs is desirable. A Ph.D. or M.L.Sc. is preferred; a Ph.D. in Agricultural and Extension Education is acceptable, if the incumbent possesses experience in agricultural communications.

8. Agricultural Statistics and Econometrics Coordinator. This Coordinator will assist in the collection, storage, retrieval, and presentation of food and agricultural data; and, in the development of a national agricultural information and documentation system. For the on-farm demonstrations, this Coordinator will track and forecast the inputs required for the technical packages, largely based on requests from the field. Assisting with monitoring and evaluating NARP will involve establishing a system to rapidly determine input needs, supplies, and costs for all technical packages. A practical system to accurately determine output costs including marketing, processing, and distribution costs and opportunities is required.

9. Seed Production and Technology Coordinator: This person will play a crucial role in assisting the establishment of a more effective and responsive seed program and industry in Egypt.

Major activities would include assisting and coordinating programs to: improve the national system for seed certification; design, establish and deploy new and renovated seed conditioning storage and testing facilities; assist in training technicians and supervisors from public and private sectors in seed production, conditioning; establish quality assurance and testing procedures and operations; establish a system for close working relationships with the central administration for ARC seed companies; and provide sufficient quantities of high quality foundation and certificate seed for the technical packages.

This person should have a strong technical background in seed production; conditioning, and quality assurance evaluation and control; experience in the management of one or more seed industry operations; and, experience in international development assistance. A Ph.D. in an applied plant science field is preferred; a M.Sc. in the same field with appropriate levels of experience is acceptable.

10. Crop Protection Systems Coordinator. This person will assist in the establishment of a national integrated pest management and crop protection system, and will also be responsible for the development of a crop loss assessment program.

Working closely with the Plant Protection Research Institute, the Plant Pathology Research Institute, the Pesticides Central Laboratory, and the plant protection departments at the universities, this Coordinator will assist in the management and coordination of applied and adaptive research to reduce crop losses by producing better technical recommendations for crop protection systems. This person will also be involved in the design of preservice and inservice training of Subject Matter Specialists in pest control measures and pesticides handling; and, coordinating the linkages between researchers and Subject Matter Specialists in developing a system to determine the economic thresholds for insect infestation in the crops included in NARP.

The incumbent seeking this position should possess a Ph.D. in Pest Management or in an area specifically related to pest management, e.g., plant pathology. Successful experience in organizing, conducting and evaluating large pest management programs for the public or private sector is also required.

11. Agricultural Mechanization Systems Coordinator. This person will assist the ARC in developing, implementing, and monitoring a system to coordinate the various farm mechanization programs in Egypt. This Coordinator will also assist in the coordination of mechanization research programs with the Undersecretariat for Agricultural Engineering, the Ministries of Irrigation and Land Reclamation, and university departments of agricultural engineering. This Coordinator will assist the Applied Research Grants Program in identifying research priorities and requests for proposals in farm mechanization.

This person will be an agricultural engineer experienced in farm machinery systems management. A successful background in managing farm machinery and equipment service centers in the public and private sectors is highly desirable.

12. Livestock Production Systems Coordinator
This Coordinator will assist the ARC in developing applied and adaptive research programs for livestock production. This includes developing integrated applied livestock field research programs. Assistance to the ARC will be provided to establish multidisciplinary research teams, networking among livestock scientists and managers, and more on-farm demonstration activities. The Livestock Coordinator will address large and small livestock production systems, dairy production, but not poultry. Elements to be developed in the system will include research management, research administration, pre- and in-service training for ARC research support staff, and research methods.

The incumbent for this position should possess a Ph.D. in animal science or related field. He/she should possess extensive experience in multidisciplinary research, applied and adaptive livestock research, extension and research management. Commercial experience is highly desirable.

Attachment
NARF Long Term Technical Assistance

Technical Assistance	Project Year							total
	1	2	3	4	5	6	7	
1. Chief of Party/NAPP	1	1	1	1	1	1	1	7
2. Finance/Business Manager	1	1	1	1	1	1	1	7
3. Field Research Systems Coordinator	0	1	1	1	1	0	0	4
4. Multidisciplinary Research Systems Coordinator	0	1	1	1	0.5	0	0	3.5
5. Demonstration Training Coordinator(1)	0	1	1	1	1	1	1	6
6. Research Station Coordinator	0	1	1	1	0.4	0	0	3.4
7. Information Systems Management Coordinator	0	1	1	1	0	0	0	3
8. Agricultural Statistics and Econometrics Coordinator	0	1	1	1	0.5	0	0	3.5
9. Seed Production Coordinator	0	1	1	1	0	0	0	3
10. Crop Protection Systems Coordinator	0	1	1	1	0	0	0	3
11. Agricultural Mechanization Systems Coordinator	0	1	1	1	0.4	0	0	3.4
<u>Total person years by project year</u>	<u>2</u>	<u>11</u>	<u>11</u>	<u>11</u>	<u>5.8</u>	<u>3</u>	<u>3</u>	<u>46.8</u>
<u>Total person months by project months</u>	<u>24</u>	<u>132</u>	<u>132</u>	<u>132</u>	<u>69.6</u>	<u>36</u>	<u>36</u>	<u>561.6</u>

* Livestock Production Systems Coordinator could be added to long-term TA.

177

II. Short Term Technical Assistance

Type of assistance. The projected short term technical assistance requirements for the National Agricultural Research Program (NARP) will consist of three main types of assistance:

- (a) Technical consultancies to research, extension, information and production projects, experiments, or programs;
- (b) Developing and/or conducting training programs in research, extension, information, production and management activities;
- (c) Collaborative research with Egyptian counterparts in projects and programs to strengthen the institutional capabilities of the GOE to carry out programs to increase agricultural productivity.

Specific areas in which short-term technical assistance will be required include: Commodity-oriented crop sciences, agronomy, horticulture, tissue culture, plant breeding, microbiology, agricultural engineering, animal husbandry, dairy husbandry, animal health, agricultural economics, farm management, policy analysis, biometrics, rural sociology, research station management, research systems management, agricultural and extension education, seed technology, agricultural communications, library sciences, computer programming and hardware, training curriculum development and training methodology, equipment repairs and maintenance, financial management, cooperative organizations, womens' development programs, rural youth organizations, and pesticides handling.

Short-term technical assistance will be selected primarily by the NARP management unit of the ARC. Through the prime Technical Assistance contractor, the ARC wants to draw technical assistance from the broader agricultural scientific and technical community. The ARC will select high-caliber personnel through a long-term linkage program with U.S. universities, International Agricultural Research Centers (IARC's), U.S. private sector companies, and selected individuals not associated with an institution. Short-term technical personnel will be subcontracted for recurrent short-term assignments over a long period of time. The frequency and duration of assistance will be determined by the ARC. However, most of the short-term technical assistance for NARP will be provided by U.S. universities.

The prime Technical Assistance contractor will facilitate subcontracting with U.S. government agencies (USDA/OICD), U.S. private sector (e.g., seed companies), and IARC's. The bulk of the short-term technical assistance will be U.S. land grant university personnel, which will be subcontracted under the terms of GOE/U.S. university cooperative agreements.

The ARC will strengthen long-term linkages between organizations that provide short-term technical assistance by giving financial and professional incentives to the individuals and institutions supplying short-term technical assistance; and by linking technical assistance, research opportunities, out-of-country training programs, and access to the Egyptian agricultural data base. Specifically, the ARC will:

- (a) Share training opportunities. Universities participating in short-term TA programs will receive Ph.D. and M.Sc. candidates if they have high quality programs in the areas of study needed by candidates. A wide range of out-of-country and in-country post-doctoral research training, observation tours and professional workshops and conferences.
- (b) Participate in the Applied Research Grants Program; and, share the Egyptian agricultural research data base for non-sensitive data.

174

TRAINING

USAID/Cairo will provide training opportunities to qualified Egyptian agricultural managers, scientists, technicians, and research support staff. Training will be included in one of the following categories.

1. Long-term-more than six months;
2. Short-term-six months or less;
3. Degree--M.Sc. and Ph.D (N = 100) in the U.S.
4. Non-degree which includes
 - pre-service training
 - in-service training
 - observation and invitational tours, conferences, and seminars
 - non-formal farmer training

General Comments on Training

NARP will offer flexible training options to increase the efficiency of the research and research support services in the public and private sector offered to the farmer. Training will be available at all levels in the ARC and include managers, researchers, technicians, clerks, and skilled laborers. Training will concentrate on:

- (a) Research planning
- (b) Research management
- (c) Research techniques and methods
- (d) Information systems management
- (e) Data collection/analyses
- (f) Seed technology

A Master Training Plan must be developed during the first year of project implementation that describes selection criteria for participants; detailed objectives for each level of training; and, recommendations for preferred training methods and procedures. All training provided by NARP must be practical, hands-on and based on the actual knowledge, skills, and attitudes needed to perform the job. It must be provided according to staffing needs required for the effective performance of the strategy elements.

Research staff will be trained to more effectively identify and address the needs of female farmers, a process already begun under the EMCIP and SFPP projects. Female Campaign Team members will be actively recruited by the MCA and trained by the training staff.

183

Training for all categories will be through a direct contract. Long-term, training will be coordinated by one U.S. university, a university consortium, or other U.S. government agency. Short-term, in country training of field research staff should include direct contracts with private sector training companies. Training opportunities for staff development to achieve one or more of the project outputs will be available to private and public sector organizations with interest and experience in research. Training staff supplied by the Contractor will assist the GOE with planning, curriculum development, training trainers, and evaluation. Egyptian trainers trained by the Contractor will provide much of the short-term training in Egypt.

Long-Term Degree Training

Sixty Ph.D and M.Sc. candidates will be trained during the life-of-project. Post-graduate degree training is needed to restructure the basic, applied, and adaptive research techniques and methods of the ARC. Many researchers in the ARC received post-graduate training in Eastern-bloc countries. Therefore, although they possess a degree, their training has not increased the efficient production of new technology .

The selection criteria for degree candidates should be stated in the Master Training Plan. These criteria should describe, to the extent possible, the ultimate job title and responsibilities of the candidates upon return to full-time work when their training is finished. This is the responsibility of the ARC in collaboration with USAID. The job title and responsibilities should form the basis of a prescriptive, individualized Candidate's Training Plan for each candidate selected. Of course some changes during the course of the candidate's training will have to be made, but the candidate, his/her GOE supervisor and U.S. university academic advisor will know the basis for the candidate's selection and what knowledge and skills the candidate will need to learn to perform effectively upon return to Egypt.

These candidates should be identified, released from full-time employment responsibilities, and placed in one of several intensive English language training programs offered through AUC, AMIDEAST, and other private language schools in Cairo or Alexandria. This should occur just as soon as the Grant Agreement is signed.

Alternative methods of intensive language training should be explored. If USAID Training develops a residential language training program in Egypt, it should be utilized.

Masters' candidates should possess a 500 TOEFL score prior to departure to the U.S.; Ph.D candidates should possess a 550 TOEFL score prior to departure.

If the number of students identified for long-term training cannot be handled by existing language schools in Egypt, USAID will provide an additional grant to supplement the language training offered by a private or public agency or school. A Project Implementation Letter to set out selection criteria, TOEFL prerequisites, and other requirements stipulated by the Mission Training Office should be included as a condition precedent.

Egyptian universities will grant most if not all of the Ph.D. and M.Sc. degrees in agriculture. This will be done in collaboration with an affiliate U.S. university, where the degree candidate will receive most of his or her academic and formal classwork. A portion of the Training budget will be set aside for invitational travel for U.S. academic advisors and Egyptian research advisors to travel to each other's institutions. The U.S. academic advisor will assist and advise the candidate on his or her in-country research while in Egypt and teach and/or participate on field trips if time permits. The Egyptian research advisor will travel to the U.S. to evaluate the candidate's academic progress; advise the candidate on research methodology; brief the candidate's academic advisor and Research Committee on Egyptian agriculture and research; and, offer seminars on Egyptian agriculture and participate on observational field trips if time permits.

Masters' theses will be conducted in the U.S. Doctoral research may be conducted in Egypt. All advanced degree research will be based on research problems of an applied nature. When possible all research topics should address real problems and research priorities associated with production and the research system to support technology development. When possible all candidates should leave Egypt for the U.S. with a list of several relevant research topics; this list is to be presented to the candidate's U.S. academic advisor.

Pre-Service Training for Field Personnel

All field personnel selected will complete a pre-service orientation course prior to employment. The length of the

basic pre-service course should not extend beyond 3-5 weeks. Topics covered include: introduction to technical backstopping and training for technical transfer; instructing farmers on using the technical package; trouble-shooting; and record keeping. This course is repeated prior to the onset of the next cropping season, with emphasis on crops to be grown then and recurrent livestock programs. Technical assistance provided by the Contractor will be used to help the ARC formulate training policies, selection criteria for trainees, and develop pre-service curriculum.

Training will qualify experienced research workers as Subject Matter Specialists (SMS) in the most cost-efficient manner. Subject Matter Specialists will receive the latest training in their research area as it relates to agricultural production and instruction in demonstration methods. Where possible, private sector company(s), who are qualified to deliver the preservice training courses will be funded under FAR procedures through a direct contract. If this type of contract is used, joint U.S.-Egyptian company proposals would be preferred if both companies have adequate numbers of qualified training staff and the administrative capability to implement an extensive training program for production.

Subject matter specialists will train village extension agents. The subject matter specialists will receive assistance from the training Contractor through pre-service, in-service training and supervisory followup; and, instructional materials from NARP through the ARC. ARC senior research staff and Egyptian university faculties of agriculture will provide some of the inservice training and technical backstopping of SMSs' Categories of Subject Matter Specialists to be trained.

The following numbers of personnel and areas of specialization are based on anticipated needs for implementation purposes. The ARC will need to determine the actual numbers and categories based upon needs stated in their annual Training Plan.

183

<u>Areas of Specialization</u>	<u>Number</u>
Agric. Information/ Public Sector	20
Agric. Information/ Private Sector	10
Livestock Production/ Large Ruminants	10
Livestock Production/ Small Ruminants	10
Dairy Production(Bovine and Caprine)	10
Poultry Production	20
Artificial Insemination	5
Prophylactic Animal Health Programs	10
Forage Production/Conservation Systems	10
Pomology	7
Viticulture	5
Vegetable Crops	15
Post-Harvest/Storage	10
Livestock and/or Crops Marketing	25
Small Scale Irrigation(w/MOI)	7
Soil Fertility Management	7
Small Scale Farm Mechanization	7
Large Scale Farm Mechanization	7
Animal Traction	7
Farm Management	10
Apiculturalists	5
Integrated Pest Management	20
<u>TOTAL</u>	<u>237</u>

The balance of the Subject Matter Specialists, approximately 130, will be trained as Crop Production Specialists. Approximately 75 percent (95) will receive training in the target food crops, and 25 percent (35) will be trained in high-value crops.

A pre-service training program is also needed for Seed Production Technologists. Approximately 100 will be given pre-service training for positions as seed production technicians and seed plant managers. Training courses should be located at the seed production plants. Pre-service courses should emphasize quality assurance control that starts with contract farmers and ends with delivery of certified seed to the farmer.

Most training will occur at the Regional Research Stations and demonstration block farms to ensure that instruction duplicates field conditions and cropping systems.

Pre-Service Training for ARC Research and Research Support Staff.

Due to attrition and promotions in the ARC new research and research support staff will need to be trained. Categories of staff include: research chairmen, first researchers, researchers, associate researchers, technicians, and clerks. This training will contribute to the project output of developing an effective management and administrative capacity, and the improvement of research techniques and methods.

Pre-Service Training Methods

Computer-assisted-instruction (CAI) and audio-visual instructional aids can be used to reduce the cost of instruction of the subject matter specialists. A computer program will monitor and track trainees and also provide graduate followup data for curriculum revision.

The curriculum developed for short-term non-degree training courses will be straight-forward, minimally theoretical, maximumly practical. Course objectives and lessons will apply to learning how to rapidly deploy the different technical packages, troubleshoot problems, working as a team, and keeping and analyzing farm records to make management decisions. Performance criteria will be used to monitor the effectiveness of the pre-service training program.

125

The development of instructional modules should be used. These modules must be assembled, tested and deployed throughout Egypt. Approximately 150 training modules will be developed during the life-of-project. The content of the modules will be based on the knowledge skills, and attitudes needed to improve the research process and the flow of technology.

Table A lists the numbers of field research personnel that will be trained during the life-of-project. Approximately 600 Subject Matter Specialists and supervisory personnel will receive pre-service training.

In-Service Training

In-service instruction is important to the success of the NARP. It provides the NARP support staff with the latest information on materials and methods that comprise the technical package. In-service training consists of formal and non-formal instruction. The formal training will be done on a scheduled, continual basis as arranged by the Contractor. The in-service training needs will be described in the annual Training Plan. The training for field research staff will provide instruction and controlled practice in promoting and deploying the technical packages. For NARP management, frequent inservice seminars and professional development short courses will provide research scientists and administrators feedback on their work and help strengthen their ability to perform collaborative research.

In-service training will be provided to the NARP support staff in the ARC, PBDAC, MOA, and other relevant Ministries; and technicians and managers in the private sector connected with NAPP activities.

A computerized training program is necessary to identify training needs and plan for production campaigns in target areas. The informal training will be done mainly by Subject Matter Specialists working with the field research staff.

Table B lists the numbers of NARP support personnel that will receive inservice training.

In-Service Training for Field Research and Support Staff.

The Master Training Plan will develop and explain fully the sequence of inservice courses. For field research staff inservice training the course of study will be based on

relevant cropping systems and technical packages. Selected interventions to improve the efficiency of the methods used to enroll farmers in the on-farm demonstrations and deploy the technical package will also be included in the inservice curriculum. Therefore, inservice training for field research staff will achieve these project outputs: the improvement of basic, applied, and adaptive research techniques, the establishment of a field-based national research network, and expansion of demonstration blocks for food and high-value crops and livestock.

In-Service Training for ARC Research and Support Staff.

Approximately 960 ARC research and support staff will be trained through in-service training programs. Approximately 75 percent will receive in-service training in-country.

Senior managers, key research scientists, subject matter specialists and others will participate in short-term, out-of-country training courses and other kinds of professional training opportunities. In-service training opportunities will be available from USDA courses, private agri-business companies and cooperatives in the U.S., International Agricultural Research Centers and U.S. universities. The requirements and limits of out-of-country, short-term, in-service training will be included in the Master Training Plan and subject to annual review by USAID and the MOA. Trainees who have passed the TCEFL and ALIGU can participate in out-of-country short-term training. USAID will also strive to equate the level of language proficiency with the training environment. For example, if a post-doctoral fellow does not have the minimum language score for long-term training, the USAID Training Office will waive this requirement if the Office determines that the trainee's language skills are sufficient for one-on-one instruction.

Observation and Invitation Tours, Conferences, and Seminars

This type of training provides opportunities for heads of departments, under-secretaries, researchers, and other senior scientists, administrators, and policy-makers to familiarize themselves with new technology and management concepts. Through networking at conferences, tours, and seminars it allows busy decision-makers the opportunity to focus on problems and solutions related to increasing agricultural productivity.

Invitation travel will be arranged by the Contractor with assistance from USAID in for senior administrators,

scientists, and key decision-makers on a limited basis. Most of this travel will be to other countries where new technology relevant to Egypt's agricultural sector exists. The Contractor will arrange for medical insurance for all participants in observation and invitational travel. The Contractor will debrief all participants and provide USAID/Cairo and the MOA with a synopsis of the program and participants' reactions. USAID and the MOA will provide opportunities for followup seminars and informal discussions with participants.

Non-Formal Farmer Training

There will be two types of farmer training: the continual one-on-one instruction that the SMS deliver in field during daylight visits to block and individual farmers; and, group sessions for groups of farmers covering general problems and new strategies. The field research staff will utilize the Village Council to encourage growth in local leadership capacity. They will be supplied with audio-visual aids and other instructional supplies to conduct farmer training sessions. Farmer training sessions will be given prior to the next cropping season to explain the package. Other training sessions are scheduled when and where the local research staff sees fit.

The goal for the project is to enroll 10 percent of all adult farmers in non-formal farmer training classes annually. Adult farmer enrollees will include numbers of women proportional to those that farm in the village.

182

Table A. Pre-Service Training Requirements
National Agricultural Research Program

Numbers of Trained Staff Needed by Project Year

Personnel Required	Project Year							
	1	2	3	4	5	6	7	Total
1. Subject Matter Specialists (SMS)	0	25	30	40	80	120	50	345
2. Administrative and Supervisional staff (1:20)	5	11	16	21	42	53	20	168
6. Seed Production Technicians/ Managers	5	20	25	25	25	0	0	100
4. Research Chairmen	10	10	10	10	10	10	0	60
5. First Researchers	20	20	20	20	20	20	0	120
6. Researchers	20	20	20	20	20	20	0	120
7. Associate Researchers	20	20	20	20	20	20	0	120
8. Technicians	40	40	40	40	40	40	40	240
9. Clerks	50	50	50	50	50	50	0	300
Total Enrolled, Project Year	170	216	231	246	307	333	70	1573

Based on estimates of expanded areas included in demonstrations, and crops and livestock less carry over of staff previously trained; plus 10% allowance for attrition. Implementation of training would precede staff required on-site by 6-12 mos

Table B. Inservice Training Requirements
The National Agricultural Research Program

Total Number of Staff Enrolled, by Project Year

Category	Project Year							Total Enrolled LOP
	1	2	3	4	5	6	7	
1. Subject Matter Specialists (SMS)	0	50	65	100	200	320	355	1090
2. Administrative and supervisory staff (1:20)	0	31	50	70	120	150	168	589
3. Seed Production Technicians/Managers	0	20	40	60	80	100	100	400
4. Research Chairmen	0	30	50	100	150	200	0	540
5. First Researchers	0	10	30	50	100	150	200	540
6. Researchers	0	10	50	100	150	200	250	760
7. Associate Researchers	0	25	75	150	200	200	250	900
8. Technicians	0	25	75	150	200	200	250	900
9. Clerks	0	25	50	100	200	200	200	775
10. Skilled Laborers (Research)	0	20	75	100	100	100	100	495
Total Enrolled, Project Year	0	226	540	930	1450	1770	2673	6989