

2630070 (2)

PD-AAD-978-B1

DEPARTMENT OF STATE  
AGENCY FOR INTERNATIONAL DEVELOPMENT  
Washington, D.C. 20523

149 p.

PROJECT PAPER

EGYPT: Major Cereals Improvement

263-0070

UNCLASSIFIED

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT PAPER FACESHEET

1. TRANSACTION CODE

**A** ADD  
C CHANGE  
D DELETE

PP

2. DOCUMENT CODE  
3

3. COUNTRY ENTITY

Egypt

4. DOCUMENT REVISION NUMBER

5. PROJECT NUMBER (7 DIGITS)

263-0070

6. BUREAU/OFFICE

A. SYMBOL

B. CODE

NE

03

7. PROJECT TITLE (MAXIMUM 40 CHARACTERS)

Major Cereals Improvement

8. ESTIMATED FY OF PROJECT COMPLETION

FY 84

9. ESTIMATED DATE OF OBLIGATION

A. INITIAL FY 79

B. QUARTER 4

C. FINAL FY 83

(Enter 1, 2, 3 or 4)

10. ESTIMATED COSTS (\$000 OR EQUIVALENT \$) -

A. FUNDING SOURCE	FIRST FY			LIFE OF PROJECT		
	B. FY	C. L. C.	D. TOTAL	E. FY	F. L. C.	G. TOTAL
AID APPROPRIATED TOTAL	163		163	20,031	9,969	30,000
GRANT				20,031	9,969	30,000
LOAN						
OTHER						
U.S.						
MOST COUNTRY		3,201	3,201		9,943	9,943
OTHER COUNTRY						
TOTALS	163	3,201	3,364	20,031	9,969	39,943

11. PROPOSED BUDGET APPROPRIATED FUNCS. (\$000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE		E. 1ST FY 79		H. 2ND FY 80		K. 3RD FY 81	
		C. GRANT	D. LOAN	F. GRANT	G. LOAN	I. GRANT	J. LOAN	L. GRANT	M. LOAN
(1) SA	114B	070		30,000					
(2)									
(3)									
(4)									
TOTALS				30,000					

A. APPROPRIATION

N. 4TH FY 82

O. 5TH FY 83

LIFE OF PROJECT

12. IN-DEPTH EVALUATION SCHEDULED

A. APPROPRIATION	N. 4TH FY 82		O. 5TH FY 83		LIFE OF PROJECT	
	C. GRANT	D. LOAN	F. GRANT	G. LOAN	I. GRANT	J. LOAN
(1) SA					30,000	
(2)						
(3)						
(4)						
TOTALS					30,000	

MM YY  
110 314

13. DATA CHANGE INDICATOR - WERE CHANGES MADE IN THE PIO FACESHEET DATA, BLOCKS 12, 13, 14, OR 15 OR IN PIP FACESHEET DATA, BLOCK 12? IF YES, ATTACH CHANGED PIO FACESHEET.

2 YES

14. ORIGINATING OFFICE CLEARANCE

SIGNATURE

*Donald S. Brown*

15. DATE DOCUMENT RECEIVED IN AID/W OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION

TITLE

Donald S. Brown  
Director

DATE SIGNED

MM DD YY  
015/16/79

MM DD YY  
015/21/79

Project Paper  
Egypt Major Cereals Project  
No. 263-0070

Table of Contents

	<u>Page</u>
I. Facasheet Data	
A. Project Paper Facasheet	i
B. Table of Contents	ii
II. Recommendations and Brief Description	1
A. Recommendations	1
B. Introduction	1
C. Brief Description	2
III. Project Background and Detailed Description	4
A. 1. General	4
2. Problems and Constraints	8
B. Detailed Project Description	12
1. Goal	12
2. Purpose	12
3. Outputs	15
4. Inputs	17
5. Important Assumptions	20
IV. Project Analysis	21
A. Economic Analysis	21
B. Social Soundness	25
C. Technical Feasibility	27
D. Administrative Feasibility	31
E. Environmental Concerns	34
V. Financial Analysis and Plan	35
A. Funding Summary	35
B. Host Country Contributions	36
C. Cost Estimates and Type of Financing	36
D. Source and use of funds	
Summary Financial Plan	36
E. U.S. Obligation and expenditure Schedule	38
F. Costing of Project outputs/Inputs	39
G. Financial Viability of the Project	40
H. Payment of Funds and Audit	40

	<u>Page</u>
VI. Implementation Arrangements	41
A. AID Project Administration	41
B. GOE Responsibility	42
C. Technical Services Contractor	42
D. Implementation Plan	43
E. Contracts	44
VII. Evaluation Arrangements	46
VIII. Conditions, Covenants, and Negotiating Status	49

---

Annexes

General and Explanatory

I. AID/W PID Approval Message	
II. Logical Framework Matrix	
III. Grantees' Application for Assistance, and Statement referring to.	
IV. Job Descriptions	
V. Financial Annexes	
VI. Modified PID Facesheet	
VII. Statutory Checklist	
VIII. Draft Project Description for Grant Agreement	
IX. Initial Environmental Examination	
X. Recommendation to Authorize Local Cost Financing	
XI. Draft Project Authorization Request for Allotment of Funds	
XII. Location of Proposed Facilities	
XIII. Constraints/Problems	
XIV. 611(e) Certification	
XV. Waiver Justification	
XVI. Postharvest Food Grain Losses	

## Tables

- I. Wheat: Average area, production and yield during the 1950-78 period.
- II. Wheat area and yields of local varieties and semi-dwarf varieties.
- III. Mean Wheat yields (kg/feddan) - 1977-1978 Season.
- IV. Maize: Average area, production and yield during the 1950-1978 period.
- V. Maize area and yields of local varieties and hybrids during 1975 and 1976.
- VI. Mean grain yields (kg/feddan) - 1978 season.
- VII. Sorghum: Average area, production and yield during the 1950-1978 period.
- VIII. Mean sorghum yields (kg/feddan) - 1978 season.
- IX. Barley: Average area, production and yield during the 1950-1978 period.
- X. Mean barley yields (kg/feddan) - 1976-1978 season.
- XI. Selected Grain Imports - 7 year period.
- XII. Total production of wheat, maize, sorghum and barley under assumed yield increases.
- XIII. Increases in cereal productivity and values.
- XIV. Projected Import-Export situation for cereal grains in 1985.
- XV. Maize Production Costs, Price levels, Yield and Returns, 1978 and after Adoption of New Cultural Practices.

## II. Project Recommendations and Brief Description

### A. Recommendation

USAID/Egypt recommends that AID/W approve a Grant in the amount of \$ 30,000,000 to assist the Government of Egypt, through the Agriculture Research Center of the Ministry of Agriculture, to establish a research/extension capability in cereal grains, i.e., wheat, maize, sorghum and barley, and stimulate an increase in production of these grains. It is recommended that \$ 15,000,000 be authorized for initial obligation at the time of Grant signing and up to \$ 15,000,000 be approved for incremental funding during the remainder of fiscal year 1979 or fiscal year 1980.

### B. Introduction

Egypt faces a serious problem in her attempts to feed an increasing population. Relatively constant yields of cereals since 1970 compared with a 2.5% annual population increase over the same period resulted in Egypt having to import about 45% of her cereal grain requirements in 1977. The major cereals make up most of these imports and contribute heavily to the Egyptian diet. Wheat, maize and sorghum supply over 45 percent of the total food consumed daily. In the supply of total daily calories they are even more important, supplying approximately 70 percent of the caloric intake.

Four major problem areas constraining cereal<sup>1/</sup> production have been identified, they are:  
1) the lack of a properly funded, professionally oriented research organization; 2) the lack of a properly staffed and funded extension system, integrated with the research organization;  
3) the quality, quantity and distribution of high quality seeds, and 4) inability to quickly and effectively disseminate appropriate research information to farmers.

<sup>1/</sup> Constraints identified by the project design team, Consortium for International Development (CID).

### C. Brief Description

The project will address the major problem areas described above by providing funds for technical assistance, short-term and long-term training, new and renovated facilities and purchase of needed supplies and equipment. In conjunction with these activities new technical production information will be developed and tested.

The project, in addressing systems which will lead to increased productivity of the traditional grain crops for small farmers, falls directly within strategy for the Agricultural Sector articulated by USAID/Cairo in the CDSS. This strategy, which looks to increasing productivity while maximizing employment, is reflected in the crop concentration of this project. Cereals are the principal crop of the small farmer in Egypt and also highly labor intensive. More specifically, this project directly addresses the two major concerns of the strategy, i.e.:

- a) the geographic location of the target beneficiaries (cereals are basically an Old Lands crop), and
- b) the target beneficiaries of the Sector Strategy; the small farmer.

The project proposes that: 1) a multi-disciplinary team of Egyptian scientists assisted and advised by a team of American scientists be established with headquarters at ARC in Giza, 2) a Director General be appointed by the Minister of Agriculture to direct the project, and 3) an Executive Committee be established consisting of representatives of several organizations and agencies involved in cereal production <sup>1/</sup>- (They will establish policies and provide direction for the operation of the project.).

Four existing research stations will be upgraded in facilities and personnel such that research and extension functions can be conducted more efficiently and effectively.

---

<sup>1/</sup> See Section III(B)(3) page 13 for details.

The establishment of a pilot extension program with special linkages to the research effort will be a key element of this project. Trained village extension agents will be placed in each village in four selected districts to implement the extension program.

An extensive training program will be instituted both in-country and outside of Egypt. Its purpose is to develop expertise in new agricultural technology not now available in Egypt and to increase the professional capabilities of existing scientists.

The seed producing and processing industry of Egypt will receive limited assistance to improve their capabilities of meeting the needs of the farmers for increased supplies of high quality seeds.

A limited mechanization program will be initiated to identify appropriate levels and types of mechanization for cereal production.

Project inputs will include technical assistance, training, commodities, budgetary support, and other costs as described in Section V(E).

### III. Project Background and Detailed Description

#### A. Background

##### 1. General

Egypt is interested in increasing the production of major cereals because a growing population is demanding greater and greater quantities. Given the shortages of cultivatable land vertical expansion or imports are the only feasible means of meeting the demand.

In an effort to assist the GOE attain its objective of increased cereal production, USAID/Egypt provided funds for the development and design of a major cereals project. The project has evolved to its present status through the process described in Annex III. The project will be implemented under a collaborative assistance contract agreement with a consortium of western universities called CID (Consortium for International Development).

This method of contracting is intended to provide the contractor with maximum flexibility for changing the implementation plan (with prior AID approval) when and if needed, (See Annex III for details relating to collaborative assistance mode of contracting.).

Agriculture continues to be the largest sector in the Egyptian economy, contributing just under 30% of the GNP. This is about the same proportion as 25 years ago, indicating growth has kept pace with that of the rest of the economy. Agriculture employs about 45% of the labor force and directly or indirectly is responsible for over three quarters of the country's annual export earnings. Although total production of cereal grains has increased about 4% per year since 1970, the per faddan yield has remained relatively constant.

The failure of cereals yields to exhibit any substantial growth over the past decade gives cause for concern, since experimental evidence indicates that considerable increases are still possible. Those factors most directly contributing to the stagnation of yields are hypothesized to be poor production and management practices along with institutional shortcomings.

An analysis of the importance of cereals to Egypt, and the constraints restricting production increases follows.

a. Importance of Cereals<sup>1/</sup>

Cereal crops in Egypt constitute the most important group of field crops in cash value, contributing approximately 40% to the value of all crop production. The group includes wheat, barley, maize, rice and sorghum.

This project will concentrate on four of these cereals; wheat, maize, sorghum and barley, two of which are for summer cultivation (maize and sorghum) and two for winter growing (wheat and barley).

The first three cereals (wheat, maize and sorghum) supply approximately 45% of the total daily consumption of food. By commodity, the percentages in 1978 were: wheat 25%, maize 17% and sorghum 4%. In the supply of total daily calories they become even more significant, supplying approximately 70% with the following shares in 1978: wheat 37%, maize 27%, and sorghum 7%.

Quantities of maize and wheat imports continue to rise rapidly. Annex Table XI shows imports of maize during 1977 amounted to 600,000 tons with a cash value of approximately \$42 million, while wheat imports stood at about 4,000,000 tons with a value of approximately \$249.2 million.

<sup>1/</sup> PL 480 imports for CY 1978 totaled 1.1 million-metric tons of wheat and 431,000 metric tons of flour.

(1) Wheat

Wheat is the staple food of the urban area and is widely used for blending with maize flour in rural areas. In cash value it outranks rice, but is less than maize. The wheat area ranged from about 1.3 to 1.6 million feddans during 1950 to 1978, or 21 - 25% on an annual basis of Egypt's total cultivated area (See Annex Table I). Yields in the 1970's have been relatively constant, but they are substantially greater than those achieved in the 1960's, however, potential for yield increase has not been fully exploited.

In 1977 roughly 1.7 million tons of wheat were produced. Imports totaled 4.3 million tons, thus there was an apparent consumption of 6.0 million tons. Annex Table II shows a comparison of yields of local and improved varieties, and illustrates yield increases possible from variety improvement. Using a 2.5% population growth rate and assuming present per capita wheat consumption, Egypt will require 7.1 million tons of wheat in 1985.

(2) Maize

Maize is the main cereal for bread making in the rural areas. It is also being used increasingly as livestock feed, especially for poultry. Maize can be grown throughout the country, but the bulk of the growing area is in the Delta (75%) and Middle Egypt (20%). The entire maize crop is consumed within Egypt and additional quantities are imported to make up deficits.

Maize outranks all other cereals in cultivated area and cash value. It occupies about

one third of Egypt's total cultivated area on an annual basis. A major increase in maize yields occurred in the 1965-1969 period when yields increased to 1.5 tons/faddan, due to the availability of irrigation water following the completion of the High Dam at Aswan, which allowed earlier planting dates. Since the 1965-1969 increase, however, maize yields have plateaued (See Annex Table IV). Maize production in 1978 was about 3.2 million tons. An additional 0.6 million tons were imported, showing an apparent consumption in 1978 of 3.8 million tons. Assuming per capita consumption remains at its present level it is estimated that 1985 consumption for maize will be about 4.5 million tons.

In Annex Table V, data from the Statistical Department of the Ministry of Agriculture show that the nation's maize yields could be increased by about 15% if all present producers were to use available improved germ plasm.

As shown in Annex Table VI, results of "on-farm" trials indicate that maize germ plasm exists for the North Delta and for Middle Egypt which is capable of yielding considerably more than the "local" varieties. In the South Delta this was not the case, but in several trials on the South Delta the "local" variety may have been germ plasm under release by the Ministry. The average "South Delta" yield in these trials across varieties was about 2.7 tons per faddan or nearly 70% above the national average which comes from a combination of additional nitrogen (i.e., 90 kg n/faddan), higher plant density, improved germ plasm and the absence of leaf stripping.

### (3) Sorghum

Sorghum is the fourth most important cereal crop of Egypt, in both area and value, after maize, wheat, and rice.

The distribution of sorghum is localized with 80% being grown in Upper Egypt and 20% in Middle Egypt. In those regions, sorghum replaces maize as the main bread cereal for the rural population. Sorghum yields are shown in Annex Table VII. The greatest yield increase occurred during the 5 year period, 1965-1969, due to the use of an improved variety.

#### (4) Barley

Barley is of less importance among the major cereals of Egypt. The bulk of the crop is 6-rowed barley grown for animal feed and malting. Less than 10% of the barley area is planted to 2-rowed barley, produced specifically for malting. In addition to the irrigated barley in cultivated lands, rainfed barley is grown in large areas in the western coastal desert region, south and west of Alexandria. This rainfall area may reach 400,000 feddans in some years. In this area barley is used as a food and feed crop by the Bedouins. Production data is shown in Annex Table IX.

## 2. Constraints<sup>1/</sup>

The major constraints to increased cereal yields and production and those project activities designed to address them are shown in Annex XIII. The following section summarizes the constraints identified in the Annex.

### a. Biological and Technical Constraints

(1) Soil salinity associated with poor water management, excess irrigation and poor drainage.

(2) Shortage of nitrogen fertilizer as well as a possible need for other major and minor elements, especially at high N levels. In addition, hand fertilization appears to result in poor distribution.

<sup>1/</sup> The PP design team identified several problems interconnected with the constraints shown in this section. Annex XIII describes these problems in detail.

- (3) Plant densities which are too low or uneven to produce high yields and make efficient use of high nitrogen levels. Poor stands may often be associated with seeding by hand and the consequent poor distribution and seed cover.
- (4) Farmer preference for "local" varieties instead of improved cultivars-due largely to inefficient extension program.
- (5) Poor weed control, a major problem especially in wheat and barley.
- (6) Use of maize and sorghum as a summer forage crop. The practice of defoliation damages the plant, thereby reducing yield.
- (7) Poor management practices, such as:
- Poor tillage, especially at primary tillage and planting.
  - Late planting. This again relates to tillage as well as to timely removal of the previous crop.
  - Late harvesting of cereals, resulting in grain lost to shattering and transport.
- (8) Insect damage to all cereals.
- (9) Disease damage due to late wilt and leaf blight in maize, and leaf and stripe rust in wheat.
- (10) Shortcomings in the improved varieties themselves.
- (11) Lack of modern seed cleaning equipment to produce high quality seed.

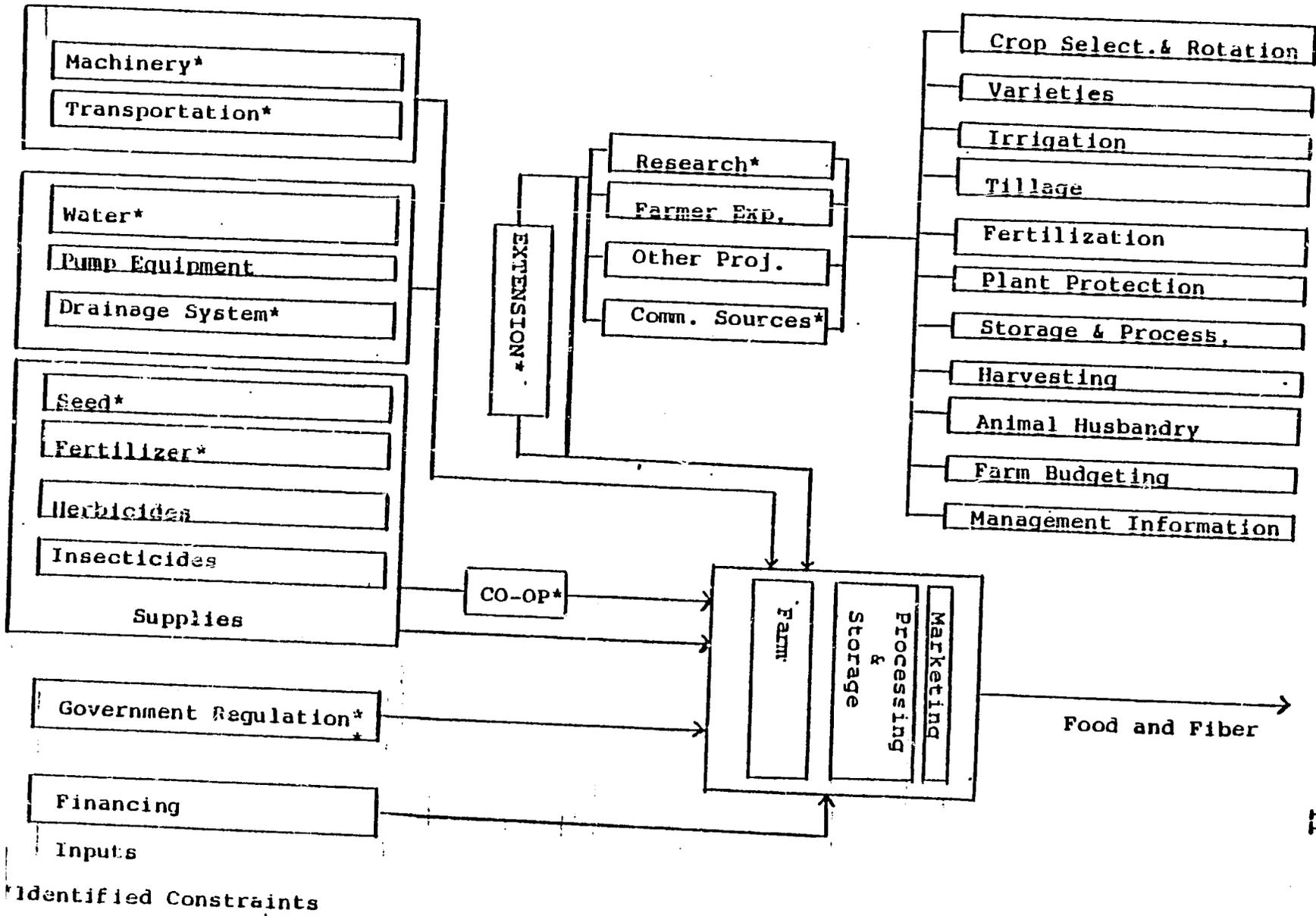
b. Institutional and Policy Constraints

- (1) Segmentation of the various research and production efforts on the same crop into various institutes and sections.
- (2) A complex of an excess number of staff, short working hours, and poor salaries. Poor salaries often force employees into second jobs.

- (3) A bureaucratic (routine) system which prevents the efficient and timely execution of tasks.
- (4) The system of staff advancement and promotion based largely on journal publications and on seniority.
- (5) Inadequate program equipment and funds to support an effective research and extension effort.
- (6) Confounding of the Experiment Station system and the State Farm system. The objectives of the two are very different.
- (7) Limited incentives to the farmer caused by low, regulated prices for produce and designated management production control.
- (8) Necessary quantities of quality inputs not readily available to the farmer (largely seed and fertilizer).
- (9) Research information is not being made readily available to the farmer.
- (10) Apparent lack of a dynamic, aggressive and well-funded extension system.
- (11) Lack of cooperation and communication between departments within the Ministry of Agriculture as well as between Ministries.

Examination of the diagram shown in Figure I facilitates identification of constraints to higher yields as described above. High yields of cereal grain and forage require inputs into a production system such as is illustrated in Figure I. The production system is composed of the farm units, processing and storage facilities, and a marketing mechanism. Productive capacity is determined by physical inputs such as seed, water, and machinery; financing; government regulations, and management information.

Figure 1 Egypt's Agricultural Production System



Management information, under Egyptian conditions, is obtained from the experience of other farmers and from research programs. Potentials exist for the expansion of information from other projects and from commercial sources. Information from all these sources can flow directly to the farmer or through an organization with an extension capability.

Some of these constraints such as government regulations, are clearly outside the domain of the cereal grains project. Others, such as water delivery and drainage systems, are under study by Colorado State University and P.L. 480 projects on drainage and crop water requirements.

#### B. Detailed Description of Project

1. The project will not attempt to directly address a national or sector goal. However, it will contribute to the GOE multisector goal of food security and rural quality of life improvement, and the agricultural sector goal of increased income for farmers.

2. The purpose and a principal focus of this project is to develop/provide significant knowledge and expertise prerequisite to increasing cereal production by approximately 25 percent.<sup>1/</sup> The 25 percent gain objective will first be realized in only eight governorates. However, it is anticipated that a rapid spread effect will be in evidence and adoption of the project recommendations will lead to rapid realization of the project purpose for the entire country.

The project purpose will be achieved through the development of new technical information concerning cereal production, development of new cultivars with increased yield capabilities, establishment of an integrated research-extension system, testing and adoption of

<sup>1/</sup> The basis for the 25 percent production goal is shown in Annex XIII and stems from amelioration of the specific constraints.

mechanization for Egyptian conditions, and providing technical and advanced training for personnel involved in the project. It should be noted that although this project has a major research component, the project design team felt that given the availability of data and information and the number and abilities of research personnel presently working in Egypt, the project should also be directed toward organizational restructuring and extension-type activities as well as research per se. In other words, appropriate production practices will be studied, various techniques to disseminate information will be tested, and extension personnel trained and put in place. These activities will be initiated as required to overcome problems in adapting and gaining farmers acceptance of such practices.

### 3. Program Thrust<sup>1/</sup>

#### a. Administrative Restructuring

A Major Cereals Directorate will be formed to establish linkages between research and extension to address the problems and issues of cereal grain production. Within the Directorate policy guidance and appropriate action policies will be developed. The Executive Committee of the Directorate shall consist of the highest ranking official (or his designated representative) from each of the following:

Agricultural Research Center  
 Agricultural Extension Department  
 Undersecretary for Agricultural Production  
 Bank of Development and Agricultural Credit  
 Ministry of Irrigation

Ex-officio nonvoting members will be:  
 Project Director General  
 Project Expatriate Team Leader  
 U.S. Agency for International Development  
 (USAID/Egypt Mission)  
 Representative of Consortium for International  
 Development (CID)

---

<sup>1/</sup> See CID report for details

The Chairman of the Executive Committee shall be appointed by the Minister of Agriculture from among the voting members as listed above.

b. Research

The main thrust of cereal production research will be carried out at the four research stations. A cadre of Egyptian specialists will be selected and trained in breeding, agronomy, biometrics, entomology, pathology, economics and research station management. The cadre and technical specialists will design and conduct a research project to eliminate identified constraints. 1/

c. Extension

A line of communications between researchers and farmers will be provided by a team of cereal production specialists. They will receive practical training in cereal production techniques for conducting on-farm trials and demonstrations in the 8 governorates.

A pilot extension program will be developed and tested by the end of the second year in each of the four prototype areas. The extension program will utilize present personnel and facilities whenever possible. However, the pilot program will provide village agents in each village of two districts each, in Gharbia and Minia Governorates. It is projected that in the third or fourth year of the project four more districts from the other governorates may be selected to expand the pilot program under expanded financing by the GOE.

d. Seed Production and Processing

The thrust of this activity will be aimed at improving existing seed production and processing facilities and training personnel so that sufficient high quality seed is available to carry out the planned demonstration activities. Every effort will be made to develop a private seed production and processing industry.

1/ The project team did not identify postharvest grain losses as a major constraint. However, this problem will be addressed in the manner described in Annex XVI.

e. Mechanization

A limited mechanization program will be initiated to identify appropriate levels and types of mechanization for cereal production. New and/or modified equipment will be developed and tested to determine effectiveness. Some training in equipment design, operation and utilization will be provided as deemed necessary.

4. Outputs

The outputs of this project which will be produced to achieve the project purpose are the following:

a. Major Cereal Research - Extension System

Recognizing the limited spread effect which can likely be expected within the time span of this project and the importance accorded organizational restructuring and the extension link, a major output of this project will be the restructuring of major cereals research and extension within the Ministry of Agriculture.

This output will add further assurance that the project will end with an on-going capability to continue replication of appropriate research-extension systems.

b. Strategies for Reaching Farmers

As this project is based on adaptive research, demonstrative testing, and adoption of recommended practices the need to develop effective means to reach farmers and gain their acceptance of the practices recommended is crucial. Therefore, a major output of the project will be the development of alternative strategies for MOA-farmer communication and education. Alternative strategies for securing farmer adoption of research recommendations will not be left to chance. Various extension techniques and production technology will

be tested concurrently with the initial recommendations. Every effort will be directed toward the end result of farmers acceptance. Evaluation of the effectiveness of alternative extension methods will be continuing - several team members will be involved in this aspect of the project. However, it will be one of the training extension advisors main responsibilities.

c. Improved Seed System

This output will be achieved by the upgrading of present seed processing plants, seed testing facilities and seed distribution. New techniques for the handling and multiplication of foundation seed will be initiated. These activities will lead to an improved seed production technology and distribution system.

d. Trained Egyptian Personnel

By the end of the project, 30 long-term trainees and 342 short-term trainees will have been assigned to positions in the research-extension system. Long term trainees will be trained and assigned as counterparts immediately upon completion of their training. All long-term trainees will be in position by the end of the project. At least one half of the short-term extension trained Egyptians are to be in their respective positions by the end of the second project year.

e. Research and Information Data Base

In order to establish an information data base, several activities related to processing existing and future research findings will be initiated and carried out over the life of the project. The major findings of existing research will be collected and analyzed by the end of the first project year. A continuous series of similar technical data will be accumulated and analyzed throughout the project.

f. Innovative Strategies Related to Output

- (1) Research and extension will be established as an integrated program capable of reacting to the needs of farmers with minimal delay.
- (2) From the central level of the Project to the village level the problem of increasing cereal grain production will be viewed with a multidisciplinary, problem solving approach.
- (3) Cooperation and coordination will be established with existing institutes within Egypt, International Research Centers, and any and all organizations useful to the accomplishment of the objectives of the Project.
- (4) Pay scales will be increased and working hours lengthened to encourage professionalism of effort at all levels of the Project.
- (5) Four districts will be staffed by an entire system of extension personnel under the employ of the Project.

5. Inputs

The inputs required and felt sufficient to produce the outputs described in the preceding section are delineated in the following discussion.

		(000 US \$)
a. USAID	Total (Rounded)	\$ <u>30,000.0</u>
	(1) <u>Technical Assistance/Field</u> <sup>1/</sup>	\$ <u>7,751.0</u>

The project will provide 41 staff years of long-term technical expertise, and 12 staff years of consultancies as described in Annex IV. The staffing pattern and job description for the long-term technicians are also shown in Annex IV. Consultancies will be provided in the following areas (and possibly others as deemed necessary): Training, Plant Breeding, Agricultural Engineering, Administration, etc.

<sup>1/</sup> To be furnished by a technical service contractor (CID).

(2) Technical Assistance/CID <sup>1/</sup>  
Campus Backup Staff \$ 897.3

Backup support of 11.5 staff years have been planned to include services of specialists from all CID Campuses.

(3) Technical Assistance/  
Administration<sup>2/</sup> \$ 1,066.2

As the Project will be awarded to CID as provided for under the Collaborative Assistance mode of contracting, backstop support has been planned to include the service of a campus coordinator, a staff assistant and two secretaries. Staff trips and provisions for administrative overhead are also included.

(4) Training \$ 3,330.6

Training will include 70 study years of long-term training for 30 participants in specialized disciplines in the U.S.; 144 study years of short-term training for 282 participants for in-country training; and 30 study years for 60 participants outside Egypt, probably in the U.S. The proposed participant training schedule is shown below.

Training Scheduling:

<u>New Starts</u>	<u>FY 79</u>	<u>FY 80</u>	<u>FY 81</u>	<u>FY 82</u>	<u>FY 83</u>	<u>Total</u> <u>Trainees</u>
Long-term	7	7	7	7	2	30
Short-term	10	20	10	10	10	60
In-country	-	104	98	40	40	282

These participants will be trained in a wide range of areas covering the specialties being provided by the technical assistance personnel and other special areas as needed. The Project's training schedule is frontloaded to the maximum extent judged possible in order to maximize the participants on-the-job exposure to U.S. funded

<sup>1/</sup> The CID Campus Backup Staff will consist of Subject Matter Specialists who will provide short-term technical assistance as needed.

<sup>2/</sup> Administrative headquarters for CID will be NMSU, at Las Cruces, New Mexico.

technical assistance staff. All of the long-term training will emphasize specialized training in specific disciplines.

Any graduate degree bestowed will be incidental to training and not the primary purpose of training. The short-term overseas training will emphasize specialized training and experience in specific disciplines through working with appropriate extension specialists and county Extension Agents.

Short-term in-country courses will be given to provide appropriate training to resident Egyptian staff. Village Agents, District Agronomists, Subject Matter Specialists, Extensionists and Team Leaders will be the primary participants.

(5) Construction \$ 4,663.4

The construction component totals \$ 4,663.4 and consists of the following:

- Giza Central Office	\$ 535.9
- Sakha	841.0
- Mallawi	841.0
- Gemmieza	500.0
- Sids	500.0
- District Extension Offices	424.4

(6) Commodities \$ 10,853.7

Commodities will include vehicles, field research and laboratory equipment, office and training equipment and supplies, and library books and periodical subscriptions. Annex V provides a breakdown and individual cost estimates of these items.

(7) Other Costs \$ 1,435.9

Included are Egyptian support staff cost. Computer services, guest house rental, library materials, drivers and secretaries, vehicle operating expenses and external evaluation costs.

b. <u>GOE</u>	Total \$ <u>9,942.8</u>
(1) Training support	635.0
(2) Salaries and wages	7,807.8
(3) Land	1,500.0

The salary levels shown above and in Annex IV for Egyptian project personnel are significantly higher than present salary levels in the Ministry of Agriculture. The MOA recognizes that higher salary levels for all project personnel are necessary in order for them to effectively deal with the constraints confronting this project. Consequently, the MOA has made a commitment to provide the necessary funding from GOE resources to permit the payment of salaries to project personnel throughout the life of the project at a level that will provide sufficient incentive to attain required performance levels.

#### B. Important Assumptions

Important assumptions related to the achievement of project objectives are indicated in the Logical Framework Matrix, Annex II. Among these external factors over which management has little or no control, and which are particularly important to project success are: interdepartmental coordination and cooperation; continued emphasis on the cereals program and trainees are placed in critical areas as planned.

#### IV. Project Analysis

##### A. Economic Analysis

A potential exists for increasing the value of Egypt's cereal production up to 25 percent within the next five years. Since land is the biggest single constraint in Egyptian agriculture, production increases must come from a transfer of present knowledge from the research institutions to the farmer and new knowledge generated by research and again transferred by extension to the farmer. This knowledge must be oriented toward the farmers and readily accepted by them. A select cadre of research-extension people must be selected, trained and provided with work facilities to accomplish these objectives.

It is the judgement of the Design Team that the greatest economic return to the Egyptian farmer will come from securing adoption of known production technology rather than an emphasis upon further refinement of production information. A necessary condition for adoption of this technology is that it be packaged in a total system which is applicable to local conditions. Applicability is defined as income increasing activities which are: acceptable to farmers, appropriate to the resource base of the Egyptian farmers, and which afford protection of the land base.

This project envisages a program with investment in facilities, structure, equipment and operations budgets that will help assure the capability of Egypt to continue the program with their own resources upon completion of the project, and is clearly cost-effective.

This project will increase the country's capability to produce increased quantities of wheat, maize, sorghum and barley. Such increases in productivity will have beneficial effects upon the nation of Egypt by decreasing its dependence upon cereal production of other countries and improving its balance of trade. Increased cereal production will create increased indigenous economic activity creating more employment, increasing payments to wage earners, and creating increased demand for consumer goods and services.

Since it is believed that increases in cereal productivity can be achieved without proportionate increases in the cost of production (i.e. improved seed quality and improved managerial practices) the net income of farmers will be increased causing additional economic activity in the rural areas of Egypt. These rural communities are in desperate need of increased economic activity to provide the financial base to upgrade their community services and personal living conditions. With over 4,000 villages in Egypt the most effective way to improve living conditions is through activities which result for improved economic conditions.

The success of the Project depends to a great deal on activities outside the scope of the Project itself. Several constraints have been identified which will not be actively pursued under the auspices of this project.

Increased cereal grain production will likely require increased quantities of nitrogen fertilizer. Available information indicates that new fertilizer plants, currently under construction, will be "on line" in about two years and will have the capacity to produce the needed supplies.

Prices in the food and agricultural sector of the Egyptian economy are seriously distorted away from the free market prices by a complex system of controls, government purchases, subsidies and black markets, to the extent that it is not possible to determine what free market prices will be. It is believed by the Project Design Team that the government policy on price controls on certain of the cereal grains has a depressing effect on productivity. While estimates of the net effect of government intervention in the agricultural price system differ substantially, there is general agreement that on balance there is a net transfer out of agriculture.

To date, AID's policy has been one of opposition to agricultural price controls and subsidies as a policy tool. The implementation

of this policy, however, has been limited because of strong pressures from within the government and from the public.

The role of this project is to increase cereal grain production with the expectation that a transition to freer prices will be possible. If and when price deregulation occurs, farmers' profit would be higher, because of higher output, lower cost, or both.

There is no assurance that removing price controls in one crop or input, i.e., wheat, would move the whole system closer to a free-price situation than it is now. Therefore, AID believes that pressure for price reform should be part of an overall package of policy change.<sup>1/</sup>

Assuming that these constraints, which are not being considered by the Project, are adequately dealt with over the next five years, an increase in productivity of cereal grains of 25% for each of wheat, maize, sorghum and barley is possible in the eight governorates covered by the Project. In 1978, the percentage of Egypt's total production of the four cereals produced in the eight governorates was: wheat 75%, maize 66%, sorghum 50%, and barley 33%. Some "spill-over" benefits will be accomplished in the remaining cereal producing areas of the country. Increases in production of 12% for each of the cereal crops should be possible in these areas.

Projected cereal grain production for 1985 is shown in Annex Table XII, (based on current trends). Increases in cereal productivity and associated values at 1977 export prices are shown in Annex Table XIII.

Increased value of productivity amounts to 66,539,000 LE. Not all of this increased productivity, however, can be applied to the nation's balance of trade.

<sup>1/</sup> AID is addressing the pricing problem through Agricultural Development Systems, Project 263-0041, and self help measures applicable under PL-480 Title 1.

If population continues to increase at a 2.5% annual rate, the number of persons in Egypt will total 48.0 million by 1985. This increase in population creates increased demand for cereal grains. At current per capita consumption levels the demand for cereals in 1985 will be: wheat 7.1 million tons, maize 4.5 million tons, sorghum 808.1 thousand tons, and barley 158.7 thousand tons. Annex Table XIV shows the projected import-export situation in 1985 for the four cereal grains under conditions of constant 1978 yields and projected yield increases. The net balance of trade for Egypt would be improved in the amount of 90.7 million LE in the fifth year alone. If it is assumed that the first year of the project produced no increase in cereal grain yield and each of the following four years produced one third of the projected increase, the total improvement in balance of trade over the five year project would be 272.1 million LE or \$389 million. Assuming a total cost of the Project as \$39.9 million (GOE & USAID), the benefit-cost ratio approaches 9.8 to 1.

Economic benefits will also be felt by the farmers of Egypt. Increased yields will result from minimal increases in cost per feddan. Due to the relatively high levels of current usage of fertilizer and chemical pesticides these costs are expected to increase only moderately as yields are increased. The major yield increasing effects will result from improved cultural and managerial practices.<sup>1/</sup>

It is projected that net income per feddan of the four cereal grains will increase (in real terms)<sup>2/</sup> by approximately: 12.86 LE for wheat, 21.23 LE for maize, 23.25 LE for sorghum, and 14.45 LE for barley. A farmer who produces one feddan each of maize and wheat (as part of the typical 3 year cotton rotation on a 3 feddan farm) will find his net income increased by 34.09 LE.<sup>3/</sup>

- <sup>1/</sup> Annex Table XV analyzes the major yield increasing effects and their estimated costs which will result from the improved cultural and managerial practices.
- <sup>2/</sup> Adjusting for inflationary factors.
- <sup>3/</sup> Using most recent reliable farm cost and price information.

## B. Social Soundness

Proposed technologies and practices of the proposed pilot project are well within the mainstream of accepted social customs. Producers are aware of varietal improvement programs and accept new varieties if they are superior to existing varieties.

### 1. Beneficiaries and Social Impact

#### a. Beneficiaries

The project is aimed at the poorer segment of society, the small peasant farmer who has an average holding of two to three feddans of which one feddan is planted to wheat or barley in the winter season and maize or sorghum in the summer season. Cereal grain producers are the eventual target group of this project; over 1.3 million feddans of wheat and approximately 1.9 million acres of maize are cultivated annually. Hence, somewhere between one and two million small farmers will benefit from development of new, disease and insect resistant, high yielding varieties and from development and extension of improved production practices.

Consumers will be major beneficiaries of the proposed project through an increased higher quality food supply. As pointed out earlier in this paper all income groups consider either/or both wheat and maize a basic food commodity.

#### b. Social Impact

The social impact of the Project can be analyzed as a direct result of the economic impact. An improved balance of trade could result in improved social conditions for the citizens of Egypt as financial resources are freed from purchase of cereal grains to be used for improving living conditions. Improved roads, communication systems, educational facilities, etc. could be the result of saving 272 million LE over the next five years.

Social impacts will also be significant at the village level as farmers' incomes are increased. The propensity to consume is extremely high in the rural areas of Egypt, meaning that a very high proportion of additional income is used to purchase consumer goods and services. This fact in conjunction with the multiplier effect will have significant effects on the economic activity of the rural communities. This activity will have a positive impact upon living and social conditions.

Women are involved in cereal production at the farm level. Their present functions include hoeing, weeding, leaf stripping, bundling, transporting bundles, winnowing, screening, etc. Development of appropriate agriculture equipment will ease the work of the women considerably, especially during the peak harvesting seasons.

The Project proposes an ambitious training program with individuals at all levels from village extension agents to the Program Leaders, Directors of Research Stations, and other high ranking officials being provided technical, administrative, and practical training. Such training will provide an impact as those who have been trained continue to work and progress upward in the Ministry of Agriculture.

The mechanization program although small, will provide a means of reducing labor requirements to agriculture in Egypt. Labor requirements will be diminished because the farmer will be able to carry out many of the needed farming operations in a more timely manner. Thus, members of the farm family will benefit through a reduction in demanding physical labor activities. A second benefit from increased mechanization will result from the reduced dependence upon animal power, reducing the

need for forage crops which presently compete with cereals for land. This reduction in forage demand could have significant impacts on cereal production as more area is converted to cereal grains, more timely planting is allowed, and leaf stripping in corn and sorghum is reduced.

## 2. Benefits and Spread Effects

The benefits of this project will accrue to those farmers who are able to increase their rural income through adoption of more productive farming practices. Benefits can be expected to flow during the project and afterwards assuming appropriate and acceptable technologies have been developed and GOE commitment to the replication of appropriate technology continues. Alternative communication strategies will be examined in this project to insure that the most effective method(s) are recommended and employed to facilitate and maximize the long run spread effect.

## C. Technical Feasibility

Dramatic production increases for Egypt in wheat, maize, sorghum and barley are probably not possible in the near future (next 5 years). As pointed out earlier, Egypt ranks very high, world-wide in yields of cereal crops. Therefore, increases will be incremental, and due to a combination of factors/inputs such as recommended in this project. A high-level base of knowledge is in existence concerning both production relationships and the relevant socio-economic characteristics found in Egyptian agriculture. The potential for high payoff is the conversion of this information base into relevant data and dissemination to the farmers.

Egypt now has a network of 11 agricultural research stations, all established during the 1960's. Wheat research is carried out on all stations, maize and barley on six or seven stations and sorghum at two. This project includes only four centers most relevant to major cereal producing areas. These four are: Sakha, Gemmeiza,

Sids, and Mallawi. Some additional work will be done at Shandaweel but will be directed from the Mallawi Center. Each center will carry out on-farm trials and extension activities in two governorates. These governorates are: Gharbiya, Menufiya, Kafr El Sheikh, Dakahliya, Beni Suef, Fayoum, Minia and Assiut.

Maize, wheat, barley and sorghum can be produced throughout Egypt. However, in 1978, two-thirds of Egypt's total production of the four cereals was in the eight governorates proposed for this project.

This project is a commodity oriented program which requires that researchers and extension personnel work closely together as a team to eliminate constraints in cereal production. The mission of this multidisciplinary team approach is to reach the farmers with improved seed and cultural practices as quickly as possible. Having a cadre of specialists located in the governorates where the greatest quantities of cereals are produced should have a greater impact on production than a centralized effort.

Each Research-Extension Center will provide a certain amount of replication in the project, however, each station also differs in its specific mission. For example the majority of the maize produced in the Sakha area is planted after rice. The rotation with rice seems to lessen the severity of maize wilt. This disease is prevalent at Gemmeiza and Sids. However, there appears to be a location-genotype interaction between the latter two centers. This could be an indication of different races of this disease organism. The disease complex on wheat, maize, and barley differs from area to area indicating some small but distinct environmental differences.

Research results obtained at Sakha will apply more to the North Delta area, while results obtained at Gemmeiza represent the Middle and South Delta. The center at Sids is representative of middle and southern Egypt with a different climate and environment than the Delta. Maize wilt is more severe in this area. The environment of this area also is better suited for making sorghum crosses.

The center at Mallawi has two distinct functions differing from the other centers, improvement of durum wheat and grain sorghum. Research on these two cereals will be emphasized at this station.

Egypt has a significant number of well trained and educated crop scientists. The presence of a cadre of excellent plant breeders, pathologists, entomologists, and other disciplines assures the feasibility of the Project. The primary constraints currently existing are the lack of a professional attitude toward research and extension and the lack of a properly structured organization which encourages the type of output required by a developing agriculture. Both of these constraints have been dealt with in this project proposal. The training activities and the inclusion of scientists from the United States will have a positive impact on these constraints. The success of the project will encourage the GOE to continue/expand its cereal grain programs in the future.

#### 1. Employment Effects

The Major Cereals Project recognizes that the existing land tenure system of Egypt precludes large scale mechanization of agriculture. Contrary to the typical development process which involves displacement of agricultural labor as a result of mechanization, this project may offer increased employment opportunities within agriculture. If farming cereal crops can be made more intensive and more profitable, it will provide increased inducement for individuals to work on farms. More returns per farm unit will permit the farmer to hire additional farm labor, whereas presently it is needed, but the farmer feels he cannot afford the cost.

An increase in cereal production will require a parallel development of infrastructure for both provision of inputs and marketing of products. Increased employment opportunities will develop from intensification and expanded input/marketing systems. This project is designed to stimulate this type of increased productivity from the farming sector.

## 2. Engineering Analysis and Construction Feasibility

The proposed construction component of the project includes funding for new office/laboratory/library buildings at Giza, Sakha, Mallawi, and apartments/shop facilities at Gemmeiza and Sids. Renovation of existing structures at Gemmeiza and Sids is also planned. District Extension agronomist buildings have been funded, but exact site locations have not been determined. Only sketch plans for the proposed construction have been developed. Therefore, it will be necessary to derive cost estimates on a square foot or meter basis using cost data available in the GOE for similar standard construction buildings. The project design team estimate that the total construction component will cost about \$ 3,642.0 thousand at today's price. Inflation costs of \$ 657.0 thousand over a period of two years have been added, plus \$ 363.0 thousand for contingencies and other unforeseen costs. This brings the total costs to \$ 4663.0 thousand. An inflation allowance has been included because construction will not be completed until FY 1981. The total amount for the proposed construction appears reasonable.

### a. Satisfaction of Section 611(a)

The cost estimates presented herein have been determined by utilizing current contract costs and in consultation with officials in the MOA. Such personnel are in contact with builders and contractors and are in a position to identify and forecast building costs. The lead time between project documentation and actual construction and anticipated inflation costs have been added. Funds have also been included to cover unforeseen costs and contingencies. Therefore, construction costs presented herein appear to be reasonably firm.

Building design and plans and specifications for the construction will be of the standard designs which have been developed by MOA. Submission of final plans and specifications and allocation of land for the construction shall be

included as a condition precedent to disbursement of construction funds for each construction or renovation activity.

D. Administrative Feasibility<sup>1/</sup>

1. Central Level Organization

a. The Major Cereals project will be carried out by a new Directorate under authority to be delegated by the Minister of Agriculture, see figure 2. A detailed description of the directorate's central level organizational structure is shown in Figure 2. The Minister of Agriculture will designate a Chairman of the Executive Committee and a Project Director General. There are six program areas, they are; wheat and barley, maize and sorghum, mechanization, extension, seed, and economics, statistics and sociology. Each of the six program areas will be headed by a Program Leader responsible for administering program activities within his program area. Program Leaders will function under supervision of the Director General. Personnel within each program area will be responsible for the effectiveness of their program to the appropriate Leader of Section.

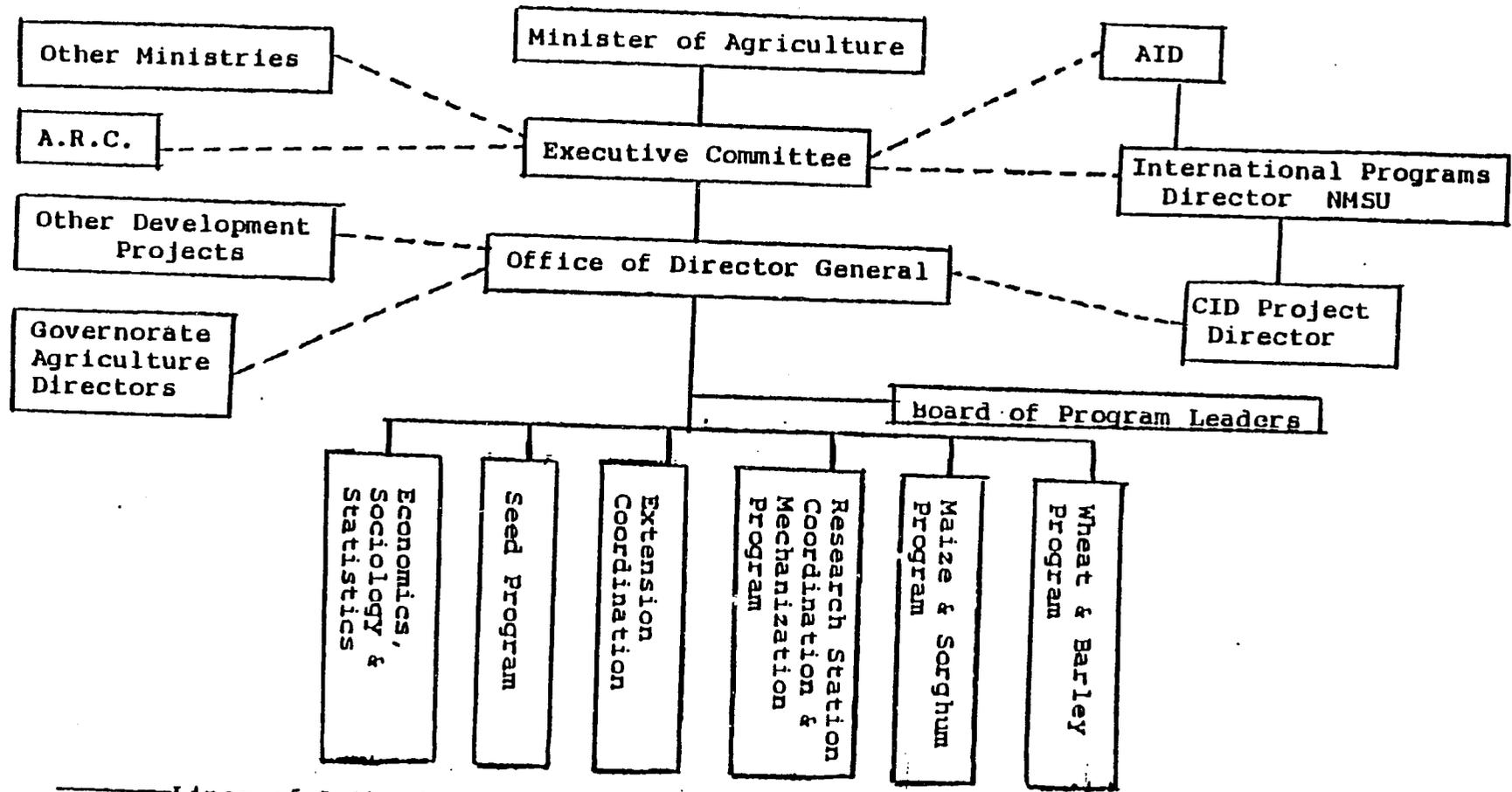
b. Coordination of project activities will be effected by/through the Executive Committee and the Board of Program Leaders. Additionally, cooperation and coordination among staff in the various divisions is exceedingly important and will be fostered in every way possible.

2. Local Level Organization

Figure 3 shows the proposed local level organizational chart at the Research-Extension centers, districts, and villages. A cadre of Trained Researchers, Subject Matter Specialists Extensionists, District Agronomists, and Village Agents will man these positions.

<sup>1/</sup> For a detailed analysis of the administrative feasibility of this project see CID report, pages 40 through 50.

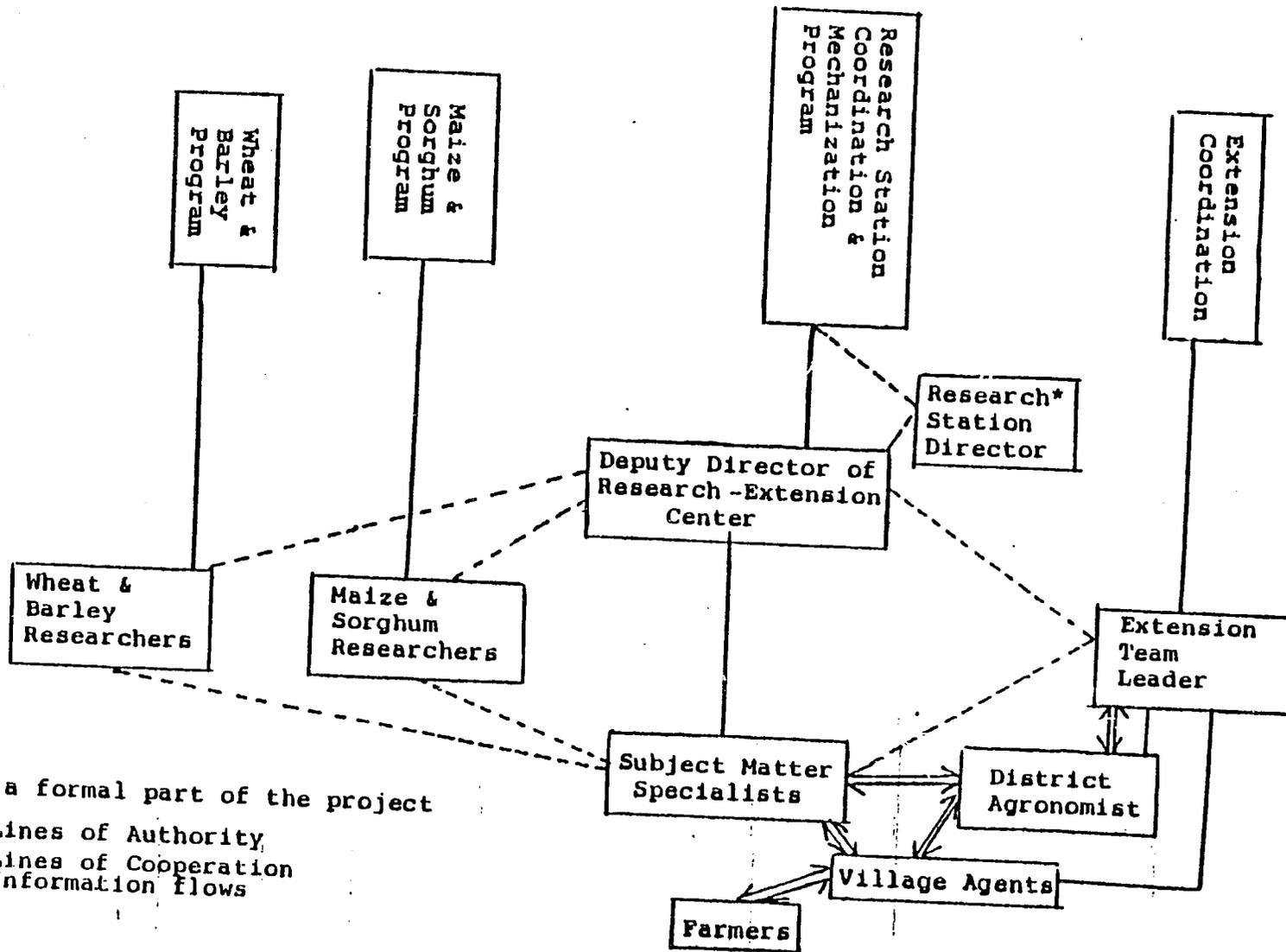
Figure 2 EGYPTIAN MAJOR CEREAL IMPROVEMENT PROJECT  
Central Level Organizational Chart



— Lines of Authority

- - - Lines of Cooperation

FIGURE 3 EGYPTIAN MAJOR CEREAL IMPROVEMENT PROJECT  
Local Level Organizational Chart



### 3. Management Capabilities<sup>1/</sup>

#### a. Existing Personnel Resources

It was pointed out that the Ministry of Agriculture presently has in its employ significant numbers of highly trained personnel. However, there is a definite lack of trained personnel suitable for many of the positions included in this project. Therefore, further intensive training is justified.

#### b. Project Personnel Needs

The technical services to be supplied by the contractor are identified in Annex IV. It is paramount that counterpart Egyptian personnel be identified and assigned to each technical position of the Technical Service Contractor. It is anticipated that existing qualified personnel will be assigned upon implementation of this project. Part of the "first year" plan of operation will be to identify personnel needs and select personnel for placement and/or training.

#### c. Physical Facilities

The present physical facilities are inadequate. Contained in the budget portion of this document are funds to build the required physical facilities. Annex V and Section IV. C. 2. describes the building requirements in as much detail as is possible at this time. This project provides for the renovation of the facilities at Gemmeiza and Sids and construction of new facilities at Giza, Sakha and Mallawi.

### E. Environmental Concerns

As this is largely a research/extension systems project, the long-term environmental impact will be very positive. As farmers adopt the conservation-oriented (particularly water) recommendations of the Project, the impact will be significant and highly beneficial to the environment. A negative determination on the Project initial environmental examination was approved (See Annex IX).

<sup>1/</sup> See Annex I(A) For a discussion of the relationship of this project to the rice research project, including manpower requirements.

## V. Financial Analysis and Plan

A summary of the total project funding based on detailed cost estimates presented in Annex V is shown below in Table 1. The sources and uses of these funds are presented in Table 2. AID funds will be obligated in FY 1979 as shown in Table 3. This is followed by an analysis of inputs measured against outputs in terms of costs (Table 4.). Finally, an assessment is made of the financial viability of the project, and procedures for payment of funds and audit are delineated.

### A. Funding Summary

The total cost of the project is estimated at \$39.9 million. AID will provide a grant of \$30.0 million in kind or cash, or 75% of total project costs.

Table 1.

Project Funding  
Egypt Major Cereals Project  
FY 1979 - FY 1983

(000 U.S. \$)

	<u>Foreign Exchange</u>	<u>Local Currency</u>	<u>Total</u>	<u>Percent of Total</u>
USAID	\$20,031.2	\$ 9,966.9	\$30,000.0 <sup>1/</sup>	75%
GOE	-	\$ 9,942.8	9,942.8	25%
Total	\$20,031.2	\$19,909.7	\$39,942.8	100%
Percent	50%	50%	100%	

<sup>1/</sup> Includes allowances for price increases of \$ 4,533.3 and contingencies of \$1,642.8. (rounded)

## B. Host Country Contributions

Total GOE contributions are approximately \$ 10 million (25%) of which over 80% have been allocated for salaries and wages and 15% for land. Given the precarious international political climate the GOE is under, and its status as an LDC, it is felt the GOE's financial contribution to the Project is generous and a reflection of its strong commitment to the Project.

## C. Cost Estimates and Type of Financing

Detailed cost estimates broken down by type of financing are included as Annex V. A. Accompanying "Explanatory Notes" show how these were derived. Financing is equally distributed between foreign exchange costs and local currency costs with about \$ 20 million designated for each. AID funds will be utilized for all foreign exchange requirements.

## D. Source and Use of Funds - Summary Financial Plan

Table 2 indicates the relative significance of each major assistance in terms of costs and who will be financing them. Technical assistance accounts for the largest portion (40%) reflecting the multidiscipline requirements of the Project. Following in order of significance, commodities (22%), construction (9%), training (7%), land (4%), and other costs (2%). Allowances for inflation and contingencies are 12% and 4% respectively.

Approximately 33% of the U.S. input to this project will be utilized for local currency funding. This will support the items as shown above. By the time this project begins full implementation, and heavy local currency expenditures will be required, Egypt will be leaving the status of an excess currency country. AID has determined that for certain types of projects it will provide dollar funding to purchase Egyptian pounds. The type of projects include those that would have a significant impact on meeting the needs of the poor majority or that would encourage the Egyptian Government to undertake new policy initiatives affecting the

Table 2.  
Summary Financial Plan - Source and Use  
Egypt Major Cereals Project  
 (000 U.S. \$)

Source	USAID <sup>1/</sup>		GOE		Total	
	FX	LC	FX	LC	\$	%
Use: 1. Staff & Consultants	5,624.5	2,371.5	-	7,897.8	15,803.8	40
2. Training	1,356.0	1,038.0	-	635.0	3,029.0	7
3. Construction	182.0	3,460.3	-	-	3,642.3	9
4. Commodities	8,777.3	-	-	-	8,777.3	22
5. Other Costs	170.0	842.4	-	-	1,012.4	2
6. Land	-	-	-	1,500.0	1,500.0	4
7. Inflation	2,841.2	1,692.1	-	-	4,533.3	12
8. Contingency	1,080.2	562.6	-	-	1,642.8	4
<b>Total</b>	<b>20,031.2</b>	<b>9,966.9</b>	<b>-</b>	<b>9,942.8</b>	<b>39,942.8</b>	<b>100</b>

<sup>1/</sup> Total USAID inputs rounded to \$ 30.0 million from \$29,998,100.

country's poor that it otherwise would not initiate. The Project meets both these criteria. Justification for the use of dollar funds in association with local currency expenses is provided in Annex X.

E. U.S. Obligation and Expenditure Schedule

The entire AID input (\$30.0 million) will be obligated, subject to the availability of funds, in FY 1979, in accordance with the proposed budget shown in block 11 of the facesheet and Table 3.

Table 3.

AID Obligations by Fiscal Year

(\$000)

Project 263-0070

Title: Major Cereals Project

Item	FY 1979		Total
	FX	LC	
<u>AID Outputs</u>			
Technical Assistance	5,624.5	2,371.5	7,996.0
Training	1,356.0	1,038.0	2,394.0
Construction	182.0	3,460.3	3,642.3
Commodities	8,777.3	-	8,777.3
Other Costs	<u>170.0</u>	<u>842.4</u>	<u>1,012.4</u>
<u>Sub Total</u>	16,109.8	7,712.2	23,822.0
<u>Inflation</u>	2,841.2	1,692.1	4,533.3
<u>Contingency</u>	1,080.2	562.6	1,642.8
<u>Total AID</u>	<u>20,031.2</u>	<u>9,966.9</u>	<u>30,000.0<sup>1/</sup></u>

See Annex V. B. for the GOE expenditure schedule. Annex V. C. shows the anticipated expenditure schedule for the project.

<sup>1/</sup> Rounded to \$ 30.0 million from \$ 29,998,100.

Table 4.

**F. Costing of Project Outputs/Inputs**      **Egypt Major Cereals Project**  
**FY 1979 - 1983**  
**(000 U.S. \$)**

Project Inputs	PROJECT OUTPUTS*							
	Total	1	2	3	4	5	6	7
<u>U.S.</u>	<u>30,000.0</u> **	<u>2,961.1</u>	<u>10,443.5</u>	<u>5,093.6</u>	<u>3,705.4</u>	<u>4,961.0</u>	<u>1,894.0</u>	<u>939.5</u>
Technical Assistance	7,996.0	799.6	1,999.0	2,398.9	799.6	799.6	799.6	399.8
Training	2,394.0	478.8	598.5	239.4	239.4	239.4	478.8	119.7
Construction	3,642.3	546.3	1,821.3	364.2	364.2	182.1	182.1	182.1
Commodities	8,777.3	438.9	3,410.0	977.7	1,316.6	2,633.2	-	-
Other Costs	1,012.4	91.2	456.2	91.2	191.2	91.2	45.7	45.7
Inflation	4,533.3	450.1	1,602.5	758.9	537.2	753.9	287.9	142.8
Contingency	1,642.8	156.2	556.0	263.3	257.2	261.6	99.9	49.4
<u>GOE.</u>	<u>9,942.8</u>	<u>697.4</u>	<u>2,680.8</u>	<u>2,615.7</u>	<u>1,009.3</u>	<u>1,039.3</u>	<u>1,027.8</u>	<u>872.5</u>
Training	635.0	127.0	158.8	63.5	63.5	63.5	127.0	31.7
Salaries and Wages	7,807.8	390.4	1,952.0	2,342.2	780.8	780.8	780.8	780.8
Land	1,500.0	180.0	570.0	210.0	165.0	195.0	120.0	60.0
<u>Total</u>	<u>39,942.8</u>	<u>3,658.5</u>	<u>13,124.3</u>	<u>7,709.2</u>	<u>4,714.7</u>	<u>6,000.3</u>	<u>2,921.8</u>	<u>1,812.</u>

\*Outputs are as follows:

1. Restructuring of Research - Extension System
2. Improved and expanded cereal grain production research
3. Information and practices disseminated to farmers
5. Training 372 research extension specialists
6. Improved seed production technology and distribution
7. Research and information data base
4. Strategies for reaching farmers

\*\*Rounded to \$ 30.0 million from \$ 29,998,100.

### G. Financial Viability of the Project

Most institutions in the project already exist and operating budgets are being funded. Additional costs of the project which are of a recurring nature will represent less than one percent of the 1978 MOA annual budget. For those new entities that will be created for this project, the Ministry of Agriculture should be able to budget for them given the extremely small amount of MOA resources that they will require. The GOE will covenant that it will provide all necessary resources for new and on-going operating expenses.

### H. Payment of Funds and Audit

The specific procedures for payments under the project will be detailed in the Grant Agreement or in Project Implementation Letters (PIL's). Payments will be made in accordance with U.S. Government regulations and policies. Payment in dollars will be either through direct letters of commitment or letters of commitment to a U.S. bank. It is probable that payments for local costs will be handled by an initial advance to the Grantee for expenses anticipated for a period of three months. Accountability should be every three months, and additional advances would be subject to the acceptability of such accountability by A.I.D. The MOA will develop a regular system and schedule to audit the financial accounts established under the project. This audit function will be the sole responsibility of the MOA with such GOE audit assistance as appropriate. In keeping with standard U.S. Government procedures, A.I.D. reserves the right to audit U.S. Government financed goods and services.

## VI. Implementation Arrangements

The project will be carried out over a five year period. Implementation of the principal Project components will be phased in over the first three years of the project, so that there will be no sharp increase in the demands placed on the administrative capabilities of the GOE. Activity in FY 1979 will be limited to providing technical assistance. It is expected that full project implementation will get underway early in FY 1980.

### A. A.I.D. Overall Responsibility

AID management responsibilities will be discharged through the preparation of a life of project implementation plan for the Project and two extended external evaluations. Plans will be developed jointly by the Ministry of Agriculture, the Technical Services Contractor for the Project and AID staff. The implementation plan, in form and substance satisfactory to AID, will be required to be completed before any project disbursement for construction is made. The USAID/Egypt Assistant Director for Agricultural Development or his designee, will have AID management responsibility. Day-to-day monitoring will be by the appointed USAID Project Officer.

Upon initiation of the project, the USAID Project Officer will immediately assume all monitoring responsibilities pertinent to the Project. Implementation will be in accordance with existing mission orders and all Handbook procedures. Technical backstopping will be provided by the Assistant Director for Agricultural Development, his staff, and other USAID officers as appropriate. The AID Project Committee will participate with the Director in the periodic reviews of the activities of the Project and recommend changes as appropriate.

## B. GOE Responsibility

The Major Cereals Directorate will implement the activities of the Project, which are for the purpose of providing new information and knowledge for cereal grain production by increasing research and training capabilities.

The Directorate, with the contractor's assistance, will have the responsibility to organize and manage all the diverse activities of the Project. The Directorate, in cooperation with other Ministries, International Research Agencies and other interested parties, and in accordance with the project paper and grant agreements, will coordinate and direct the program activities to effect the objectives of the Project. The Directorate will establish and maintain coordination with the Director, USAID/Egypt, or his designated representative, for the purpose of keeping the USAID apprised of the Project activities and evaluating its progress, both on an on-going basis as well as at intervals, as specified in the project paper. Where project redesign or amendments are indicated, the Directorate will assist in the development of project documentation required for AID review. The Directorate will provide for and implement as required the Project's training programs, in coordination with the contractor, USAID/Egypt and training institutions.

## C. Technical Services Contractor

The Technical Services Contractor will have the day-to-day responsibility for advising the Ministry of Agriculture with regard to all operational aspects of the Project. Among these responsibilities will be the provision of all advisory technical services which shall include but not be limited to, 1) advising with regard to all project procurement of U.S. and locally available commodities, 2) identification and placing of trainees, 3) preparation of work plans and reports, and participating in project reviews/evaluations. A proposed scope of work is set forth in Annex IV. Annex IV also shows the technical positions to be supplied by the contractor and describes the duties and responsibilities of each position.

## D. Implementation Plan

The following Table shows the schedule for implementation.

1. General
  - 6/79 PP approved
  - 7/79 Grant Agreement signed
  - 8/79 Project Director General appointed
  - 9/79 Technical Assistance contract signed
2. Technical Assistance Team
  - 10/79 Team Leader arrives
  - 11/79 Agricultural Training Specialist, Extension Education Specialist, and Crop Scientist arrive
  - 1/80 Soil Scientist and Irrigation Specialist arrive.
  - 3/80 Agricultural Engineer arrives
  - 5/80 Applied Research Agronomist arrives
  - 10/80 Seed Multiplication Specialist and Agricultural Economist arrive
3. Construction
  - 6/80 A & E work completed
  - 1/81 Construction at all sites started
  - 11/81 Construction completed
4. Research and Extension
  - 11/79 Major Cereals Directorate established
  - 12/79 Central Office Staff appointed
  - 3/80 Team Members selected for training
  - 5/80 Research and Extension Staff posted
  - 5/80 Maize & Sorghum seed beds prepared with available field equipment
  - 9/80 field equipment in place
  - 9/80 wheat & Barley seed beds prepared with available field equipment
  - Continuous Improved varieties and production practices developed
  - 6/81 Demonstration activities begin
  - 9/81 External evaluation
  - 11/84 Training completed
  - 4/85 Post Project evaluation

## E. Contracts

### 1. Technical Assistance

The GOE will sign an institutional technical services contract for furnishing project technical services, salaries, other direct costs and overhead of the contractor.

The contract will be of a cost reimbursement type entered between the Consortium for International Development and the Ministry of Agriculture and will be required to conform with the provisions of AID Handbook 11, to the maximum extent possible.

### 2. Construction

Local contracts will be let competitively to provide required Architectural and Engineering services and to build the physical facilities. Construction and renovation contracts will be entered into between the Ministry of Agriculture and contractors and will be with AID-purchased Egyptian pounds and will be let to Egyptian contractors in accordance with the provision of AID Handbook 11, i.e., competitively awarded pursuant to formally competitive procedures.

### 3. Commodities and Equipment

Commodities and equipment contracts shall be let competitively in accordance with procedures set forth in AID Handbook 11.\*

### 4. Architectural and Engineering Services

An Architectural and Engineering Services (A & E) contract between the Ministry of Agriculture and an Egyptian firm shall be funded

---

\* The project technical services contractor shall be charged with developing specifications for these procurements and with furnishing services to assist in evaluating bids and recommending contract awards under host country contracting procedures.

with AID purchased Egyptian pounds and awarded competitively in accordance with the guidance of AID Handbook 11. The contractor shall be charged with producing final designs for and supervising construction and renovation of project facilities.

## VII. Evaluation

Evaluation is an on-going, critical component of this project. Continuous internal evaluations, annual evaluations and two external evaluations are scheduled to insure that project objectives and commitments are met.

### A. Internal Evaluations

The internal "in-house" evaluations by the contractor and the MOA staff are to insure that all project activities are being directed toward the achievement of project outputs and purpose. The form and scheduling of reviews will be left to the discretion of project management. The intent of these evaluations is to emphasize the need to examine progress on a continuing basis to insure project effectiveness.

### B. Annual Evaluations

USAID/Egypt, through its project manager will annually examine project progress with the contractor and the MOA staff.

### C. External Evaluations

To insure progress toward the Project objectives, two teams composed of 3 CID technicians, the MOA staff and USAID/Egypt staff will conduct external evaluations during the third and fifth year of the Project. One team will focus on summer crops (maize and sorghum) and the other team will focus on the winter crops (wheat and barley). In order to coordinate the efforts of the review teams one member will serve on both teams.

The first evaluation will: (1) determine progress toward achieving project outputs and purpose; (2) insure that data is being collected to permit measurement of progress; and (3) make recommendations to further assure that project objectives are realistic and can be accomplished. The final evaluation will be carried out after the Project ends to determine its efficiency effectiveness and impact.

Specifically, the evaluations will be directed toward evaluating:

1. Crop yields in the two pilot program areas.
  - a. Yields in these areas will be carefully and systematically monitored each year and compared with previous years' yields. Similar procedures will be used to evaluate other districts and governorates to determine the effectiveness of the pilot and the district programs.
  - b. Importation of these four cereal grains will be monitored. If yields and production are increased, imports of cereal should be less. Less imports should have a positive effect on the balance of payments in the Egyptian economy.
  - c. On-farm and research tests results will be a guide to the yield potential of new cultivars and cultural practices. If the yield spread between farmers' yields and research results is small it would indicate that information transfer, improved cultivars and cultural practices are being readily accepted. (It is also an indication that more research effort is needed). The number of improved cultivars released and how rapidly they are accepted will also be a measure of the effectiveness of this program.
  - d. Quality of commercial seed will be monitored each year and compared to foundation seed produced by the research station. Seed purchased by farmers will be sampled and checked for purity, germination and yield potential.
  - e. The quantity of training of personnel will be measured by the number of man-hours of training received per month. The quality measurement of training is more difficult to evaluate. However, an assessment of job performance will be made before and after an individual receives training to determine the effectiveness and appropriateness of his training program.

- f. A sociological survey or study of farmers in the two pilot areas will be made. This study will be designed to determine if there are any changes in the farmers' attitudes toward the service they receive from the government, in the area of extension, research, seeds, etc.

Scopes of work for the external evaluations will be prepared by AID and MOA. Team personnel selected will receive the concurrence of both USAID/Egypt and the MOA and may include staff from AID/W if appropriate.

VIII. Conditions, Covenants and Negotiating Status

The conditions precedent to disbursement and the covenants of the Grant Agreement will incorporate the substance of the following:

A. Conditions Precedent

1. Conditions Precedent to Initial Disbursement

Prior to any disbursement, or the issuance of any commitment documents under the Project Agreement, Grantee shall, except as A.I.D. may otherwise agree in writing, furnish in form and substance satisfactory to A.I.D.:

a. A statement of the names and titles with specimen signatures of the persons who will act as the representatives of the Grantee;

b. Evidence that the Minister of Agriculture has established the Major Cereals Directorate and the Office of the Director General, as provided in the Project Paper, with operating authority sufficient to implement the project, and (ii) a statement of the functions of the Major Cereals Directorate.

c. Such other documentation as AID may require.

2. Conditions Precedent to Disbursement for Technical Services

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

a. Evidence of the formation of a multidisciplinary team of Egyptian scientists, which will have its headquarters at Giza and which will establish links between

research and extension in order to address the problems and issues of cereal grain production; and

b. A statement signed by the Project Director General describing the relationship of the team to United States scientists working on the Project.

c. Such other documentation as AID may require.

3. Conditions Precedent to Disbursement for Architectural and Engineering Services

Prior to any disbursement or to the issuance by A.I.D. 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 A.I.D. in form and substance satisfactory to A.I.D.:

a. Evidence of the availability of adequate sites for both the construction for the physical facilities contemplated for the Project and field trial activities;

b. Evidence of a signed contract with a contractor acceptable to A.I.D. 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.

c. Such other documentation as AID may require.

4. Conditions Precedent to Disbursement for Construction and Renovation

Prior to any disbursement or to the issuance by A.I.D. 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 A.I.D., in form and substance satisfactory to A.I.D., the Project implementation plan. The Project implementation

plan shall include a modified fixed amount reimbursement procedure agreeable to A.I.D., except that construction during the first year of Project implementation may be financed by an advance from A.I.D. The Project implementation plan shall also indicate Grantee's commitment to raise budget levels to cover project construction in subsequent years. Details of the Project implementation plan may be elaborated in Project implementation letters.

5. Conditions Precedent to Disbursement for Commodities

Prior to any disbursement or the issuance by AID of documentation pursuant to which disbursement will be made for Project commodities, with the exception of Project vehicles and 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, the Project implementation plan.

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 cause the Project to be carried out in conformance with all the Project plans and specifications approved by A.I.D. pursuant to the Project Agreement, and shall provide on a timely basis the necessary local currency and in-kind support as specified in the Project Agreement.

2. The Grantee shall submit for A.I.D. approval prior to implementation, issuance or execution, all plans, specifications, construction schedules, bid documents, documents concerning solicitation of proposals relating to eligible terms, contracts, and all modifications to these documents.

3. The Grantee shall make available, after the termination of the Project, sufficient resources, including the provision of funds, to support on a long term basis the research and extension activities which have been supported by the Project.

4. The Grantee agrees to exercise its best efforts to institute appropriate pricing policies in order to assist the Project to reach the objective of stimulating production of the cereal crops with which the Project is concerned.

#### General Covenants

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



AMEMBASSY CAIRO

ANNEX-T

12 AUG 77 05 36Z  
AMERICAN EMBASSY  
CAIRO, EGYPT

UNCLASSIFIED

Classification

ACTION TO	TA. FIVE PRA
ACTION TAKEN	DATE 9/16
NO. 13794	INITIALS

ACTION  
IDC  
XCM  
PM  
OL  
A  
COM  
OVAL  
CI  
DMT  
SO  
RV  
LF  
ER  
FH  
JOIC  
MS  
M  
RE SAID  
IA  
MS  
IA  
D  
R  
MRU  
ROW  
YES  
INITIALS

P 112150Z (AUG 77)  
FM SECSTATE WASHDC  
TO AMEMBASSY CAIRO PRIORITY 4281  
BT  
UNCLAS STATE 190462

AJDAC  
E.O. 11652: N/A

TAGS:  
SUBJECT: MAJOR CEREALS 263-0070

PRIORITY

1. THE RE ADVISORY COMMITTEE REVIEWED AND APPROVED PID ON JULY 29. BECAUSE OF THE PAUCITY OF INFORMATION IN THE PID THE COMMITTEE SUGGESTED THAT THE MISSION NOT MOVE DIRECTLY TO PREPARATION OF A PP BUT SUBMIT AN INTERIM ISSUES-ORIENTED DOCUMENT AS SOON AS GENERAL OUTLINE OF PROJECT KNOWN. THIS DOCUMENT (WHICH COULD CONSIST OF CABLE) SHOULD SPECIFY THE NATURE OF THE CONSTRAINTS ADDRESSED BY THE PROJECT, PROGRAM OR POLICY ISSUES STILL OUTSTANDING, GENERAL IMPLEMENTATION PLAN AND PROVIDE FINANCIAL AND OTHER DETAILS FOR THE PROPOSED PROJECT. WE PARTICULARLY INTERESTED IN RELATIONSHIP THIS PROJECT TO RICE RESEARCH PROJECT AND DEGREE TO WHICH THESE TWO PROJECTS MAY DRAW UPON SOME GOE RESEARCH TALENT.

2. OTHER SPECIFIC ISSUES RAISED BY THE COMMITTEE INCLUDE:  
(A) POST HARVEST LOSSES, PARTICULARLY ASPECTS RELATED TO VARIETY OR PRODUCTION PRACTICES. WE ASSUME WILL BE INCLUDED AS AREA OF RESEARCH TO BE CARRIED UNDER PROJECT.  
(B) WHICH IS APPROPRIATE AGENCY FOR PROJECT DEVELOPMENT/IMPLEMENTATION? CHRISTOPHER

UNCLASSIFIED

Classification

ANNEX I(A)

State cable 190462, dated August 1977, requested information regarding the relationship of this project to the Rice Research Project.

The following information is provided in response to the above referenced cable:

1. As pointed out on page 29 and again on page 34 the Ministry of Agriculture presently has in its employ significant numbers of highly trained personnel in all cereal specialities. The primary constraints currently existing with regards to major cereals are the lack of a professional attitude toward research and extension and the lack of a properly structured organization which encourages the type of output required by a developmental agriculture.
2. The situation currently existing for rice research and production is essentially identical to that described above for major cereals.
3. Both projects have been designed to address similar problems in a similar manner, namely that of using a multidisciplinary team approach to overcome the constraints.
4. Even though the problems are similar and the approaches are identical the two projects are distinctly separate with neither dependent upon inputs from the other, with perhaps the exception of agricultural economics. Each project will formulate plans and policy separately, but both under the guidance of the Minister of Agriculture to assure maximum coordination.
5. Finally, all the crops to be addressed, (rice, wheat, maize, sorghum and barley) currently have major, separate research programs underway. Each program is manned by a separate body of Egyptian scientists. Both projects (rice and cereals) have been designed to use existing staff within its own sphere.

## ANNEX II

LOGICAL FRAMEWORK

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p><u>Goal:</u></p> <p>Improve the economic and social condition of the cereal grain producer and increase the quantity and quality of food supplies.</p>	<p><u>Measures of Goal Achievement:</u></p> <ul style="list-style-type: none"> <li>- Real income to the cereal grain producer will have been increased</li> <li>- Quality and Quantity of domestic cereal grains will have increased</li> </ul>	<p>Government production data and quality control data</p>	<p><u>Assumptions for Achieving Goal Targets:</u></p> <p>GOE will continue to emphasize cereal grain production. Interdepartmental coordination and cooperation will be adequate.</p>
<p><u>Project Purpose:</u></p> <p>Provide new information and knowledge for cereal grain production increase of 25 percent.</p>	<p><u>Conditions that will indicate purpose has been achieved (EOPs):</u></p> <ul style="list-style-type: none"> <li>- Staff of research and training specialists operational.</li> <li>- Ag Sector has adopted new cultural practices.</li> <li>- 25% higher cereal grain production in eight governorates.</li> </ul>	<p>Project records, surveys, and evaluations.</p>	<p>GOE maintains commitment to project. Trained participants will return to positions in critical areas.</p>

LOGICAL FRAMEWORK

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<u>Outputs:</u>	<u>Magnitude of Outputs:</u>		
1. Restructuring of Research-Extension System.	<ul style="list-style-type: none"> <li>- Improved process for identifying problems and issues in research and its utilization.</li> <li>- Improved process for public sector administration of cereal programs.</li> </ul>	GOE and Project records, project evaluation, and professional judgements.	Trainees assigned to positions trained for. GOE will contribute to emphasize importance of cereal grain research
2. Improved and expanded cereal grain production research.	<ul style="list-style-type: none"> <li>- Trained research staff.</li> <li>- Improved and expanded research facilities.</li> <li>- Development of improved varieties and production practices.</li> </ul>		GOE incentives are sufficient to assure adequate seed production and utilization.
3. Information on new varieties and improved cultural practices disseminated to farmers.	<ul style="list-style-type: none"> <li>- Trained Extension subject matter specialists.</li> <li>- On-farm demonstrations of improved varieties and cultural techniques.</li> </ul>		GOE agricultural elements will recognize benefits of an integrated cereal grain program.
4. Strategies for reaching farmers.	<ul style="list-style-type: none"> <li>- Alternative strategies for MOA developed and tested by FY 81.</li> </ul>		
5. Train 372 research extension specialists.	<ul style="list-style-type: none"> <li>- US trained specialists working in research and extension in 1983.</li> </ul>		

LOGICAL FRAMEWORK

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<u>Outputs:</u> (continued)	<u>Magnitude of Outputs:</u> (continued)		
6. Improved seed production technology and distribution	<ul style="list-style-type: none"><li>- Trained staff.</li><li>- Improved field inspection procedures.</li><li>- Assured seed supply.</li><li>- Improved seed processing facilities.</li><li>- Improved seed-to-farmer distribution system.</li></ul>		
7. Research and information data base.	<ul style="list-style-type: none"><li>- Existing research data base collected and analyzed by FY 81.</li></ul>		

LOGICAL FRAMEWORK

NARRATIVE SUMMARY

OBJECTIVELY VERIFIABLE INDICATORS

MEANS OF  
VERIFICATION

IMPORTANT ASSUMPTIONS

Inputs:

USAID:

Technical Assistance

Team Leader  
Research Specialists  
Consultants  
Backstop Personnel

See detailed budget.

USAID records  
GOE records

AID, GOE, contractor &  
suppliers provide  
goods and services  
on time as required.

Training

Long-term  
Short-term  
In-country

Construction

Office/Laboratories/  
Housing

Commodities

Vehicles, field  
research and laboratory  
equipment and supplies;  
office and training  
equipment and supplies;  
library books and  
periodical subscriptions.

LOGICAL FRAMEWORK

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<u>Other Costs:</u>	See detailed budget.	USAID records GOE records	AID, GOE, contractor and suppliers provide goods and services on time as required.
Budgetary support, computer services, secretaries, etc.			
<u>Inflation Allowance</u>			
<u>Contingencies</u>			
<u>GOE</u>			
Training Support Salaries Land			

4.  
ARAB REPUBLIC OF EGYPT

MINISTRY OF AGRICULTURE

MINISTER'S OFFICE

ANNEX III

April 26, 1979

Mr. Donald S. Brown  
Agency for International  
Development  
American Embassy  
Cairo - Egypt

AGAR	DEP/CD
DATE	5/7/79
INITIALS	5/1

Dear Mr. Brown:

The Government of the Arab Republic of Egypt is desirous of taking additional steps to improve the production of cereal grains in Egypt, specifically the production of wheat, maize, sorghum and barley.

Based upon the findings of the CIMMYT study and the recommendations of the Agricultural Research Center's major cereals committee, it has been decided to move ahead on a major program to increase the production of the above specified cereal grains. We would hope to accomplish this by restructuring the research-extension system and upgrading the facilities and personnel such that research and extension functions can be conducted more efficiently and effectively.

We hereby request AID assistance in our efforts to increase the production of these four important cereal grains.

Major elements of the proposed assistance will include:

(a) development of new technical information concerning cereal production, (b) development of new cultivars with increased yield capabilities, (c) establishment of an integrated research-extension system, (d) testing and adoption of mechanization for Egyptian conditions and (e) providing technical and advanced training for personnel involved in the project.

Subject to the favorable consideration of this request, we would like to initiate this project as soon as possible.

Sincerely yours,



M.M. Dawood  
Minister of Agriculture

ARAB REPUBLIC OF  
MINISTRY OF AGRICULTURE  
MINISTER'S OFFICE

ANNEX III

19 SEP 1977

Cairo, September 11, 1977.

567

Dear Mr. Brown,

7/2/9

This is to inform that this Ministry concurs in the conclusion of the project agreement entitled "Egyptian National Wheat & Maize Program" a copy of which is attached.

Your prompt action in taking the necessary arrangement for the conclusion of this agreement will be appreciated.

Yours Sincerely,

*I. Shoukry*

Ibrahim Shoukry  
Minister of Agriculture

Dr. Donald S. Brown  
Director  
U.S. Agency for International  
American Embassy  
CAIRO.

ACTION TO	TA	DEP/DD
ACTION TAKEN		DATE 7/30
DATE		INITIALS

ATT. TO TA

\*See the following pages, this Annex, for a complete statement regarding the Grantees' Application for Assistance and project background.

01

## ANNEX III

Major Cereals ProjectBackground Statement on Project Development

The Major Cereals Project evolved from activities sponsored by the Ford Foundation. The Foundation has supported maize and wheat research through CIMMYT in Egypt for many years. CIMMYT has had resident advisors in Egypt since 1969. During this period numerous Egyptian scientists have received practical training in maize and wheat at CIMMYT headquarters in Mexico.

In early 1977, both CIMMYT and the Mission agreed to participate in designing a project to establish a comprehensive national maize and wheat research and production program in Egypt. These efforts led to two separate, but cooperative proposals which outlined the potential activities of both AID and CIMMYT.

The CIMMYT proposal was submitted to the MOA on June 15, 1977. The Mission proposal was in the form of a Project Identification Document (PID) and was submitted to AID/W for approval in May 1977. The purpose of the Mission Project was to develop a national research and production system to provide improved packages of agronomic practices for increasing the production of maize and wheat. State cable No. 190462, dated August 12, advised the Mission that subject PID had been approved on July 29, 1977.

In September 11, 1977, the Minister of Agriculture officially requested Mission assistance to develop a major cereals project. A lengthy delay occurred at this time because the new President of the Agricultural Research Center (ARC) had serious reservations about a project that would not be directly under his control. Finally, however, the Mission was able to proceed and did so by asking AID/W to contract for a project design team to develop information necessary for the preparation of a project paper.

In August of 1978, AID/W sent a "Request for Expressions of Interest" for a major cereals project

to eleven U.S. universities, the USDA and two consortiums.

From those applying, the GOE, USAID/Egypt and AID/W selected the Consortium for International Development (CID) to provide the services. In order to expedite project development and implementation, CID was contracted under the collaborative assistance method of contracting.\*

In March 2, 1979, the CID project design team provided the Mission with their report, Egyptian Major Cereals Improvement. This report has provided much of the information used in the project paper. Copies of the CID report are appended to this project paper as reference material.

---

\* The collaborative assistance method of contracting was selected for this project because it represents an alternative method for long-term technical assistance which provides a flexible approach to project design, contracting, and project implementation. This flexibility is essential to the major cereals project as the problem areas are complex and of varying uncertainty. CID will have the flexibility to change project components (with prior AID approval) as the need is shown to exist.

ANNEX IV

Position Descriptions and Scope of Work<sup>1/</sup>

A. Personnel

1. Technical Services Contractor Staff - Long-Term

Table IV-1 shows the long term contractor staff needed during the five years of this Project. This team will be stationed at the Central Headquarters at Giza to be readily available to all four Research-Extension Centers as well as entities of the Government of Egypt. A brief description for each of the positions follows:

(a) Team Leader

This position requires an agricultural scientist with general management and research administration experience. Previous foreign experience would be desirable. He will administer all contractor team members, be responsible for their staffing, budget, purchases and other logistical needs, and function as follows:

- (1) Serve as the principal U.S. technical representative for all activities of the Project during its duration, and act as Project Co-Director.
- (2) Provide technical and administrative assistance to GOE authorities responsible for planning and implementation of work programs under the Project. He will maintain daily coordination with the Project Director General.
- (3) Assure that project activities are scheduled and implemented according to the Project Paper and staff work plan.

<sup>1/</sup> In addition to the duties listed for each position, all technical staff will have the responsibility for training of counterparts in their special area of expertise as well as assisting in providing in-country training programs.

TABLE IV. 1.

## Manpower Requirement for Contractor Long-Term Personnel

COMPONENT	Person Months					Total
	First	Second	Third	Fourth	Fifth	
	pm	pm	pm	pm	pm	pm
1. Team Leader	12	12	12	12	12	60
2. Crop Scientist	12	12	12	12		48
3. Soil Scientist	9	12	12	12	3	48
4. Irrigation Specialist	9	12	12	12	3	48
5. Applied Research Agronomist	3	12	12	12	9	48
6. Agricultural Training Specialist	12	12	12	12		48
7. Extension-Education Specialist	12	12	12	12		48
8. Seed Multiplication Specialist		12	12	12	12	48
9. Agricultural Engineer (Mech)	6	12	12	12	5	48
10. Agricultural Economics Statistician		12	12	12	12	48
Total Person/Months	75	120	120	120	57	492
Total Person/ Years	6.25	10	10	10	4.75	41
1. a. Consultants	20	2.5	3.0	2.5	2.0	12

(4) Establish and maintain coordination with GOE authorities and USAID for timely and efficient implementation of project activities.

(5) Provide evaluation reports to GOE and USAID.

(6) Recommend needed changes or amendments to the Project.

(7) Approve and facilitate requests for the procurement of commodities provided by this Project.

(b) Crop Scientist and/or Plant Breeder Specialist

Broad experience in agronomic research on field crops, preferably cereal grains with plant breeding experience desired. Will work with barley, maize, sorghum, and wheat breeders concerning a variety of problems in Egyptian agriculture.

(c) Soil Scientist Specialist

Experienced in soil fertility and management, including physical properties. Will work closely with Irrigation Specialist (and Egyptian Water Use and Management Project) in problems of water use, water logging, and soil salinity.

(d) Irrigation Specialist

Experienced in water management, including soil moisture relationships, water requirements, and water measurement and scheduling. He will work closely with the Egyptian Water Use and Management Project and the Soil Specialist.

(e) Applied Research Agronomist Specialist

Experienced in general crop production with special emphasis on on-farm trials and experimental design.

(f) Agricultural Training Specialist

This individual should have experience in developing and conducting a variety of nonacademic short-term training programs in the agricultural field. This individual will be responsible for the planning and conduct of all in-country project related in-service and pre-service training of Egyptian staff and arranging for training conducted in the United States or other countries.

(g) Extension Education Specialist

This person will have had broad experience in extension and special training in extension education. His role will be advisory to the total extension program within the Project. He will assist with training programs involving extension administration, extension methods, program planning and evaluation, human behavior in the education process, etc.

(h) Seed Multiplication Specialist

Should have knowledge and training of seed increase programs, including production, processing, and distribution.

(i) Farm Mechanization Specialist

Specialist capable of designing, adapting, and evaluating agricultural machinery, especially for small farms and/or research station use.

(j) Agricultural Economist/Statistician Specialist

Experienced in evaluating alternate farming systems, credit use, merits of mechanization and farm management. Knowledge of statistics and economic/sociological surveys. Trained to provide economic analysis of research results.

## 2. Egyptian Staff - Central Office

The central office for this project will be located at Giza. All administrative support for this project and its field components will be located at this site. Table IV.2. shows the Egyptian Central Office Staff by program area.

The Central Office Staff is to function as both an administrative and field working team. The idea is to establish a multidisciplinary research and production system along crop oriented lines that is capable of responding effectively to help reduce and remove existing constraints to production.

The system will be run by a capable, <sup>1/</sup> dedicated staff which will have accepted the responsibilities, been given the necessary authority and received sufficient support. They must travel frequently, often remaining overnight at the centers (i.e. 3 - 5 days per week, when work requires). It should be remembered that for the actual planning and execution all staff members must work together as a well trained "team". A brief description of the responsibilities of the central office staff are listed below.

### (a) Director General

The Director General of the Project will be appointed by the Minister of Agriculture. He should be an agriculturalist with successful experience in research and/or extension administration. He should be extremely knowledgeable of Egyptian agriculture and have a general knowledge of international agriculture. He should be capable of working with people and have experience in public relations.

The Director General will work harmoniously with the Contractor Team

1/ All administrative staff members must be bilingual in Arabic and English.



Leader, serve as Chairman of the Board of Program Leaders, cooperate and interact with other Ministries, development and research projects, international research centers, and government officials at all levels.

(b) Deputy Director General

The qualifications of the Deputy Director General should be much the same as for the Director General indicated above. He will be in charge, administratively, of the Project in the absence of the Director General and assume any specific duties assigned by the Director General.

(c) Sociologist

The Sociologist will initiate and execute studies to determine the sociological impact of the recommended production practices.

(d) Program Leaders

There will be six Program Leaders in charge of the six program areas as discussed in the Project Description section of this paper. The Program Leaders will have administrative experience and be knowledgeable in the work of his particular program area. He should be capable of working with people and command the respect of subordinates.

(e) Assistant Program Leaders

Each program area will have assigned an assistant Program Leader. He should possess the same qualifications as the Program Leader. His professional orientation should compliment the respective Program Leader as related to the tasks of the program area.

(f) Professional Staff

A small staff of scientists<sup>1/</sup> will be located at the central office<sup>2/</sup> whose duties are to assist and direct the research at the centers and to assist in the training of extension personnel. They should be well versed and experienced in their discipline and possess skills of public relations.

3. Egyptian Staff - Research-Extension Centers

The Project will include four Research-Extension centers. These will be located at Sakha, Gemmeiza, Sids, and Mallawi. Table IV.3. includes both research and extension personnel who will be located at each of these centers. The following is a brief description of the responsibilities of the staff identified in this table.

(a) Deputy Director of the Research-Extension Center

This person will be responsible for the operation of the Research-Extension Centers. His responsibilities will include land preparation, irrigation, labor, cultural practices and maintenance of all cereal project farm equipment. He must work closely with each Team Leader and the present Director of the Research Station. He will coordinate, assist and be administratively responsible for the Subject Matter Specialists working at his Station. Administratively he will answer to the Research Station Coordination and Mechanization Program Leader.

(b) Team Leaders

One person in the Maize-Sorghum and Wheat-Barley group, at each station will be designated as the Team Leader.

<sup>1/</sup> See Table IV.2. For specific scientific disciplines of this staff.

<sup>2/</sup> The Agricultural Mechanics Staff will be located at Sakha.

Table IV. 3.  
Research and Extension Staffing

Personnel	Total	Sakha		Gemmeiza		Sids		Mallawi	
		Wheat & Barley	Maize & Sorghum						
<b>Research Staff</b>									
Deputy Director	4	1		1		1		1	
Team Leader	8	1	1	1	1	1	1		
Plant Breeder	16	2	2	2	2	2	2		1
Pathologist	6	1	1	1	1			2	2
Seed Specialist	8	1	1	1	1				1
Production Res. Agronomist	16	2	2	2	2	2	2	2	2
<b>Research/Extension</b>									
Entomologist	8	2		2		2		2	
Soils Specialist	8	2		2		2		2	
Water Specialist	8	2		2		2		2	
Agricultural Mechanic	4	1		1		1		1	
Weed Control Spec.	8	2		2		2		2	
Production Agronomist	16	4		4		4		4	
<b>Extension Personnel</b>									
	Total	Ghar-bia	Menu-fia	Kafr el Sheikh	Dak-alia	Beni Suef	Fayum	Minia	Assiut
Extension Team Leader	4	1		1		1		1	
District Agronomist	66	8	8	8	11	7	5	9	10
Village Agents	160	80						80	

It will be his responsibility to direct the overall research activities of this specific group. He will coordinate activities such as, obtaining extra labor when needed (both office and field), locating material, supplies, equipment and repairs. He must work closely with the Research Deputy Director. Administratively he will answer to the Program Leader (Maize-Sorghum or Wheat-Barley) at the Central Office.

(c) Research Personnel Assigned to Wheat-Barley; Maize-Sorghum Programs at each Center

Four plant breeders, two each of wheat and barley and maize and sorghum; four Production Research Agronomists, two each for wheat and barley and maize and sorghum; two Plant Pathologists, one each for wheat and barley and maize and sorghum, two Seed Specialists, one each for wheat and barley and maize and sorghum will be assigned to the research section of the wheat-barley and maize-sorghum programs. Administratively they will answer to the Team Leader in their respective section.

(d) Plant Breeders

These people will hybridize, select and/or develop superior cultivars in maize, wheat, sorghum and barley. Breeding for pest resistance and other attributes will require the cooperation of colleagues in other disciplines.

(e) Plant Pathologists

These people will study the nature of cereal diseases and develop methods for their control. These methods may include the use of chemicals, plant resistance, biological control and/or combinations of several methods. Much of the work should be in cooperation with the breeders. They will also serve as advisor to the Extension personnel on problems related to pathology.

**(f) Seed Specialists**

These people will specialize in growing, roguing and maintaining clean seed increase fields of breeder and elite seed stocks. They will be responsible for cleaning, storing, and packaging of seed. They will conduct both field and laboratory germination tests when necessary. They will assist other disciplines in packaging seed for tests. They will be available for consultation concerning problems in commercial seed production.

**(g) Production Research Agronomist**

These people will conduct research trials on all type of cultural practices such as date and rate of seedings, fertilizers (amounts, sources, applications, etc.) weed control (mechanical and/or chemical) irrigation (times and amounts), cultivation plowing, clipping etc. They must work closely with the Subject Matter Specialists.

**(h) District Agronomists**

The District Agronomist is responsible to the Extension Team Leader and is charged with conducting an effective extension educational program in cereal grain production for his assigned district. In four selected districts of the pilot study area the District Agronomist has administrative and program direction over the Village Agents.

**(i) Village Agents**

The Village Agent is responsible to the District Agronomist for an effective extension educational program in cereal grain production for his assigned village. At the beginning of the Project villages in only four districts will be manned by Village Agents.

ANNEX V

Explanatory Notes

Cost Estimates

Egypt Major Cereals Project

FY 1979 - 1983

1. Estimates: Prepared March 1979 by USAID/Egypt and CID Project Design Team
2. Conversion Rate: U.S. \$1 = LE .70
3. AIM Fiscal Year: October to September following year.
4. Technical Assistance:
  - a. U.S. Technicians:

Estimates are based on information presented in CID Study, Table 22. a. Estimates include salaries, fringe benefits, post differential, travel to and from post for technicians and dependents, U.S. Storage, HHE and car shipment, R & R, education allowance, marine insurance, and institutional overhead of 40 percent. Based on recent Mission experience.

- b. Egyptian Project Personnel:

Based on GOE salary range (annual L.E. 1,260 - 6,000). See CID Report, Tables 24 and 25.

- c. Backstop:

For technical, supervisory, and managerial support provided by the institution awarded the project contract.

- (1) Field: \$ 36,000 average salary + 30% fringe benefits allowance, international travel, per diem and institutional overhead of 77%, see CID report, Table 22.b.

- (2) Campus: Calculations include two distinct backstop areas; (1) Technical support from several of the consortium universities - \$ 32,000 average annual salary + 17% fringe benefit allowance, and institutional overhead at 77%, see CID Report, Table 22.c.; and, (2) campus coordination office - Project Director, \$ 35,000 annual salary + 20% fringe benefits; secretary, \$ 6,000 annual salary + 17% fringe benefits. Institutional overhead @ 77% of salaries. See CID Report, Table 22.d.

5. Participants:

- a. Long-term Training, U.S. - Calculated at \$ 13,200 per year; based on current costs.
- b. Short-term Training, out of country - Calculated at \$ 14,400 per year; based on current costs.
- c. In Country - Calculated at \$ 600 per month; based on current costs.
6. Construction: Calculations based on CID project team estimates; see CID report Tables 15 and 27, and Section IV.C.2, this paper.

7. Vehicles:

All prices are CIF Egypt for U.S. procured vehicles includes 10 percent for damage and loss; estimates provided by CID design team, see CID report, Tables 17 and 29.

a. <u>Sedans</u>		
	6 units @ \$ 9,000 each	= \$ 54,000
b. <u>Pickups, Crew Cab</u>		
	28 units @ \$ 15,000 each	= \$ 420,000
c. <u>Pickups, 1/2 ton</u>		
	39 units @ \$ 13,500 each	= \$ 526,500
d. <u>Pickups, 3/4 ton</u>		
	5 units @ \$ 16,500 each	= \$ 82,500
e. <u>Vans</u>		
	16 units @ \$ 16,500 each	= \$ 264,000
f. <u>Truck, one ton</u>		
	1 unit at \$ 22,500 each	= \$ 22,500

g. <u>Motor Bikes (100 cc)</u>		
248 units @ \$ 1,500 each	= \$	372,000
h. <u>Replacement Parts</u>	= \$	232,200
Subtotal*	= \$	<u>1,973,700</u>
Total	= \$	<u>3,947,400</u>

\*These vehicles will be replaced in 2 years. Therefore, budget has been doubled, see total.

8. Machinery and Equipment for Research Extension Centers:

Item	Unit Cost	Subtotal	Spare Parts	Estimated Total Cost	Location
	\$	\$	\$	\$	1/
<u>Research-Extension Center</u>					
2 80 d.b. hp Tractors	20,000	40,000	8,000	48,000	S, G
2 60 d.b. hp Tractors	18,000	36,000	7,200	43,200	Se, Ma
4 35 d.b. hp Tractors	14,000	56,000	11,200	67,200	S, G, Se, Ma
4 40' Land Planes	3,000	12,000	600	12,600	S, G, Se, Ma
4 Moldboard Plows	1,500	6,000	300	6,300	"
4 Chisel Plow	1,500	6,000	300	6,300	"
4 Lister 2/Tool bar	1,500	6,000	300	6,300	"
4 Bed Shaper 2/Tool bar	1,500	6,000	300	6,300	"
4 Adjustable Cultivator	1,200	4,800	240	5,040	"
4 Flail Chopper	1,700	6,800	340	7,140	"
4 Rotary Chopper	1,200	4,800	240	5,040	"
4 Lilliston Cultivator	2,200	8,800	440	9,240	"
4 80" rotovators	3,400	13,600	680	14,280	"
4 Hagi Plot Comb.	10,000	40,000	8,000	48,000	"
4 10' Fert. Spreader	750	3,000	150	3,150	"
4 6' Fert. Spreader	750	3,000	150	3,150	"
4 Ditch Openers	500	2,000	100	2,100	"
4 4 row Cone Planter	4,000	16,000	800	16,800	"
4 80" Blade	750	3,000	150	3,150	"
4 10' Grain Drill	3,400	13,600	680	14,280	"
4 Farm Wagons	750	3,000	150	3,150	"
4 Pipe Wagons	750	3,000	150	3,150	"
4 Hilldrop Planter	3,500	14,000	700	14,700	"
4 Portable Pump 4" out	3,000	12,000	2,400	14,400	"
4 Sets gated pipe 4" Irrigation	6,000	24,000	1,200	25,200	"

1/ S = Sakha, G = Gemmeiza, Si = Sids, Ma = Mallawi, Headquarters (Giza)

Item	Unit Cost	Subtotal	Spare Parts	Estimated Total Cost	Location
4 4" in-line meters	750	3,000	600	3,600	S, G, Se, Ma
4 Sets Shop Equipment	15,000	60,000	3,000	63,000	"
4 3 pt. Border Disc.	1,000	4,000	200	4,200	"
4 Vogel Threshers	4,500	18,000	3,600	21,600	"
4 Misc. Small Equipment	20,000	80,000	16,000	96,000	"
4 Seed Cleaning Equip.	25,000	100,000	20,000	120,000	"
<b>Subtotal</b>		<b>608,400</b>	<b>88,170</b>	<b>696,570</b>	
<b>Extension Function &amp; Research-Extension Center</b>					
4 25 hp Tractors	8,000	32,000	6,400	38,400	S, G, Se, Ma
4 6' Grain Drill	2,400	9,600	460	10,060	"
4 6' Fert. Spreader	750	3,000	150	3,150	"
4 5 ton-5th Wheel Trlr.	8,000	32,000	1,600	33,600	"
4 Tract. Mount Sprayer	4,000	16,000	800	16,800	"
Misc. Small Equipment	10,000	40,000	8,000	48,000	"
<b>Subtotal</b>		<b>132,600</b>	<b>17,410</b>	<b>150,010</b>	
<b>Total (Purchase)</b>		<b><u>\$741,000</u></b>	<b><u>\$105,580</u></b>	<b><u>\$846,580</u></b>	
F.O.B.-U.S.				\$ 846,580	
Freight (50%)				423,290	
Breakage and Loss (10%)				84,658	
Misc.				14,400	
<b>Grand Total</b>				<b><u>\$1,368,928</u></b>	

9. Laboratory Equipment:

Item	Unit Cost \$	Subtotal \$	Spare Parts \$	Estimated Total Cost \$	Loca- tion
4 Entomology Lab Equipment	50,000	200,000	40,000	240,000	S,G,Si,Ma
4 Soil Lab	100,000	400,000	80,000	480,000	
4 Pathology Lab	100,000	400,000	80,000	480,000	
4 Breeders Workroom Equipment	25,000	100,000	20,000	120,000	
1 Cereal Quality Lab	150,000	150,000	30,000	180,000	Headq'trs
1 Lab Equipment for Giza	50,000	50,000	5,000	55,000	
		1,300,000	255,000	1,555,000	
				F.O.B.-U.S. \$1,555,000	
				Freight (50%) 777,500	
				Breakage & Loss (10%) 155,500	
				<u>Grand Total</u> \$2,488,000	

10. Office Equipment and Supplies:

Includes office furniture, calculators, Ditto Machine, typewriters, photocopiers, air conditioners, and daily office supplies. Total costs are estimated at about \$973,000.

11. Budgetary Support:

To fund research investigation, testing and demonstration operations, includes technical and general support services. Total costs for one expeditor, one administrative assistant, 3 secretaries, one translator, and 13 drivers is estimated to be about \$285,000. In country travel expenses and vehicle operating costs are estimated to be \$315,000. Guest house with appliances is estimated to be about \$177,000. Communications (U.S./Egypt), \$60,000; library materials, \$25,000; external evaluations, \$100,000, and miscellaneous \$50,000.

12. Inflation Factors:

Based on recent trends, U.S. and GOE rates calculated at 10% compound rates as follows:

	FY 80	FY 81	FY 82	FY 83	FY 84
U.S. & GOE	10%	21%	33%	46%	61%

13. Contingency Factor:

Applied only to certain items - 10%.

1/ S=Sakha, G=Gammeiza, Si=Sids, Ma=Mallawi, Headquarters(Giza)

Explanatory NotesGOE Contributions

1. Training Support\* - GOE policy is to support out-of-country trainees at full salary for entire training period.

2. Egyptian Professional Staff, Salary

<u>Number of Employees and Title</u>	<u>Annual Salary</u>	<u>5 year Total</u>
	<u>L.E.</u>	<u>L.E.</u>
<u>Central Office</u>		
1 Director General/5 years	6,000	30,000
1 Deputy Director General/5 years	5,400	27,000
5 Program Leaders/5 years	27,000	135,000
5 Asst. Program Leaders/5 years	24,000	120,000
6 Plant Breeders/5 years	25,200	126,000
2 Pathologists/5 years	8,400	42,000
1 Entomologist/5 years	4,200	21,000
1 Soil Scientist/5 years	4,200	21,000
1 Irrigation Scientist/5 years	4,200	21,000
2 Agronomist/5 years	8,400	42,000
3 Agri. Mechanization/5 years (Located at Sakha)	10,800	54,000
1 Statistician/5 years	4,200	21,000
3 Chemist/5 years	10,800	54,000
1 Editor/5 years	3,600	18,000
Subtotal		732,000
<u>Four Research-Extension Centers</u>		
1 Research Station Deputy Director/5 years	19,200	96,000
8 Team Leaders/5 years	33,600	168,000
16 Plant Breeders/5 years	57,600	288,000
6 Pathologists/5 years	21,600	108,000
8 Seed Specialists/5 years	28,800	144,000
16 Prod. Research Agronomist /5 years	57,600	288,000
8 Entomologists/5 years	28,800	144,000
8 Soil Specialists/5 years	28,800	144,000
8 Water Specialists/5 years	28,800	144,000
8 Weed Control Specialists/5 years	28,800	144,000
4 Agricultural Mechanics/5 years	14,400	72,000
16 Production Agronomist/5 years	57,600	288,000
4 Extension Team Leaders/5 years	14,400	72,000
66 District Agronomists/5 years	118,800	594,000
160 Village Agents/5 years	192,000	960,000
Subtotal L.E.	3,654,000	\$ Equivalent
Total L.E.	4,386,000	6,140,400

3. Egyptian Support Staff, Salary:

<u>Number of Employees and Title</u>	<u>Annual Salary</u>	<u>5 year Total</u>
<u>Central Office</u>		
	<u>L.E.</u>	<u>L.E.</u>
1 Expediter/5 years	3,000	15,000
1 Administrative Asst./5 years	3,000	15,000
8 Secretaries/5 years	19,200	96,000
10 Laborers/5 years	6,000	30,000
7 Drivers	12,600	63,000
Subtotal		219,000
<u>Four Each Research-Extension Centers</u>		
8 Mechanics/5 years	19,200	96,000
8 Mechanics Helpers/5 years	9,600	48,000
8 Tractor Drivers/5 years	14,400	72,000
70 Technicians/5 years	84,000	420,000
40 Laborers/5 years	24,000	120,000
8 Drivers/5 years	14,400	72,000
12 Secretaries/5 years	21,600	108,000
4 Cooks/5 years	7,200	36,000
Subtotal L.E.		972,000
Total L.E.	1,191,000	<u>1,667,400</u>
Total GOE Salary Contribution		\$ 7,807,800
Total GOE Land Contribution		\$ 1,500,000
Total GOE Training Contribution		\$ <u>635,000</u>
Total GOE Contribution		\$ <u>9,942,800</u>

\* GOE support during training is calculated as follows:

- (1) Long-terms, U.S. - 30 participants: L.E. 4,000  
Average salary.  $\$5,720 \times 30 \times 2.5 \text{ years} = \$ 429.0$
- (2) Short-term, U.S. - 60 participants: L.E. 4,000  
Average salary.  $\$5,720 \times 60 \times .6 \text{ years} = \$ 206.0$

## ANNEX V (A)

Cost Estimates  
Egypt Major Cereals Project  
FY 1979 - FY 1983  
(000 U.S.\$)

	<u>Foreign Exchange</u>	<u>Local Currency</u>	<u>Total</u>
I. Grand Total	\$ 20,031.2	\$ 19,909.7	\$ 39,942.8
A. USAID	20,031.2	9,966.9	30,000.0 <sup>1/</sup>
B. GOE	---	9,942.8	9,942.8
II. USAID	\$ 20,031.2	\$ 9,966.9	\$ 30,000.0 <sup>1/</sup>
A. <u>Technical Assistance/Field</u>	<u>4,867.6</u>	<u>2,883.4</u>	<u>7,751.0</u>
1. Team Leader (5 years @ 130.0)	421.5	228.5	650.0
2. Crop Scientist (4 years @ 120.0)	295.2	184.8	480.0
3. Soil Scientist (4 years @ 120.0)	295.2	184.8	480.0
4. Irrigation Specialist (4 years @ 120.0)	295.2	184.8	480.0
5. Applied Research Agronomist (4 years @ 120.0)	295.2	184.8	480.0
6. Agricultural Training Specialist (4 years @ 120.0)	295.2	184.8	480.0
7. Extension Education Specialist (4 years @ 120.0)	295.2	184.8	480.0
8. Seed Multiplication Spe- cialist (4 years @ 120.0)	295.2	184.8	480.0
9. Agricultural Engineer (Mech.) (4 years @ 120.0)	295.2	184.8	480.0
10. Agricultural Economist (4 years @ 120.0)	295.2	184.8	480.0

<sup>1/</sup> Rounded to 30,000.0 from 29,998.1

	<u>Foreign Exchange</u>	<u>Local Currency</u>	<u>Total</u>
11. Consultants (12 years @ 114.0)	924.2	443.8	1,368.0
12. Project Staff Trips (3 @ 7.0 - 1 @ 10.0)	---	31.0	31.0
13. Preparatory Trip (Team Leader)	1.0	5.0	6.0
14. Inflation Allowance	864.1	511.9	1,376.0
<u>B. Technical Assistance/ Total CID</u>	<u>897.3</u>	<u>---</u>	<u>\$ 897.3</u>
<u>Campus Support</u>			
1. CID - Campus Backup Staff (11 1/2 years @ 64.0)	736.0	---	736.0
2. Inflation Allowance	161.3	---	161.3
<u>C. Technical Assistance/ Campus Administration</u>	<u>1,066.2</u>	<u>---</u>	<u>\$ 1,066.2</u>
1. Professional Staff (7.5 years @ 81.3)	610.0	---	610.0
2. Staff Assistant (5 years @ 25.0)	125.0	---	125.0
3. Secretaries (10 years @ 12.5)	125.0	---	125.0
4. Secretaries (part time) (5 years @ 5.0)	25.0	---	25.0
5. Inflation Allowance	181.2	---	181.2
<u>D. Training</u>	<u>1,866.4</u>	<u>1,464.2</u>	<u>\$ 3,330.6</u>
1. In-country	---	1,038.0	1,038.0
2. Short-Term (U.S.)	432.0	---	432.0
3. Long-Term (U.S.)	924.0	---	924.0
4. Inflation Allowance	397.1	300.0	697.1
5. Contingency	113.3	126.2	239.5

	<u>Foreign Exchange</u>	<u>Local Currency</u>	<u>Total</u>
<u>E. Construction</u>	<u>233.0</u>	<u>4,430.4</u>	<u>4,663.4</u>
1. Giza (Central Office)	26.8	509.1	535.9
2. Sakha	42.0	799.0	841.0
3. Mallawi	42.0	799.0	841.0
4. Gemmeiza	25.0	475.0	500.0
5. Sids	25.0	475.0	500.0
6. District Extension Office	21.2	403.2	424.4
7. Inflation Allowance	32.8	624.1	656.9
8. Contingency	18.2	346.0	364.2
<u>F. Commodities</u>	<u>10,853.7</u>	<u>---</u>	<u>\$ 10,853.7</u>
1. Vehicles	3,947.4	---	3,947.4
a. Sedans (12)	108.0	---	108.0
b. Crew Cab Pick-ups (56)	840.0	---	840.0
c. 1/2 Ton Pick-ups (78)	1,053.0	---	1,053.0
d. 3/4 Ton Pick-ups (10)	165.0	---	165.0
e. Vans (32)	528.0	---	528.0
f. 1 Ton Trucks (2)	45.0	---	45.0
g. Motorbikes (496)	744.0	---	744.0
h. Replacement-parts	464.4	---	464.4
2. Office Equipment & Supplies	973.0	---	973.0
3. Field Machinery & Equipment	1,368.9	---	1,368.9
4. Laboratory Equipment	2,488.0	---	2,488.0
5. Inflation Allowance	1,198.7	---	1,198.7
6. Contingency	877.7	---	877.7
<u>G. Other Costs</u>	<u>247.0</u>	<u>1,188.9</u>	<u>1,435.9</u>
1. Budgetary Support-Vehicle Operating Costs, & Travel Exp.	---	600.4	600.4
2. Guest House & Appliances	---	177.0	177.0
3. Communications	30.0	30.0	60.0
4. Library Material	25.0	---	25.0
5. Miscellaneous	15.0	35.0	50.0
6. Inflation Allowance	6.0	256.1	262.1
7. Contingency	71.0	90.4	161.4
8. Evaluation	100.0	---	100.0
III. GOE (all local currency)	<u>\$ 8,442.8</u>	<u>\$ 1,500.0</u>	<u>\$ 9,942.8</u>
A. Training Support	635.0	---	635.0
B. Salaries and Wages	7,807.8	---	7,807.8
C. Land	---	1,500.0	1,500.0

## ANNEX V (B)

GOE EXPENDITURE SCHEDULE  
EGYPT MAJOR CEREALS PROJECT

FY 1979 - FY 1983

(000 U.S.\$)

	<u>FY 79</u>	<u>FY 80</u>	<u>FY 81</u>	<u>FY 82</u>	<u>FY 83</u>	<u>Total</u>
<b>TOTAL</b>	\$ <u>3,201.4</u>	\$ <u>1,701.4</u>	\$ <u>1,701.5</u>	\$ <u>1,701.5</u>	\$ <u>1,637.0</u>	\$ <u>9,942.8</u>
<b>A. <u>Training</u></b>	140.0	\$ 140.0	140.0	140.0	75.0	635.0
1. Long-Term, U.S.	50.8	50.8	50.8	50.8	50.8	254.0
2. Short-Term, U.S.	89.2	89.2	89.2	89.2	24.2	381.0
<b>B. <u>Salaries &amp; Wages</u></b>	<u>1,561.4</u>	<u>1,561.4</u>	<u>1,561.5</u>	<u>1,561.5</u>	<u>1,562.0</u>	<u>7,807.8</u>
1. Professional Staff	1,228.0	1,228.0	1,228.0	1,228.0	1,228.4	6,140.4
2. Support Staff	333.4	333.4	333.5	333.5	333.6	1,667.4
<b>C. <u>Land</u></b>	<u>1,500.0</u>	---	---	---	---	<u>1,500.0</u>

## ANNEX V (C)

Notes: Inflation (percent)  
US & GOE 80 81 82 83 84  
10 21 33 46 61

## EXPENDITURE SCHEDULE, USAID\*

## EGYPT MAJOR CEREALS PROJECT

FY 1979 - 1984  
(000 U.S.\$)

	<u>FY 79</u>	<u>FY 80</u>	<u>FY 81</u>	<u>FY 82</u>	<u>FY 83</u>	<u>FY 84</u>	<u>Total</u>
<b>TOTAL</b>	<b>\$ 163.2</b>	<b>\$ 11,965.0</b>	<b>\$ 7,031.6</b>	<b>\$ 4,096.2</b>	<b>\$ 3,454.1</b>	<b>\$ 2,488.0</b>	<b>\$ 22,998.1**</b>
<b>A. Technical Assistance/Field</b>	<b>67.7</b>	<b>975.0</b>	<b>1,652.2</b>	<b>1,890.0</b>	<b>1,957.0</b>	<b>1,209.3</b>	<b>7,751.0</b>
1. Team Leader	21.7	130.0	130.0	130.0	130.0	108.3	656.0
2. Crop Scientist	-	90.0	120.0	120.0	120.0	30.0	480.0
3. Soil Scientist	-	90.0	120.0	120.0	120.0	30.0	480.0
4. Irrigation Specialist	-	90.0	120.0	120.0	120.0	30.0	480.0
5. Applied Research Agronomist	-	40.0	120.0	120.0	120.0	80.0	480.0
6. Agricultural Training Specialist	20.0	120.0	120.0	120.0	100.0	-	480.0
7. Extension Education Specialist	20.0	120.0	120.0	120.0	100.0	-	480.0
8. Seed Multiplication Specialist	-	-	120.0	120.0	120.0	120.0	480.0
9. Agricultural Engineer (Mech.)	-	60.0	120.0	120.0	120.0	60.0	480.0
10. Agricultural Economist (Stat.)	-	-	120.0	120.0	120.0	120.0	480.0
11. Consultants	-	228.0	285.0	342.0	285.0	228.0	1,368.0
12. Project Staff trips	-	7.0	7.0	10.0	7.0	-	31.0
13. Preparatory Trip, Team Leader	6.0	-	-	-	-	-	6.0
14. Inflation Allowance	-	-	150.0	328.0	485.0	493.0	1,376.0
<b>B. Technical Assistance/ Total CID Campus Support</b>	<b>-</b>	<b>128.0</b>	<b>176.0</b>	<b>193.6</b>	<b>212.8</b>	<b>186.9</b>	<b>897.3</b>
1. CID-Campus back-up staff	-	128.0	160.0	160.0	160.0	128.0	736.0
2. Inflation Allowance	-	-	16.0	33.6	52.8	58.9	161.3
<b>C. Technical Assistance/ Campus Administration</b>	<b>29.5</b>	<b>177.0</b>	<b>194.7</b>	<b>214.2</b>	<b>235.4</b>	<b>215.4</b>	<b>1,066.2</b>
1. Professional Staff	20.3	122.0	122.0	122.0	122.0	101.7	610.0
2. Staff Assistant	4.2	25.0	25.0	25.0	25.0	20.8	125.0
3. Secretaries (two)	5.0	25.0	25.0	25.0	25.0	20.0	125.0
4. Secretaries (Part-time)	-	5.0	5.0	5.0	5.0	5.0	25.0
5. Inflation Allowance	-	-	17.7	37.2	58.4	67.9	181.2

\* Prepared March 1979, by USAID/Egypt and CID Design Team.

\*\* Rounded to \$ 50,000.0

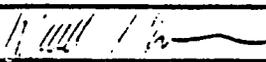
ANNEX V (C)  
Continued

	<u>FY 79</u>	<u>FY 80</u>	<u>FY 81</u>	<u>FY 82</u>	<u>FY 83</u>	<u>FY 84</u>	<u>Total</u>
<b>D. Training</b>	\$ -	\$ 634.4	\$ 831.6	\$ 973.8	\$ 509.8	\$ 381.0	\$ 3,323.6
1. In-country courses	-	300.0	300.0	300.0	100.0	38.0	1,038.0
2. Short-term (US)	-	90.0	150.0	150.0	42.0	-	432.0
3. Long-term (US)	-	138.6	184.8	231.0	184.8	184.8	924.0
4. Inflation Allowance	-	52.9	133.3	224.7	150.7	135.9	697.1
5. Contingency	-	52.9	63.5	68.1	32.7	22.3	259.5
<b>E. Construction</b>	-	1,177.5	3,485.9	-	-	-	4,663.4
1. Giza (Central Office)	-	156.9	379.0	-	-	-	535.9
2. Sakha	-	200.0	641.0	-	-	-	841.0
3. Mallawi	-	200.0	641.0	-	-	-	841.0
4. Gemmeiza	-	150.0	350.0	-	-	-	500.0
5. Sids	-	150.0	350.0	-	-	-	500.0
6. District Extension Office	-	124.4	300.0	-	-	-	424.0
7. Inflation Allowance	-	98.1	558.8	-	-	-	656.9
8. Contingency	-	98.1	266.1	-	-	-	364.2
<b>F. Commodities</b>	-	5,576.8	1,179.0	614.9	310.3	172.7	10,053.7
1. Vehicles	-	3,947.4	-	-	-	-	3,947.4
2. Office Equipment & Supplies	-	800.0	100.0	30.0	30.0	13.0	973.0
3. Field Machinery & Equipment	-	900.0	300.0	100.0	68.9	-	1,368.9
4. Laboratory Equipment	-	1,500.0	500.0	300.0	100.0	88.0	2,488.0
5. Inflation Allowance	-	714.7	189.0	141.9	91.5	61.6	1,198.7
6. Contingency	-	714.7	90.0	43.0	19.9	10.1	877.7
<b>G. Other Costs</b>	66.0	296.3	312.4	209.7	228.8	322.7	1,435.9
1. Budgetary Support	-	120.4	120.0	120.0	120.0	120.0	600.4
2. Guest House & Appliances	50.0	100.0	27.0	-	-	-	177.0
3. Communications	5.0	12.5	12.5	12.5	12.5	5.0	60.0
4. Library Materials	-	5.0	5.0	5.0	5.0	5.0	25.0
5. Miscellaneous	5.0	9.0	9.0	9.0	9.0	9.0	50.0
6. Inflation Allowance	-	24.7	36.5	48.5	67.6	84.8	262.1
7. Contingency	6.0	24.7	52.4	14.7	14.7	48.9	161.4
8. External Evaluation	-	-	50.0	-	-	50.0	100.0

BEST AVAILABLE COPY

ANNEX VI

Modified PID Facesheet

AGENCY FOR INTERNATIONAL DEVELOPMENT				1. TRANSACTION CODE		PID																			
PROJECT IDENTIFICATION DOCUMENT FACESHEET				<input checked="" type="checkbox"/> A = ADD C = CHANGE D = DELETE		2. DOCUMENT CODE																			
TO BE COMPLETED BY ORIGINATING OFFICE																									
3. COUNTRY/ENTITY Arab Republic of Egypt				4. DOCUMENT REVISION NUMBER																					
5. PROJECT NUMBER (7 DIGITS) 263-0070		6. BUREAU/OFFICE A. SYMBO. NE B. CODE 03		7. PROJECT TITLE (MAXIMUM 40 CHARACTERS) Major Cereals																					
8. PROPOSED NEXT DOCUMENT A. <input type="checkbox"/> 2 = PRP B. DATE 01 67 19 C. <input type="checkbox"/> 3 = PP				10. ESTIMATED COSTS (\$1000 OR EQUIVALENT, \$1 = )																					
9. ESTIMATED FY OF AUTHORIZATION/OBLIGATION A. INITIAL FY 713 B. FINAL FY 813				<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="2">FUNDS SOURCE</th> <th>AMOUNT</th> </tr> <tr> <td>A. AID APPROPRIATED</td> <td></td> <td>30,00</td> </tr> <tr> <td>B. OTHER U.S. \$</td> <td></td> <td></td> </tr> <tr> <td>C. HOST COUNTRY</td> <td></td> <td>9,94</td> </tr> <tr> <td>D. OTHER COUNTRIES</td> <td></td> <td></td> </tr> <tr> <td colspan="2" style="text-align: right;">TOTAL</td> <td>39,94</td> </tr> </table>				FUNDS SOURCE		AMOUNT	A. AID APPROPRIATED		30,00	B. OTHER U.S. \$			C. HOST COUNTRY		9,94	D. OTHER COUNTRIES			TOTAL		39,94
FUNDS SOURCE		AMOUNT																							
A. AID APPROPRIATED		30,00																							
B. OTHER U.S. \$																									
C. HOST COUNTRY		9,94																							
D. OTHER COUNTRIES																									
TOTAL		39,94																							
11. PROPOSED BUDGET AID APPROPRIATED FUNDS (\$1000)																									
A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE		E. FIRST FY		LIFE OF PROJECT																			
		C. GRANT	D. LOAN	F. GRANT	G. LOAN	H. GRANT	I. LOAN																		
(1) SA	114B	070		163		30,000																			
(2)																									
(3)																									
(4)																									
TOTAL						30,000																			
12. SECONDARY TECHNICAL CODES (maximum six codes of three positions each)																									
072		073																							
13. SPECIAL CONCERNS CODES (MAXIMUM SIX CODES OF FOUR POSITIONS EACH)						14. SECONDARY PURPOSE CODE																			
R/AG		XII		BF																					
15. PROJECT GOAL (MAXIMUM 240 CHARACTERS)																									
Food security, rural quality of life improvement and increased income for farmers																									
16. PROJECT PURPOSE (MAXIMUM 480 CHARACTERS)																									
Provide new information and knowledge for cereal grain production increase of 25 percent.																									
17. PLANNING RESOURCE REQUIREMENTS (staff/funds)																									
18. ORIGINATING OFFICE CLEARANCE																									
Signature: 				19. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION																					
Title: Donald S. Brown Director				Date Signed: 015 116 719																					

## ANNEX VII

## SC(2) - PROJECT CHECKLIST

Listed below are statutory criteria applicable generally to projects with FAA funds and project criteria applicable to individual fund sources: Development Assistance (with a subcategory for criteria applicable only to loans); and Economic Support Fund.

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

A. GENERAL CRITERIA FOR PROJECT

1. FY 79 App. Act Unnumbered; FAA Sec. 653(b); Sec. 634A.
  - (a) Describe how Committees on Appropriations 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 figure)?
    - (a) Congressional notification will be submitted following Mission Approval
    - (b) Yes
2. FAA Sec. 611(a)(1): Prior to obligation in excess of \$100,000, will there be (a) engineering, financial, and 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. Firm financial plans\* have been developed as a part of the project paper
  - (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?
 

None required
4. FAA Sec. 711(b); FY 79 App. Act Sec. 101. If for water or water-related land resource construction, has project met the standards and criteria as per the Principles and Standards for Planning Water and Related Land Resources dated October 25, 1973?
 

Not applicable

5. YAA Sec. 611(a). 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 of 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.

The project is not susceptible to execution as a regional or multilateral project. Assistance is not expected to encourage regional development programs although there may be minor regional benefits.

7. FAA Sec. 601(a). Information and conclusions whether project will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; (c) encourage development and use of cooperatives, 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.

The project will not directly increase the flow of international trade or foster private initiative and competition or encourage development of cooperatives or strengthen free labor unions. It is expected to improve the technical efficiency of agriculture and related services.

8. FAA Sec. 601(b). Information and conclusion 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).

A large portion of services and commodities will have their source and origin in the U.S. A large portion of services and commodities will be procured from U.S. private enterprise.

9. FAA Sec. 612(b); Sec. 616(h). 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 to meet the cost of contractual and other services.

The Grant Agreement will so provide.

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? Yes, but see Annex X for a request for a determination under Section 612 (b) that U.S. dollars may be used to procure local currency for this project notwithstanding the availability of excess local currency.
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 79 App. Act Sec. 608. If assistance is for the production of ~~any~~ commodity for export, is the ~~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

### B. FUNDING CRITERIA FOR PROJECT

#### 1. Development Assistance Project Criteria

a. FAA Sec. 102(b); 111; 113; 281a. 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 the participation of women in the national economies of developing

Not applicable

countries and the improvement of women's status; and (e) utilize and encourage regional cooperation by developing countries?

b. FAA Sec. 103, 103A, 104, 105, 106, 107. Is assistance being made available: (include only applicable paragraph which corresponds to source of funds used. If more than one fund source is used for project, include relevant paragraph for each fund source).

(1) (103) for agriculture, rural development or nutrition; if so, extent to which activity is specifically designed to increase productivity and income of rural poor; (103A) if for agricultural research, is full account taken of needs of small farmers;

(2) (104) for population planning under sec. 104(b) or health under sec. 104(c); if so, extent to which activity emphasizes low-cost; integrated delivery systems for health, nutrition and family planning for the poorest people, with particular attention to the needs of mothers and young children, using paramedical and auxiliary medical personnel, clinics and health posts, commercial distribution systems and other modes of community research.

(3) (105) for education, public administration, or human resources development; if so, extent to which activity strengthens nonformal education, makes formal education more relevant, especially for rural families and urban poor; or strengthens management capability of institutions enabling the poor to participate in development;

(4) (106) for technical assistance, energy, research, reconstruction, and selected development problems; if so, extent activity is:

BEST AVAILABLE COPY

(i) technical cooperation and development, especially with U.S. private and voluntary, or regional and international development, organizations;

(ii) to help alleviate energy problems;

(iii) research into, and evaluation of, economic development processes and techniques;

(iv) reconstruction after natural or manmade disaster;

(v) for special development problem, and to enable proper utilization of earlier U.S. infrastructure, etc., assistance;

(vi) for programs of urban development, especially small labor-intensive enterprises, marketing systems, and financial or other institutions to help urban poor participate in economic and social development.

c. (107) Is appropriate effort placed on use of appropriate technology?

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 has the latter cost-sharing requirement been waived for a "relatively least-developed" country)?

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

f. 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 and political processes essential to self-government.

g. 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?

2. Development Assistance Project Criteria (Loans Only)

Not applicable

a. FAA Sec. 122(b). Information and conclusion on capacity of the country to repay the loan, including reasonableness of repayment prospects.

b. FAA Sec. 620(d). If assistance is for any productive enterprise which will compete in the U.S. with U.S. enterprise, 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?

3. Project Criteria Solely for Economic Support Fund

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

This assistance will promote economic stability by increasing the efficiency of cereal grain research and production and will ultimately contribute to increasing the options available to Egypt in deciding the allocation of development resources. Yes

b. FAA Sec. 533. Will assistance under this chapter be used for military, or paramilitary activities?

No

## ANNEX VI.

## 5C(3) - STANDARD ITEM CHECKLIST

Listed below are 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 goods and services financed? Goods and services to the extent possible will be procured through competitive procedures--will allow U.S. small business to participate.
2. FAA Sec. 604(a). Will all commodity procurement financed 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 U.S. marine insurance companies, will agreement require that marine insurance be placed in the U.S. on commodities financed? Egypt does not discriminate against U.S. marine insurance companies.
4. FAA Sec. 604(e). 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? No such procurement is planned.
5. FAA Sec. 608(a). Will U.S. Government excess personal property be utilized wherever practicable in lieu of the procurement of new items? Yes
6. FAA Sec. 603. (a) 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

Not applicable

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 that such vessels are available at fair and reasonable rates.

7. FAA Sec. 621. If technical assistance is financed, will such assistance be furnished to the fullest extent practicable as goods and professional and other services from private enterprise on a contract basis? 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 Transport Fair Competitive Practices Act, 1974. If air transportation of persons or property is financed on grant basis, will provision be made that U.S.-flag carriers will be utilized to the extent such service is available? Yes

9. FY 79 App. Act Sec. 105. Does the contract for procurement contain a provision authorizing the termination of such contract for the convenience of the United States? It will so provide

#### B. Construction

1. FAA Sec. 601(d). If a capital (e.g., construction) project, are engineering and professional services of U.S. firms and their affiliates to be used to the maximum extent consistent with the national interest? 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

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? Not applicable

C. Other Restrictions

1. FAA Sec. 122(e). If development loan, is interest rate at least 2% per annum during grace period and at least 3% per annum thereafter? Not applicable
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? Not applicable
3. FAA Sec. 620(h). Do arrangements preclude promoting or assisting the foreign aid projects or activities of Communist-bloc countries, contrary to the best interests of the U.S.? Yes
4. FAA Sec. 636(1). Is financing not permitted to be used, without waiver, for purchase, long-term lease, or exchange of motor vehicle manufactured outside the U.S., or guaranty of such transaction? Yes
5. Will arrangements preclude use of financing:
- a. FAA Sec. 104(f). To pay for performance of abortions or to motivate or coerce persons to practice abortions, to pay for performance of involuntary sterilization, or to coerce or provide financial incentive to any person to undergo sterilization? Yes
- b. FAA Sec. 620(g). To compensate owners for expropriated nationalized property? Yes

6. FAA Sec. 660. To finance police training or other law enforcement assistance, except for narcotics programs? Yes
- d. FAA Sec. 662. For CIA activities? Yes
- e. FY 79 App. Act Sec. 104. To pay pensions, etc., for military personnel? Yes
- f. FY 79 App. Act Sec. 106. To pay U.N. assessments? Yes
- g. FY 79 App. Act Sec. 107. To carry out provisions of FAA sections 209(d) and 251(h)? (Transfer of FAA funds to multinational organizations for lending.) Yes
- h. FY 79 App. Act Sec. 112. To finance the export of nuclear equipment, fuel, or technology or to train foreign nations in nuclear fields? Yes
- i. FY 79 App. Act Sec. 601. To be used for publicity or propaganda purposes within U.S. not authorized by Congress? Yes

## ANNEX VIII

### Draft of Project Description to be Used as Annex to the Project Grant Agreement

The Major Cereals Research and Extension Project is designed to provide new information and knowledge for increased cereal grain production by improving research and extension capabilities. This will be accomplished by establishing a coordinated research-extension program and developing a cadre of well qualified researchers and extension specialists. The knowledgeable, commodity oriented cadre will focus on identifying and eliminating constraints to cereal grain production on farmers' fields. Over 214 study years of training will be provided during the Project.

Although the Project will not attempt to address directly any national goal for increased cereal grain production, it will provide significant knowledge and expertise prerequisite to increased production of approximately 25 percent.

The thrust of the project will be directed toward administrative restructuring, and improving capabilities in research, extension, seed production and processing and mechanization

#### Administrative Restructuring

A Major Cereals Directorate will be formed to establish linkages between research and extension to address the problems and issues of cereal grain production. Within the Directorate policy guidance and appropriate action policies will be developed. The Executive Committee of the Directorate shall consist of high ranking officials from the agricultural sector.

#### Research

The main thrust of cereal production research will be carried out at the four research stations. A cadre of capable Egyptian specialists will be selected and trained in breeding, agronomy, biometrics, entomology, pathology, economics and research station management. The cadre and technical specialists will design and conduct a research project to eliminate identified constraints.

### Extension

A line of communications between researchers and farmers will be provided by a select team of cereal production specialists. They will receive practical training in cereal production techniques for conducting on-farm trials and demonstration in the 8 governorates.

A pilot extension program will be developed and tested by the end of the second year in each of the four prototype areas. The extension program will utilize present personnel and facilities whenever possible. However, the pilot program will provide village agents in each village of two districts each in Gharbiyah and Minia Governorates. It is projected that in the third or fourth year of the Project four more districts from the other governorates may be selected to expand the pilot program under expanded financing by the GOE.

### Seed Production and Processing

The thrust of this activity will be aimed at improving existing seed production and processing facilities and training personnel so that sufficient high quality seed is available to carry out the planned demonstration activities.

### Mechanization

A limited mechanization program will be initiated to identify appropriate levels and types of mechanization for cereal production. New and/or modified equipment will be developed and tested to determine effectiveness. Some training in equipment design, operation and utilization will be provided as deemed necessary.

### Technical Services

The Project will be implemented by the Major Cereals Directorate under authority delegated by the Minister of Agriculture. Technical assistance and training program inputs will be provided under a contract between CID, (Consortium for International Development), and the Government of Egypt. A project Technical Manager will be provided by the Project Contractor to assist and coordinate all activities of the Project in Egypt for the duration of the contract.

Commodities and Project Procurement

CID will advise on all aspects of specifications for Project procurement of commodities. Procurement generally for the Project shall be by means of contracts entered into by the MOA, financed by AID.

A comprehensive evaluation and review of the Project's accomplishments will be conducted during the third and fifth year of the Project, to determine the effectiveness and utility of completed activities. The evaluations will also serve as a basis for determining the focus of future national or regional programs related to cereal grain production

ANNEX IX

THRESHOLD DECISION BASED ON  
INITIAL ENVIRONMENTAL EXAMINATION

Project Location: Egypt

Project Title: Major Cereals (0070)

Funding by Fiscal Year:

FY 79: 3.0 million  
FY 80: 2.5 million  
FY 81: 1.5 million  
FY 82: 1.5 million

Life of Project: \$8.5 million

IEE Prepared by: Jennifer Bremer

Date: August 8, 1978

Environmental Action Recommended: Negative Determination

Mission Decision:

Approved: \_\_\_\_\_  
Disapproved: \_\_\_\_\_  
Date: 7/12/78

Near East Bureau Decision:

Approved: \_\_\_\_\_  
Disapproved: \_\_\_\_\_  
Date: \_\_\_\_\_

Clearances:

Environmental Coordinator: J. R. [Signature] Date: Aug. 15 1978  
Legal: [Signature] Date: [Signature]  
TA: [Signature] Date: 9/12/78

INITIAL ENVIRONMENTAL EXAMINATION  
NARRATIVE DISCUSSION

1. Project Location: Egypt
2. Project Title: Major Cereals (0070)
3. Funding:

FY 79:	3.0 million
FY 80:	2.5 million
FY 81:	1.5 million
FY 82:	1.5 million
4. IEE Prepared By: Jennifer Bremer                      Date: August 8, 1978
5. Environmental Action Recommended: Negative Determination
6. Discussion: The proposed project will develop, test and extend to the farmers improved technological packages for increased production of cereal crops. Specific areas of activity will include research, extension, varietal improvements, institutional management, and plant protection.

Because the project concentrates on research, extension and relatively minor alterations of current practices, environmental impact will be minimal. Such environmental changes as do occur will be primarily positive, including the spread of disease-resistant strains and a reduction in pest populations. A minor increase in chemical pollutants may be associated with improved plant protection measures, but better handling practices should actually reduce the risk to humans.

Because it is not possible to determine the pesticides, if any, to be used in this project or the extent of their use, consideration of the risks and benefits of pesticides use as described in Sec. 216.3 (B) (1) of Reg. 16 will be postponed until preparation of the project paper or, if necessary, the final implementation.

IMPACT IDENTIFICATION AND EVALUATION FORM

Impact Areas and Sub-areas<sup>1/</sup>

Impact  
Identification  
and  
Evaluation<sup>2/</sup>

A. LAND USE

- 1. Changing the character of the land through:
  - a. Increasing the population
  - b. Extracting natural resources
  - c. Land clearing
  - d. Changing soil character
- 2. Altering natural defenses
- 3. Foreclosing important uses
- 4. Jeopardizing man or his works
- 5. Other factors

N  
N  
N  
N  
N  
N  
N

B. WATER QUALITY

- 1. Physical state of water
- 2. Chemical and biological states
- 3. Ecological balance
- 4. Other factors

N  
L  
N

<sup>1/</sup> See Explanatory Notes for this form.

<sup>2/</sup> Use the following symbols: N - No environmental impact  
 L - Little environmental impact  
 M - Moderate environmental impact  
 H - High environmental impact  
 U - Unknown environmental impact

IMPACT IDENTIFICATION AND EVALUATION FORM

C. ATMOSPHERIC

- 1. Air additives N
- 2. Air pollution N
- 3. Noise pollution N
- 4. Other factors

D. NATURAL RESOURCES

- 1. Diversion, altered use of water N
- 2. Irreversible, inefficient commitments N
- 3. Other factors

E. CULTURAL

- 1. Altering physical symbols N
- 2. Dilution of cultural traditions N
- 3. Other factors

F. SOCIOECONOMIC

- 1. Changes in economic/employment patterns N
- 2. Changes in population N
- 3. Changes in cultural patterns N
- 4. Other factors

IMPACT IDENTIFICATION AND EVALUATION FORM

G. HEALTH

- 1. Changing a natural environment N
  - 2. Eliminating an ecosystem element N
  - 3. Other factors
- \_\_\_\_\_
- \_\_\_\_\_

H. GENERAL

- 1. International impacts N
  - 2. Controversial impacts N
  - 3. Larger program impacts L
  - 4. Other factors
- \_\_\_\_\_
- \_\_\_\_\_

I. OTHER POSSIBLE IMPACTS (not listed above)

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

ANNEX X

Recommendations to Purchase Egyptian Pounds with U.S. Dollars

Over the life of the Project \$ 9,966,900 will be used to support local currency expenditures that the Egyptian Government will make for specific items in support of this project. Dollar funds will be used in association with GCE disbursement of Egyptian pounds for the costs of the travel, per diem, and shipment of household effects of project consultants; related project support costs such as the travel of Egyptian participants, rental of office space, and procurement of secretarial and interpreting services and related miscellaneous costs. The Mission will purchase Egyptian pounds with U.S. dollars provided by the Project. The Egyptian pounds will in turn be made available to the various appropriate Egyptian entity(s) responsible for project implementation for disbursement in accordance with the agreements reached between USAID and the GCE in the Project Agreement. 1/

One reason for using dollar funds in conjunction with Egyptian pound costs is that this represents an additional real resource to the Egyptian economy and provides an incentive for the Egyptian Government to implement new initiatives that otherwise it might not be able to undertake. The Mission considered the use of granting excess U.S.-owned local currency for these Egyptian pound costs; however, the use of existing U.S.-owned local currency would add no additional real resources to the economy. Given the GCE's need to restrict the growth in the money supply to correspond to the growth in real resource in the economy, the inflationary impact of using U.S.-owned local currency would have to be offset by reduced GCE disbursements of other programs. Maintaining this fiscal balance is also required under the terms of the current IMP Standby Agreement with Egypt - which the U.S. and other donors have strongly supported.

Consequently, if U.S.-owned local currency were used, it is doubtful that the various Egyptian entities could enter into agreements since they would have to

1/ It is expected that the GCE will provide the needed budget and be reimbursed by USAID for agreed upon items, although in the first year of the project USAID may provide the pounds if justified by the GCE.

sustain budgetary cutbacks in other areas. Even if the various Egyptian entities were to obtain budgetary funds to provide its full portion of project costs, it is doubtful that it could commit them to this project unless the added fillin of dollar funding for local currency costs were assured. Given the above considerations and the fact that the Major Cereals Improvement Project is fully consistent with the Congressional Mandate of the Foreign Assistance Act to undertake activities designed to improve the economic position and quality of life of the poor majority, we have concluded Projects costs should be dollar funded.

ANNEX XIPROJECT AUTHORIZATION  
AND REQUEST FOR ALLOTMENT OF FUNDS

## PART II

Name of Country: Egypt

Name of Project: Major Cereals  
ImprovementNumber of Project: 263-0070

Pursuant to Part II, Chapter 4, Section 531 (Economic Support Fund) of the Foreign Assistance Act of 1961, as amended, I hereby authorize a Grant to the Arab Republic of Egypt (the "Grantee") of not to exceed Fifteen Million United States Dollars (\$15,000,000) to assist in financing certain foreign-exchange and local currency costs of goods and services required for the project as described in the following paragraph (the "Project").

Principal activities of the Project shall include:

- (1) Provision of technical assistance in the form of short and long-term training and the long-term technical expertise of an institutional contractor.
- (2) Construction or upgrading of four existing cereal research facilities, and the design and implementation of a research project to eliminate identified constraints to cereal production.
- (3) Establishment of a pilot extension program with special links to the Project research effort,
- (4) Assistance to the seed producing and processing industry of Egypt to improve the capability of meeting the needs of farmers for increased supplies of high quality seeds,
- (5) Initiation of a program to identify appropriate levels and types of mechanization for cereal production, and
- (6) Procurement of commodities necessary to carry out Project activities..

I approve the total level of A.I.D. appropriated funding planned for this project of not to exceed Thirty Million United States Dollars (\$30,000,000) of which \$15,000,000 is authorized above, during the period of fiscal year 1979. I approve further

increments during fiscal year 1979 through 1980 of up to Fifteen Million United States Dollars (\$15,000,000), subject to the availability of funds in accordance with A.I.D. allotment procedures.

I hereby authorize the initiation of negotiation and execution of the Project Agreement in accordance with A.I.D. regulations and Delegations of Authority subject to the following terms, together with such other terms and conditions as A.I.D. may deem appropriate:

a. Source and Origin of Goods and Services

Goods and services, except for ocean shipping, shall have their source and origin in the Arab Republic of Egypt or the United States, except as A.I.D. may otherwise agree in writing. Ocean shipping shall be procured in the United States, unless A.I.D. otherwise agrees in writing.

b. Conditions Precedent to Initial Disbursement

1. Prior to any disbursement, or the issuance of any commitment documents under the Project Agreement, Grantee shall, except as A.I.D. may otherwise agree in writing, furnish in form and substance satisfactory to A.I.D.:

a. A statement of the names and titles with specimen signatures of the persons who will act as the representatives of the Grantee;

b. (i) Evidence that the Minister of Agriculture has established the Major Cereals Directorate and the Office of the Director General, as provided in the Project Paper, with operating authority sufficient to implement the project, and (ii) a statement of the functions of the Major Cereals Directorate.

2. Conditions Precedent to Disbursement for Technical Services

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

a. Evidence of the formation of a multidisciplinary team of Egyptian scientists, which will have its headquarters at Giza and which will establish links between research and extension in order to address the problems and issues of cereal grain production; and

b. A statement signed by the Project Director General describing the relationship of the team to United States scien-

tists working on the Project.

3. Conditions Precedent to Disbursement for Architectural and Engineering Services

Prior to any disbursement or to the issuance by A.I.D. 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 A.I.D. in form and substance satisfactory to A.I.D.:

a. Evidence of the availability of adequate sites for both the construction for the physical facilities contemplated for the Project and field trial activities;

b. Evidence of a signed contract with a contractor acceptable to A.I.D. 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.

4. Conditions Precedent to Disbursement for Construction and Renovation

Prior to any disbursement or to the issuance by A.I.D. 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 A.I.D., in form and substance satisfactory to A.I.D., the Project implementation plan. The Project implementation plan shall include a modified fixed amount reimbursement procedure agreeable to A.I.D., except that construction during the first year of Project implementation may be financed by an advance from A.I.D. The Project implementation plan shall also indicate Grantee's commitment to raise budget levels to cover project construction in subsequent years. Details of the Project implementation plan may be elaborated in Project implementation letters.

C. Covenants

1. The Grantee shall cause the Project to be carried out in conformance with all the Project plans and specifications approved by A.I.D. pursuant to the Project Agreement, and shall provide on a timely basis the necessary local currency and in-kind support as specified in the Project Agreement.

2. The Grantee shall submit for A.I.D. approval prior to implementation, issuance or execution, all plans, specifications, construction schedules, bid documents, documents concerning solicitation of proposals relating to eligible terms, contracts, and all modifications to these documents.

3. The Grantee shall make available, after the termination of the Project, sufficient resources, including the provision of funds, to support on a long term basis the research and extension activities which have been supported by the Project.

4. The Grantee agrees to exercise its best efforts to institute appropriate pricing policies in order to assist the Project to reach the objective of stimulating production of the cereal crops with which the Project is concerned.

D. Waivers

1. Based on the justification set forth in Annex XV of the Project Paper, I hereby waive the source, origin and nationality requirements of A.I.D. Handbook 1, Supplement B, with respect to the procurement of motorbikes and authorize their procurement from countries which are included as eligible source countries under A.I.D. Geographic Code 935.

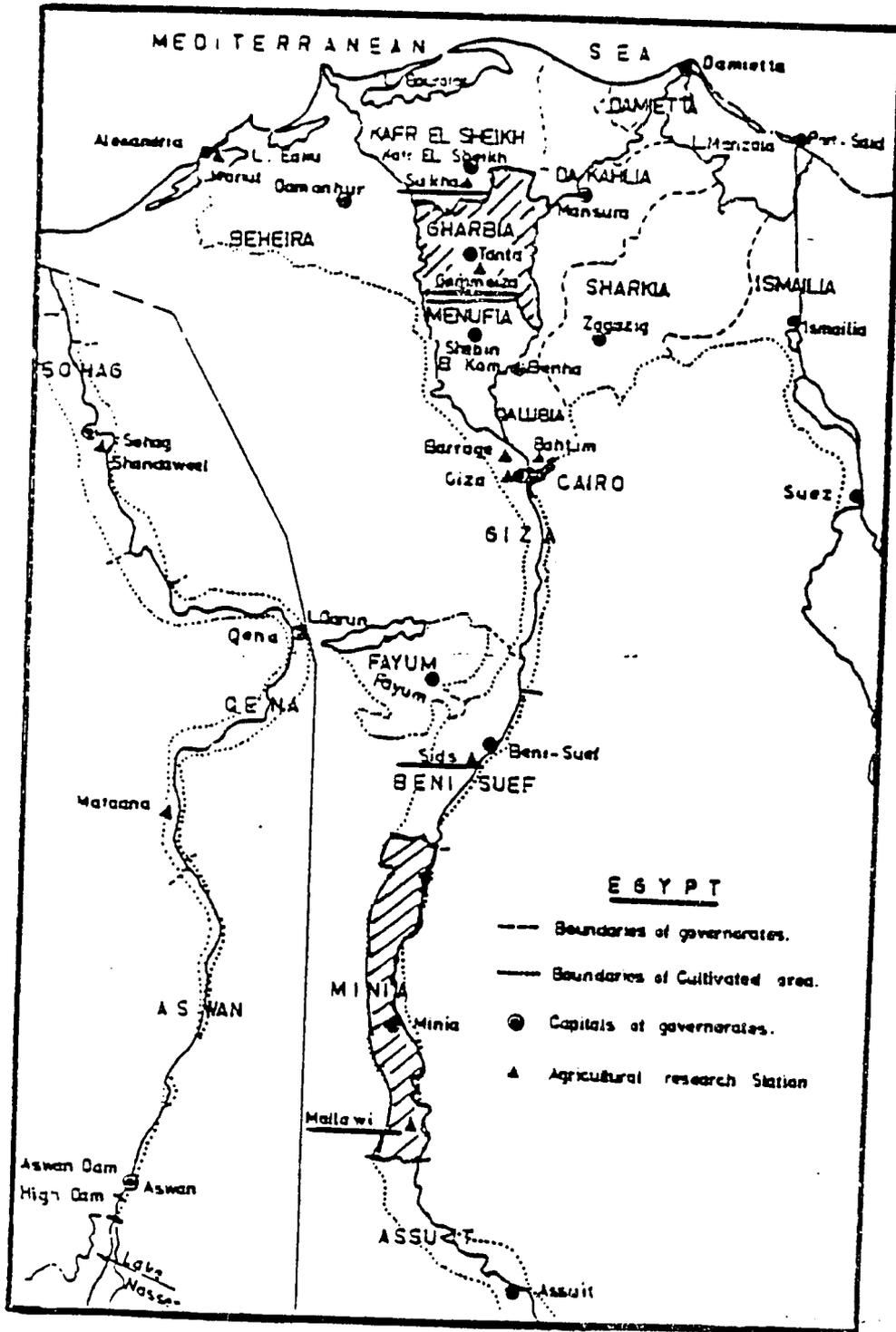
2. Based upon the justification set forth in Annex X of the Project Paper, I hereby determine, in accordance with Section 612(b) of the Act, that the expenditure of United States Dollars for the procurement of goods and services in Egypt is required to fulfill the purposes of this Project; the purposes of this Project cannot be met effectively through the expenditure of U.S. -owned local currencies for such procurement; and the administrative official approving local cost vouchers may use this determination as the basis for his certification as required by Section 612(b) of the Act.

\_\_\_\_\_  
Alexander Shakow \_\_\_\_\_  
Acting Deputy Administrator

\_\_\_\_\_  
Date

ANNEX XII

MAP OF PROJECT AREA



— Research Stations in Project  
 Pilot Program Area

ANNEX XIII

Project Activities for Alleviating and/or  
Reducing Cereal Production Constraints  
Which will Lead to Increased Cereal Grain  
Production of 25 Percent

Following are the constraints which fall within the purview of this project and a list of activities which should alleviate and/or reduce each constraint, and lead to an estimated production gain objective as shown.

Constraint No. 1:

Soil salinity associated with poor water management, excess irrigation and poor drainage.

The project activities designed to address this constraint are:

- Cooperate with the EWUP project regarding water use management.
- Conduct research pertaining to irrigation and water use of cereals.
- Breed cereals resistant to saline conditions.
- Conduct on-farm water management trials.
- Develop a package-program of information on proper irrigation techniques to be disseminated to farmers.

Objective: Possible gain in production 10 - 15%.

Constraint No. 2:

Shortage of nitrogen fertilizer as well as a possible need for other major and minor elements, especially at high N levels. In addition, hand fertilization appears to result in poor distribution.

The project activities designed to address this constraint are:

- Encourage the GOE to increase nitrogen fertilizer production
- Breed cereals which are able to respond to less than optimum amounts of fertilizer.
- Conduct fertility trials to determine the amounts of fertilizer needed for each cereal and genotypes with each cereal.
- Analyze soils for macro and micro elements and determine critical levels.
- Mechanize the application of fertilizers for better distribution.
- Conduct on-farm trials and demonstrations.
- Extend fertilizer information to the farmer.

Objective: Possible gain in production 5 - 10%.

Constraint No. 3:

Plant densities which are too low or uneven to produce high yields and make efficient use of high nitrogen levels. Poor stands may often be associated with seeding by hand and the consequent poor distribution and seed cover.

The project activities designed to address this constraint are:

- Encourage the production of high quality commercial seed.
- Determine proper plant densities through research.

- Develop mechanical planters for uniform seed distribution and uniform planting depth.
- Disseminate research information about seed cultivars, seed quality, and date and rate of seeding to farmers.

Objective: Possible gain in production 5 - 10%.

Constraint No. 4:

Farmer preferences for "local" varieties instead of improved cultivars, especially in maize.

The project activities designed to address this constraint are:

- Breed cultivars which are sociologically and economically acceptable to the local farmer, educate farmers to the value of new cultivars by on-farm trials and demonstrations.

Objective: ~~Possible gain in production 10 - 15%.~~

Constraint No. 5:

Poor weed control, a major problem especially in wheat and barley.

The project activities designed to address this constraint are:

- Develop a weed control research project using chemicals, mechanization, cultural practices and/or a combination of different methods.
- Determine proper herbicide rates and study residue carry over.
- Conduct on-farm trials and demonstrations.
- Disseminate weed control information to the farmers.

- Keep current on the development of new herbicides through journals, contacts with chemical companies and meetings.

Objective: Possible gain in production 5 - 10%.

Constraint No. 6:

Use of maize and sorghum as a summer forage crop. The practice of defoliation damages the plant, thereby reducing yield.

The project activities designed to address this constraint are:

- Advise the GOE that their low price setting for cereal grains is counter productive. Farmers will grow and use their crops to make the most money.
- Encourage farmers, through extension, to plant a forage crop, such as forage corn, forage sorghum, or sudan grass.
- Educate farmers as to the losses incurred because of leaf stripping.

Objective: Possible gain in production 5 - 10%.

Constraint No. 7:

Poor management practices, such as: (1) Poor tillage practices, especially at primary tillage and planting. (2) Late planting. This again relates to tillage as well as to timely removal of the previous crop. (3) Late harvesting of cereals, resulting in grain lost to shattering and transport.

The project activities designed to address this constraint are:

- Through research develop a package-of-cultural practices and test them in farmers' fields.
- Adopt machinery for primary tillage through harvesting. Timeliness is a major factor and machinery should increase efficiency over the entire production process.

- Cooperate with other commodity groups, such as cotton, for mechanizing their harvest such that there will be no delay in wheat or barley seeding.
- Breed cultivars resistant to shattering.
- Educate the farmer to the benefits of good cultural practices from seed bed preparation to harvest. Use on-farm trials and demonstration tests to show the farmer the benefits that are possible.

Objective: Possible gain in production 10 - 15%.

Constraint No. 8:

Insect damage to all cereals.

The project activities designed to address this constraint are:

- Breed cereals resistant to insects.
  - (-) Evaluate foreign and native genotypes for insect resistance,
  - (-) In maize and sorghum develop broad germ plasm pools of resistant materials,
  - (-) Develop artificial insect infestation so germ plasm can be evaluated.
- Evaluate new insecticides by conducting rates and time of application experiments, etc.
- Evaluate cultural practices that help reduce insect populations.
- Evaluate biological control methods.
- Develop an integrated pest management control program using combinations of all factors listed above.
- Develop a program of early detection of insect infestation so control measures can be considered before economic losses occur.
- Through extension, develop a program of

education for the farmer to aid him in  
insect identification and control methods.

Objective: Possible gain in production 15 - 20%.

Constraint No. 9:

Disease damage due to maize wilt and leaf blight  
in maize, and leaf and stripe rust in wheat.

The project activities designed to address  
this constraint are:

- Breed cereals resistant to diseases.
  - (-) Evaluate foreign and native genotypes for disease resistance,
  - (-) Develop broad germ plasm pools of resistant material,
  - (-) Develop disease nurseries such that germ plasm can be evaluated.
- Evaluate new fungicides.
  - (-) Conduct rates and time of application experiments, etc.
- Evaluate cultural practices that help reduce fungi population.
- Evaluate biological control methods.
- Develop an integrated disease control management program using combination of all factors listed above.
- Develop a program of early disease detection such that control measures can be considered before economic losses occur.
- Extend information to the farmer on disease identification and the control methods available.

Objective: Possible gain in production 15 - 20%.

Constraint No. 10:

Shortcomings in the improved varieties themselves.

The project activities designed to address this constraint are:

- Develop a dynamic breeding program for each cereal. All cultivars have shortcomings for there is no "perfect" cultivar. Continuous plant improvement programs will be vigorously employed to meet the farmers' needs.
- Testing imported cultivars
  - (-) A continuous effort should be made to test the best cereal cultivars in the world.
  - (-) The best hybrid maize and sorghum cultivars in the United States should be sent to Egypt for testing each year. This should be coordinated by the Project Director.
  - (-) Pest resistant U.S. material should be sent to Egypt for evaluation.  
Example: Greenbug resistant sorghum and wheat.
- Cooperate in planting International Cultivar Nurseries.
- Keep current on the developments of new cultivars, genotypes and breeding procedures, through journals, meetings, additional training, etc.

Objective: Possible gain in production 15 - 20%.

Constraint No. 11:

Lack of modern seed cleaning equipment to produce high quality seed.

The project activities designed to address this constraint are:

- Provide seed cleaning equipment at selected locations.
- Establish seed production units at each Research-Extension Center to produce quality seed.
- Provide technical assistance to Seed Department of the Ministry of Agriculture for the production, processing, and distributing of quality certified seed.
- To extent appropriate, assist in development of an independent seed industry.
- Assist USAID in examining the feasibility of a specially funded agribusiness project in seed cleaning and processing.

Objective: Possible gain in production 5%.

Constraint No. 12:

Segmentation of the various research production efforts on the same crop into various institutes and sections.

The project activities designed to address this constraint are:

- Establish research teams composed of various, appropriate disciplines (e.g., plant breeding, plant pest control, soils, etc.) as required for problem solving.
- Provide for linkages between research and extension to disseminate cereals research results to the farmers.

Objective: Improved coordination.

Constraint No. 13:

Due to an apparent lack of emphasis on the extension function and the apparent absence of linkages between extension and research, adequate information regarding cereal production is not reaching the farmers.

Thus, this project will:

- Provide both administrative and functional linkages between research scientists and extension personnel.
- Provide the extensionists with research information immediately after it has been generated.
- Focus more on adaptive rather than basic research. Thus, research results will be more readily useful to farmers.
- Provide a two way flow of information among researchers, extensionists and farmers.

Objective: Serve as an example to demonstrate the advantages of closer coordination and sharing information.

Constraint No. 14:

Lack of cooperation and communication between departments within the Ministry of Agriculture as well as between Ministries.

The Executive Board is to be composed of members from various Ministries and representatives from within the Ministry of Agriculture. The proposed Board of Program Leaders should provide for cooperative effort between all the administrative and functional units of the project.

Objective: Same as No. 13.

If all the proper technology were applied, cereal grain yields should be increased by over 50%. However, in nearly all systems a certain amount of slippage occurs. If improved cultivars are developed, pests controlled, a package of cultural practices readied for delivery, sufficient fertilizer and all of this transferred to the farmer, a yield gain of 25% should be reached in five years.

## ANNEX XIII (A)

### Problems Related to Constraints

The constraints identified earlier in this section refer to limits and/or restrictions to yield and production increases. The problems described below were not viewed by the Project team as constraints, but as problems/uncertainties which could, if not recognized and taken into consideration, contribute to implementation difficulties.

#### (1) Research Systems

The agricultural research system in Egypt is well established and the staff is ample, in fact most Research Stations are over staffed. Nevertheless, there is evidence of a number of problems which have severely reduced its effectiveness in recent years. It has been less successful in recent years than in the fifties and sixties in generating a stream of profitable innovations for increasing the productivity of the farming system. Linkages between research and extension, and between research and farmers, are totally inadequate.

#### (2) Research Funds

The most pervasive problem is the totally inadequate funding levels for research, as well as other problems. The bulk of allocated funds goes merely to pay salaries. Low budget allocations are reflected in acute shortage of farm machinery and of funds for experimental work, transport vehicles, laboratory equipment and library facilities, and low levels of repair and maintenance. There is also an almost total absence of foreign exchange in the research budget, despite the fact that most of the laboratory equipment, chemicals, and field equipment for research must be imported.

#### (3) Varietal Development

Better varieties are being developed and there is great opportunity for continuous germ plasm improvement. Dramatic yield increase will come from improving on-farm soil and water management. Although improved germ plasm will always offer opportunities for continued yield increases, it

is believed that the larger share of immediate yield increases will come from improved crop management (better soil and water management, increased plant density, higher level of fertilizer, reduced leaf stripping and better weed control).

#### (4) Extension

Although there are some rather serious constraints in Egypt's research programs, the main problem of how to increase cereal production does not appear to be a lack of research information, but of the transfer of technology to the farm. Research and Extension are two completely separate institutions within the Egyptian Ministry of Agriculture. Research data is forwarded to the ARC at Giza where it is analyzed and written into research report form. The Extension Department receives copies of these reports and from them prepares Extension Circulars of various forms. This is a time consuming process.

##### (a) The Village Agent

Egypt has over 4500 villages with only about 2000 manned by a village extension agent. These agents have a B.S. in Agriculture but with very little training in extension philosophy and methodology. They have no offices, in most cases, and few have a reliable means of transportation. They are by necessity linked to the local cooperatives and become involved with government regulations and incentives regarding use of fertilizers, seed and crop allotments. Since most farmers are suspicious of "government agents" they have low levels of rapport with farmers. They are conscripted almost annually, for periods up to 5-6 months by local government agencies to spray cotton for insects and other nonextension activities.

##### (b) Information and Support

Extension information is usually too late getting to the village agent to be of use to him in advising farmers. There is no established system of informational backstopping for him to rely upon. The illiteracy rate for rural people is high, over 60%, making written communications with farmers ineffective.

In summary, the village agent is charged to do an educational job with too little and too late information, low levels of respect and rapport from farmers, and significant demands on his time to do other things.

(5) Seed Production

High quality seeds of superior cultivars are essential for all crops under production. The present governmental system of production, processing and distribution of seeds does not provide quality seeds in a timely manner.

(6) Seed Quality

At this time seed quality is often not good, hence the reputation of new varieties, being released into the system has been damaged. At the cooperative which serves to distribute fertilizer and seed, there is no special incentive to distribute the available seed, thus the farmer often prefers to use his own seed rather than do business with the cooperative.

(7) Seed Distribution

In spite of direct government subsidies for certified cereal crop seeds, much of the seed is not distributed. It may be sold as commercial grain at the end of the season or fed to livestock.

Egypt has seven major seed cleaning and processing equipment and technology used in most of the plants is antiquated or nonfunctioning. Packaging seeds in burlap bags of 100 kg per bag is too cumbersome, too heavy, and often may be more seed than a grower requires.

CERTIFICATION PURSUANT TO SECTION  
611(e) of FAA 1961 AS AMENDED

---

I, Donald S. Brown, 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, do hereby certify that in my judgment Egypt has both the financial capability and the human resources to effectively install, maintain and utilize the capital assistance to be provided for (a) construction of 1 Central Office Center and 2 Research-Extension Centers, (b) construction/renovation of 2 Research-Extension Centers, and (c) purchase and placement of 66 pre-fabricated, portable Agronomists-Offices.

This judgment is based upon general consideration discussed in the capital assistance paper to which this certification is to be attached.

---

Donald S. Brown  
Director

---

Date

ANNEX XV

Justification for Origin Waiver

Without waiving the AID origin requirements with regards to project procurement of motorbikes, this Project becomes nearly inoperative. The nature of the Project, which seeks to provide extensive demonstration of improved production practices at the village level, would be forced to rely upon the present inadequate extension system. This Project proposes that a system of well trained extension personnel be placed at the four Research-Extension Centers, district headquarters of the 8 governorates covered by the Project, and every village in the four districts of the pilot study area. Nearly 500 motorbikes have been incorporated into the Project so that all village extension agents will be able to travel and effectively carry out the dissemination of research information. The motorbikes planned for this project are 100 c.c./2 stroke type which are not manufactured in the United States. This smaller size motorbike has been determined to be the most appropriate "bike" for the Project needs. In addition, ~~service, maintenance and spare part requirements~~ are critical to effective implementation of the project. Non U.S. manufactured motorbikes are the only feasible alternative. We expect that the origin of the motorbikes will be countries including AID Geographic Code 935, such as Western European countries and Japan.

The amount of all such projected procurement is \$ 744,000, see Annex V (7) (g).

For these reasons the Mission recommends waiving the origin requirements outlined in Handbook 15, Section 2A4 b (2) and Section 636 (i) of the Foreign Assistance Act.

## ANNEX XVI

### Postharvest Food Grain Losses

Inasmuch as postharvest food loss reduction has been identified as a key problem area in many developing countries this project will undertake to determine the status of food grain losses in Egypt, i.e., for maize, wheat, barley, and sorghum.

The project will undertake to, (1) summarize existing work and information on food grain losses, (2) investigate the social and economic factors involved in food grain loss and conservation, and (3) identify the need for good grain loss assessment and conservation and suggest alternatives for food grain conservation policy and programs for Egypt. The project team, early in the project will develop the necessary strategy to accomplish these objectives.

Table I. Wheat: Average area, production and yield during the 1950-78 period.

Period	Area 1000 fed	Production 1000 tons	Yield tons/fed	Index
1950-54*	1,571	1,318	0.83	100
1955-59*	1,501	1,464	0.97	116
1960-64*	1,387	1,504	1.08	129
1965-69*	1,268	1,362	1.07	128
1970-74*	1,302	1,716	1.31	157
1973-74**	1,370	1,883	1.38	166
1974-75**	1,394	2,033	1.46	176
1975-76**	1,396	1,960	1.40	169
1976-77**	1,208	1,699	1.41	170
1977-78**	1,381	1,933	1.40	169

\* Data obtained from "Contemporary Egyptian Agriculture" Second Edition, 1976, by H.A. El-Tobgy.

\*\* Data obtained from the Statistical Department of the Egyptian Ministry of Agriculture.

Table II Wheat area and yields of local varieties and semi-dwarf varieties.

Season	Variety	Area		Production (tons)	Yield Tons/feddan
		Feddans	% of Total		
1974-75	Local	1,207	86.59	1,715	1.42
	Semi-dwarf	187	13.41	319	1.70
	Total	1,394	100.00	2,033	1.46
1975-76	Local	1,219	87.32	1,660	1.36
	Semi-dwarf	177	12.68	300	1.70
	Total	1,396	100.00	1,960	1.40
1976-77	Local	908	75.23	1,232	1.36
	Semi-dwarf	299	24.77	467	1.56
	Total	1,207	100.00	1,699	1.41
1977-78	Local	1,093	79.15	1,467	1.34
	Semi-dwarf	288	20.85	466	1.62
	Total	1,381	100.00	1,933	1.40

Table III Mean wheat yields (kg/feddan) from trials conducted by the Wheat Research Section during the 1977-78 season (i.e. "D" trials).

Entry Name	REGION							
	Delta <sup>1</sup>		Middle Egypt <sup>2</sup>		Upper Egypt <sup>3</sup>		Egypt <sup>4</sup>	
	kg/fed	Local	kg/fed	Local	kg/fed	Local	kg/fed	Local
Chenab 70	2161	107	2510	126	1066	106	1919	115
Giza 157	2335	116	2374	120	1107	110	1939	116
Giza 158	2061	102	2568	129	1003	99	1878	112
Sakha 8	2336	116	2490	125	901	89	1909	114
Line 3590-2653	2229	111	2543	128	943	94	1905	114
Line 1628-2973	2221	110	2581	130	1165	116	1991	119
Line 1628-2981	2311	115	2526	127	922	91	1920	115
L.R. 64-Son.	2105	104	2147	108	919	91	1721	103
Sakha 60	2239	111	2672	135	928	92	1946	117
Sakha 61	2303	114	2689	136	1101	109	2031	122
Sakha 62	2281	113	2169	109	1000	99	1817	109
Giza 155	2016	100			1018	100		
Giza 156			1984	100			1669	100

1 - Mean of 16 locations

2 - Mean of 7 locations

3 - Mean of 2 locations

4 - Mean of 25 locations

5 - Local variety in the Delta and Upper Egypt is Giza-155 and in Middle Egypt is Giza-156

Table IV Maize: Average Area, production and yield during the 1950-78 period.

Period	Area 1,000 fed	Production 1,000 ton	Yield tons/fed	Index
1950-54*	1,746	1,568	0.90	100
1955-59*	1,850	1,624	0.88	98
1960-64	1,727	1,823	1.06	118
1965-69*	1,510	2,269	1.50	167
1970-74*	1,593	2,460	1.54	172
1974**	1,755	2,640	1.50	167
1975**	1,830	2,782	1.52	169
1976**	1,891	3,047	1.61	179
1977**	1,765	2,724	1.54	171
1978**	1,910	3,197	1.67	186

\* Data obtained from "Contemporary Egyptian Agriculture" Second Edition- 1976, by H.A. El-Tobgy.

\*\* Data obtained from the Statistical Department of the Egyptian Ministry of Agriculture.

Table V Maize Area and Yields of Local varieties, Composites and Hybrids during 1975 and 1976\*.

YEAR	Germplasm	Area		Production (tons)	Yield tons/feddan
		Feddans	% of Total		
1975	Local Varieties	1,497,148	81.82	2,214,486.0	1.48
	American Early	166,577	9.10	262,503.9	1.58
	Shedwan-3	13,417	0.73	23,854.2	1.78
	Hybrids	152,621	8.34	279,676.0	1.83
	Total	1,829,754	100.0	2,780,520.1	1.52
1976	Local Varieties	1,533,770	81.23	2,413,197.6	1.57
	American Early	202,730	10.74	336,382.2	1.66
	Shedwan-3	26,126	1.38	30,462.4	1.93
	Hybrids	125,466	6.65	242,007.8	1.93
	Total	1,888,092	100.0	3,042,050.0	1.61

\* Data obtained from the Statistical Department of the Egyptian Ministry of Agriculture.

Table VI Mean grain yields (Kg/feddan) for Maize in North Delta, Middle Delta, and Middle Egypt, from trial 3-1 (1978 season).

Entry Name	REGION							
	(1) North Delta		(2) South Delta		(3) Middle Egypt		(4) Egypt	
	Kg/fed	% of Local	Kg/fed	% of Local	Kg/fed	% of Local	Kg/fed	% of Local
D.C. 19	2297	95	2573	94	1885	95	2257	94
D.C. 186	2726	113	2807	102	2004	101	2489	103
D.C. 405	2430	101	2818	102	2273	114	2533	105
V.C. 80	2172	90	2599	94	2190	110	2356	98
Giza - 1	2510	104	2699	98	2146	108	2452	102
Gemeiza-2 Ev-1	2285	95	2567	93	2088	105	2329	97
Sids - 1 Ev-1	2351	98	2718	99	2188	110	2443	101
Sids 7444	2496	104	2679	97	2184	110	2455	102
MED IMP.	2385	99	2568	93	2339	118	2444	102
Giza - 2	2255	94	2599	94	2079	105	2332	97
Province 530	2529	105	2424	88	1919	97	2257	94
Local	2476		2751		1986		2407	
Regional Means	2409		2650		2107		2396	

- 1- Mean of a total of 5 Locations (i.e. 3 in Behera, 1 in Damietta and 1 in Dakahleya)
- 2- Mean of a total of 10 Locations (i.e. 3 in Sharkeya, 2 in Garbeya, 2 in Menifia and 3 in Kalyobeya)
- 3- Mean of a total of 9 Locations (i.e. 1 in Fayoum, 2 in Beni Suef, 3 in Menia and 3 in Assuit)
- 4- Mean of all 24 Locations in Egypt

Table VII Sorghum: Average Area, Production and Yield  
During the 1950 - 1978 period

Period	Area 1000 fed	Production 1000 ton	Yield tons/fed	Index
1950 - 54	438	519	1184	100
1955 - 59	451	574	1274	108
1960 - 64	469	672	1434	121
1965 - 69	507	853	1683	142
1970 - 74	493	847	1719	145
1975	489	775	1585	134
1976	474	800	1688	143
1977	409	648	1584	134
1978*	413	656	1588	134

\*Preliminary

Source: Ministry of Agriculture, Cairo, Egypt

Table VIII Mean Sorghum Yields (Kg/feddan) from trials conducted by the Sorghum Research Section during the 1978 Season

Variety	Giza	Faiyum	Faiyum	Assiut	Sohag	Sohag	Mean
Loc 29	790	1554	2429	2838	1260	3038	1985
Loc 129	1145	1904	1987	2738	1145	2884	1967
Giza 15	1074	1708	2566	2995	981	2310	1939
Giza 54	967	1988	2608	2853	991	2170	1929
Giza 114	1078	1642	2442	2664	840	2884	1925
Giza 123	1026	1456	2359	2554	1485	2422	1884
Giza 3	928	1176	1764	2295	1471	1652	1546
Location Mean	1001	1633	2308	2705	1168	2480	1882

Table IX Barley: Average area, production and yield during 1950-78\*.

Period	Area 1000 fed	Production 1000 ton	Yield tons/ fed	Index
1950-54	122	105	0.86	100
1955-59	135	133	0.98	113
1960-64	128	142	1.11	128
1965-69	110	111	1.01	117
1970-74	81	95	1.11	128
1974	77	89	1.15	133
1975	100	118	1.19	137
1976	104	123	1.19	137
1977	95	111	1.17	135
1978	114	132	1.16	134

\* This table does not include area under rainfed in the coastal areas, which is about (350,000 feddans), with an average of 300-500 kg/fed with no N application.

Table X Mean Barley yields (kg/feddan) from trials conducted by the Barley Research Section during the 1976/78 season (i.e. "D" Trials).

Entry Name	REGION							
	Delta <sup>1</sup>		Middle Egypt <sup>2</sup>		Upper Egypt <sup>3</sup>		Egypt <sup>4</sup>	
	Kg/fed	% of Local	Kg/fed	% of Local	Kg/fed	% of Local	Kg/fed	% of Local
Giza 119 (Local)	1451	100	1499	100	862	100	1271	100
Giza 121	1468	101	1489	99	826	96	1261	99
C.C. 89	1545	107	1721	115	844	98	1370	108
C.C. 163	1406	97	1560	104	1123	130	1363	107
C.C. 243	1462	101	1401	93	976	113	1279	101
Cr 251/14/2	1547	107	1341	90	795	104	1261	99
Cr 257/370	1542	106	1434	96	781	91	1252	99
Dr 264/8/4	1442	99	1594	106	712	83	1249	98
Mean of Region	1483		1505		877		1288	

- 1 - Mean of 4 locations
- 2 - Mean of 3 locations
- 3 - Mean of 1 locations
- 4 - Mean of all locations

Note:

1. Giza 119 is an improved variety released 1973, not a local farmers variety under irrigation.
2. National average is about 1158 kg/fed, using about 30 kg/N only.
3. Under rain fed areas (about 350,000 feddans) yield average, about 300-500 kg/acre, with no application.

Table XI Selected Grain Imports (1000 tons) for Egypt  
over a 7 year period.

Commodity	PERIOD						
	1970/71	71/72	72/73	73/74	74/75	75/76	76/77**
Coarse Grains*	76	48	130	450	460	500	600
Wheat & Flour	2527	2670	3040	3180	3490	3800	4300

(Source) Foreign Agriculture Circular, EG-6-77 May 2, 1977, p. 24, 26.

\* Essentially Maize

\*\* Preliminary.

Table XII Total production of wheat, maize, sorghum, and barley under assumed yield increases.

Eight Governorates	1978	Estimated	Area	Total
	<u>Base yield</u>	<u>yield 1985</u>	<u>planted</u>	<u>1985 production</u>
	T/feddan	T/feddan	feddans	1000 tons
Wheat	1.47	1.84	746,894	1,374.3
Maize	1.70	2.12	1,069,100	2,266.5
Sorghum	1.65	2.06	200,390	412.8
Barley	1.39	1.74	27,132	47.2
Rest of Country				
Wheat	1.40	1.58	633,718	1,001.3
Maize	1.64	1.84	829,003	1,525.4
Sorghum	1.58	1.77	232,176	410.9
Barley	1.16	1.30	86,691	112.7
Total for Country				
Wheat	--	1.72	1,380,612	2,375.6
Maize	--	2.00	1,898,103	3,791.9
Sorghum	--	1.90	432,566	823.7
Barley	--	1.44	110,823	159.9

Table XIII Increases in cereal productivity and values.

	Total Productivity		Value of Production*	
	1978	1985	1978	1985
	(1000 tons)		(1000 L.E.)	
Wheat	1,933	2,375.6	102,758	126,287
Maize	3,117	3,791.9	158,312	192,591
Sorghum	681	823.7	34,588	41,836
Barley	132	159.9	7,017	8,500
			LE 302,675	LE369,214

\* at 1977 export prices

Table XIV Projected Import-Export situation for Cereal Grains in 1985 under two levels of productivity.

Net Imports - 1985				
	1978 Level Productivity		Projected Yield Increases	
	Quantity Imported Million tons	Value 1000 LE	Quantity Imported Million tons	Value 1000 LE
Wheat	5.2	276,484	4.7	249,899
Maize	1.4	71,106	.7	35,553
Sorghum	.13	6,603	-.15	- 7,618
Barley	.27	14,353	-.001	- 53
Total	7.00	368,546	5.43	277,781

\* Minus sign indicates an export

Table xv  
Maize Production Costs, Price Level, Yield and  
Net Returns, 1978 and after Adoption of New Cultural Practices

Item	1978 (Old System)	After Adopting New Practices/ Recommendations
Price of maize (LE per ton)	77	77
Yield (tons/faddan)	1.70	2.1- <sup>1/</sup>
Total Returns (LE per faddan)	130.9	161.7
Additional Gross Return (LE per faddan)	—	30.8- <sup>2/</sup>
<hr/>		
<u>Production Practices</u>	<u>LE</u>	<u>LE</u>
Misc. Cultural Practices	3.00	4.07
Seed	1.50	1.85
Water Management	3.25	3.00
Fertilizer	10.50	13.50
Pest/Disease Control	2.50	3.00
Weed Control	4.00	5.00
Land Preparation & Planting	6.25	7.85
Harvesting	4.00	5.30
<b>Total</b>	<b>35.00-<sup>2/</sup></b>	<b>43.57-<sup>2/</sup></b>

<sup>1/</sup> Reflecting 25 percent increase.

<sup>2/</sup> Additional gross return, LE 30.8 per faddan; additional costs per faddan, LE 8.57; net return per faddan, LE 21.23. Example specifically for maize, but relevant to other cereals.

\* See the following page for verbal discussion of this table.

Analysis of New Cultural Practices  
and Estimated Returns Derived from  
25% Production Increase

When the major cereal producer in Egypt adopts the cultural practices developed and recommended under the auspices of this project, he will expect to see an increase in his production, and ultimately an increase in net income.

The Project has been designed to address the constraints in the farmers' field and it is expected that an average production gain of 25 percent will result with less than proportionate input costs vs output. Thus, this project will provide the Egyptian farmer the opportunity to realize his expectations, i.e., increased production/net income.

Table XV shows the expected input/output relationships that will exist after the farmer has adopted the recommended practices. The analysis assumes ~~(1) that cereal grain prices will~~ remain at the present level, (low side distortion), and (2) the farmer will at first only adopt the lowest-cost recommended practices. Thus, the estimated returns to the farmer are relatively conservative.