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EVALUATION OF THE CURRENT STATUS OF
THE JORDAN WHEAT PROJECT

PD-AAA-385

BY

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Agronomy Extension Consultant
Foreign Economic Development Service
United States Department of Agriculture

PASA NO. MESA (AJ) 32-71

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BEST AVAILABLE DOCUMENT

United States Agency for International Development

Amman, Jordan

A.I.D.
Reference Center
Room 1656 118

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April 12, 1971

INTRODUCTION

The GOJ wheat project was organized on the basis of the country's low average wheat production and a rapidly expanding domestic requirement for this important source of food. Justification for self sufficiency in wheat supplies was based on conservation of foreign exchange and elimination of dependency upon foreign relief supplies of wheat. Probability for success of the project was based on wheat yields ranging from two to four times those of Jordan in other areas of the world having similar environmental conditions. The benefit-cost ratio for the improved production techniques was also favorable.

The early phase of the project consisted of demonstrating the production techniques and their adaptation to local conditions. This was followed by an on-farm demonstration program and adaptive research to maximize efficiency of cultural operations to specific conditions. Personnel from the Ministry of Agriculture personnel during this period has been actively involved by the farmers in the execution of the program in rapidly picking up.

The total activities of the program have now reached a turning point. In addition to continued research and demonstration activities, motivational support for the implementation of these practices within the private sector must be given. Purpose of this report is to (1) review the current status of each of the technological facets of the wheat project; (2) outline possible improved programs for the project within GOJ; and

(3) suggest possible activities of USAID which could be of mutual benefit at this time.

Technological Facets of the Wheat Project

While it is recognized that improving wheat production in Jordan requires the successful integration of many single inputs, examination of the status of each of these individually may clarify understanding of the current progress of the project.

1. Chemical weed control. The use of 2,4-D spray for the selective control of broadleaf weeds in wheat fields has been readily accepted by project personnel. On 18 demonstrations throughout the wheat growing area, chemical sprays effectively controlled common broadleaf weeds and increased wheat yields by an average of 29 percent. In the 1970 crop year 3500 dunams were commercially sprayed. Preliminary data for 1971 crop year show five commercial sprayers in operation with 4000 dunams sprayed in Haba district alone. Farmers are eagerly seeking the services of commercial sprayers because they recognize the value of the increased yield and the low price of 250 to 300 fils per dunam is much lower and more effective than the cost of hand weeding.

Looking to the future, there are problems in chemical weed control. Removal of the readily controlled weeds such as yellow mustard will ultimately encourage thicker stands of weeds that are relatively resistant to the currently used sodium salt of 2,4-D. Weedy grasses such as Phalaris, wild oats, and Bromus are expected to increase in importance. At some

locations, late rains germinate a second crop of weeds after the first crop has been killed. [Newer herbicides might be more effective, therefore it is imperative that an active continuous weed control research program be initiated as soon as possible.] [Since there are few people skilled in operating, calibrating, and maintaining boom spraying equipment additional educational assistance must be given both wheat project personnel, farmers, and commercial spray operators.

2. Fertilizers. Economic responses from application of nitrogen and phosphate fertilizers have been obtained at almost all demonstration sites where there was sufficient moisture to produce high yields. Including all 19 demonstration sites during 1970 crop year, fertilizers increased yields by an average of 23 percent over comparable unfertilized areas. In many communities this year can be seen commercial fields that were fertilized because the farmers observed last years demonstrations. Ministry personnel have developed a set of fertilizer recommendations based on average rainfall. [While this has some logic, more refined recommendations must be based upon soil tests and predicted wheat response from increments of added nitrogen and phosphorus both singly and combined. Trials to obtain this information were initiated on 1970 crop wheat but data were not obtained because of the Civil strife. These research efforts must be conducted over a period of years at locations most typical of the major wheat growing areas both for soil type, and average rainfall. These trials could very well be an integral part of a projected national soil survey, but their completion should not be delayed while the survey is being completed.] This information is extremely important for optimizing the

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economic return from wheat production.

3. **Drilling.** The use of the grain drill has several advantages. Uniform depth of planting allows uniform emergence of seedlings and a more complete stand of wheat. The more uniform distribution of seeds allows a saving of from two to four kilograms of seed per planted dunam. Since depth of planting can be regulated, the seeds can be placed at best advantage to soil moisture. Ministry personnel are gaining good experience in how to operate the drills in a variety of soil and moisture conditions. Of greatest importance is the necessity of a level seedbed prepared by chisels, sweeps, or springtooth harrow instead of the traditional disk plow. Personnel are becoming sensitive to farmer criticisms of the wasted space in the 14 inch row spacings of the deep furrow drills being used. This space is not being wasted since the roots are utilizing the moisture from the space between the rows. Farmer reaction to the shift from broadcast seeding to row spacings is quite normal. Some research data comparing different row spacings in trials at Irbid and Rabba may be justified since this has become such a local controversy. It should be remembered that deep furrow drills must have wide spacings in order to have room to place the dry soil when deep soil moisture is being reached when planting on summerfallow land. This is normally not a problem on annual cropland. Seven inch spacings will also encounter many difficulties in obstructing the drills with rocks and trash from the previous crop. A possible advantage of the narrow spacing would be suppression of weed regrowth when rains follow a previously successful chemical weed control

operation. A few simple trials at the experiment stations would test the above observations. The advantages of drilling over the conventional broadcast system are readily apparent at all demonstration sites.

4. Summerfallow system for dry areas. Since the first 125 mm of rain in a season is used for the production of vegetative portions of the wheat plant and each successive four mm. of moisture produces one kilo of wheat per dunum the summerfallow system of conserving two years rainfall for the production of one crop could substantially increase Jordan's wheat production in the 200 to 350 mm rainfall area. Clean fallow tillage systems used in Northwestern U.S.A. have been shown to be adaptable to Jordanian conditions. The disk harrow, the springtooth harrow, chisels, sweeps, and sod weeder all have their place in appropriate soil and climatic conditions in Jordan. Fallow systems to maximize rainfall infiltration, minimize soil water losses, control weeds, and to leave the surface in a satisfactory condition for drilling are being developed in a few of the areas. A most important component of the system is a deep furrow drill to place the seed through the upper layer of dust which has accumulated on the surface of the soil while covering the seed with no more than 6 cm of dry soil. The 1970 demonstrations yielded on average of 113 percent of neighboring fields. Yield responses in 1971 will be even more dramatic because in some areas of the South and East conventional methods are giving crop failures following two drought years and the summerfallow areas are growing nicely even in an area which has received only 131 mm of rainfall this year. Long range research trials to compare various combinations of summerfallow tillage practices at representative sites are needed in order to know

which are most efficient. These were initiated by Mr. Oveson and have been continued in a minor way by Mr. Nasrswine at Rabba station. Major expansion in research trials is needed in order to make this practice more effective. A few larger farmers have adopted this practice but they need help making better use of the principle.

5. **Improved Varieties.** Mr. Ghoshah is doing a good job in his breeding and variety testing program. He has many promising lines available for eventual release. As farmers adopt the improved production practices, higher yielding varieties will be needed for response to better soil moisture, improved soil fertility, and freedom from weed competition. It is important that his nurseries receive the improved management practices so that the best varieties are known to respond to these practices. The procedures worked out for making improved seeds available to the farmers are apparently working out quite well and no suggestions for improvement are being made.

6. **Wheat in the Irrigated Crop Rotation.** As vegetable production becomes more intensively cropped, soil-borne pests will become serious. Soil compaction and salt concentration will also limit vegetable production. Growing wheat in the rotation will provide an alternate type of crop to alleviate the increasing populations of soil borne pests. Wheat will also provide soil organic matter which will minimize soil compaction and will detoxify some effects of accumulated soil salts. By irrigating the land in early November before planting and with the use of some early maturing varieties which would mature by April 15, wheat could fit into the rotation very well. It would provide the above-mentioned benefits to the rotation

and would use water during the part of the season when water requirements for citrus and other crops are not high. The financial returns per dunnam would not be as high as from vegetables but total benefits from wheat in the rotation would be high. In other parts of the world wheat often yields in excess of 600 kilos per dunnam in this type system. [A comprehensive management program of variety development, tillage practices, irrigation techniques, fertilizer application, and weed control is needed in order to obtain this yield.]

7. Wheat Grading. Earlier project efforts surveyed the quality of domestic wheat in Jordan and suggested a simple grain grading system for identifying the various wheat qualities. Apparently this project is currently dormant pending some GOJ legislation to initiate the program. It is hoped that personnel who have been actively involved in the program and who have had some experience in grain grading will still be available to assist in this activity if such legislation is developed.

Project Implementation

Suggestions for individual programs of action on the above technological facets are being constructively made. These will be followed with some ideas on coordinating the entire program.

1. Chemical Weed Control. Upon the return of Mr. Abu Irmaleh from his participant training program in U.S.A. he should be assigned to full time chemical weed control work with major emphasis in wheat. If a vegetable project is developed he could have some responsibilities there too. He should supervise the spraying of all project research and

demonstration areas and also train other Ministry project personnel in sprayer operation, maintenance, and calibration. He should also offer similar assistance to commercial spray operators and the industry which services them.

An expanded chemical weed control research program is needed. It is expected that Mr. Abu-Ismail has the necessary skills to organize it. Emphasis should be placed on field work to test new chemicals and their methods of application to better control those wheat weeds which are now relatively resistant to 2,4-D or those which are anticipated to become more important. He should be adequately supported with a budget to purchase additional equipment and new experimental herbicides. He should also have sufficient helpers and transportation so that his skills are used with maximum benefit to the project. Consideration should be given to providing him with an assistant who would hopefully receive much of Mr. Abu-Ismail's training and experience.

4. **Fertilizers:** An individual with advanced academic training in soil fertility should be assigned full time with the wheat project. He would be expected to assume leadership in establishing field research to ascertain the optimum fertilizer recommendations for the major wheat growing areas. This field research would be correlated with laboratory tests so that in the future phosphate fertilizer recommendations could be based on soil test values. The nitrogen recommendations would ultimately be based on soil type, soil moisture, and average rainfall. He would also be expected to train district personnel in principles of soil fertility as well as assist them in the organization of some of their demonstrations and field plots.

3. Tillage Practices. The successful introduction of modern tillage practices involving new types of machinery is the most critical phase of the current project. Two types of personnel are required here. First of all, an advanced academic trained agronomist with experience in dryland moisture conservation should assume the leadership in organizing and conducting some long range tillage studies similar to those started by Mr. Oveson. The major objective of these trials will be to develop tillage systems for the major wheat growing areas which will be most efficient in moisture conservation and in financial return to the farm. Since the successful operation of these new types of equipment requires that the machinery be properly maintained and constantly kept in a good state of repair, [it is imperative that one or more agricultural engineers be assigned to the wheat project. Their responsibilities should include the following: instruct other project personnel in proper operation and maintenance of the equipment, maintain inventory of the equipment, practice preventive maintenance on the equipment, develop a stock of inventory spare parts, perform emergency repairs on the equipment during the season of use, and motivate a philosophy of service among the machinery dealers.]

[Some of the demonstration equipment has been lost or damaged during the civil strife. It is suggested that such replacements be handled through the Joint Fund for Rehabilitation and Repair of Public Services. Those items of repair resulting from normal usage of the equipment should be purchased from GOJ funds. Additional demonstration units for use by the District project personnel and additional research equipment might be purchased through some type of joint GOJ USAID financing.]

4. **Project Organization.** The current organizational plan within the Ministry of Agriculture is one of strengthening the competencies of District Staff with a goal of decentralization at Headquarters. Previously most project activities were organized and conducted by Amman based staff. The leadership and devotion of Mr. Nabulsi to the project is readily acknowledged by everyone who has had any relationship with the project. It is hoped that his services to the project can be continued at least in an advisory capacity. Overall project leadership should be vested in an agronomist whose major responsibility would be to coordinate all the project activities. He would organize country-wide tours and meetings of all project personnel to facilitate a coordinated program based on free exchanges of ideas among all project personnel. He would call for anticipated needs of equipment, supplies, labor, and travel by project personnel and would develop lists of priorities for their dispersal. He would organize training programs for project personnel and would be responsible for their supervision. He in turn should be directly responsible to the Director of Research and Extension.

A major responsibility of the project leader will be to develop new programs of action as they are needed. For example, if activity in the areas of irrigated wheat or wheat grading should be deemed desirable, then he should assume leadership in seeking appropriate advice and developing staffing and operational plans for project implementation.

This method of organization is a radical change from earlier organization of the project. It can be effective if each District project member and every Amman - based person fully understands his responsibility to the project and plans his work accordingly.

USAID Involvement

With the present conditions of the country, USAID participation in the wheat project will of necessity be minimal. The wheat project has attained such good success under a difficult set of conditions. Major emphasis of USAID program should be involved in helping maintain the present project momentum by occasional short-term consultants and practical participant training. Personnel who have had no previous experiences in Jordan or other Arab countries would not be very effective on short term assignments under the present situation. In like manner participant trainees are now quite nervous about the situation in Jordan and placing them in training programs organized by people not intimately familiar with current Jordanian conditions just tends to complicate their personal adjustments. Therefore it is recommended that a low-key or minimal contract for IDY consultants and practical training programs be developed with Oregon State University. Its faculty has shown a keen interest in the wheat project and would be in the best position to continue serving the project. Consultants that would currently be of value would include an agronomist or dryland farmer during October and November, a sprayer equipment technician in January and February, and a summerfallow research agronomist in January or February. And of course any other assistance by University staff as mutually agreed upon should be included in the contract. Current participant training needs have been identified as follows:

Practical summerfallow farming techniques-two men January through October;

Practical tillage equipment maintenance and repair - one man September through November and one man March through June; Soil Fertility field

research. One man with an advanced degree January through August. Some of these trainees might audit special courses during part of their training but they should not receive any academic credit for such training. It is assumed that AUB will play an increasingly important role in formal academic training of personnel and in specially designed short courses which have been recently so successful.

Summary

The activities of the wheat project have conclusively demonstrated that Jordan's wheat production can be increased in a manner that is profitable to the economy of the country. Excellent progress has been made by the project to date and it is hoped that the momentum of current activities can be maintained as the programs are modified as suggested herein.

AIRGRAM

DEPARTMENT OF STATE

2759/39/1003

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CLASSIFICATION

For each address check one ACTION | INFO

DATE REC'D.

2D
DISTRIBUTION
ACTION

TO - ~~XXXXXXXXXXXXXXXXXXXX~~

AIDTO CIRCULAR A 1678

PD-AAA-385-B1

DATE SENT

8-4-70

5

N 10
INFO.

FROM - WASHINGTON

SUBJECT - Wheat Research and Production 278-11-130-139

AAID
IS
QA
AAPC
TAB
AGR
STATE

REFERENCE - Project Appraisal Report (PAR) as of 4/30/70;
signed at the USAID 6/16/70

Granted that the subject PAR reflects an on-going project which is meeting its stated targets, the importance to Jordan of increased wheat production is such that we felt it ~~XXXX~~ necessary to take a closer and deeper look into the project. Listed below are a number of questions and observations on which we would like you to comment.

1. How does the project objective of doubling wheat production by 1980 to 300,000 metric tons relate to Jordanian self-sufficiency in wheat? What relationship to, and effect on, self-sufficiency does the projected population growth rate have? Does the 300,000 metric ton goal include any export potential?

2. The two PARs submitted to date give the impression that the major thrust of the project is to assist large farmers double their production. How does the project affect small and medium-sized farmers? Can the project be modified to reach smaller farmers? Considering the high value we attach to the project, is there any desirable way to expand its exposure beyond the projected 800 farmers?

3. The research portion of the project appears to be seriously weak, particularly as emphasized by the lack of a counterpart for the research advisors. Would it be appropriate to include increased emphasis on adaptive varietal, agronomy and cultural practice research in the project, i.e., research on every step in producing wheat from land preparation to harvest?

PAGE 1 OF 2 PAGES

DRAFTED BY M. DiGirolamo	OFFICE NESA/IE NESA/ID/AG	PHONE NO. 29262 2969	DATE 7/29/70	APPROVED BY: James M. Blaine, NESA/TECH
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ALL OTHER CLEARANCES

1/10/ED:G. Harvey
1/10/WR:R. Birnberg

UNCLASSIFIED
CLASSIFICATION

1/10/TECH:G. Blanton
1/10/IE:R. Hobboll (Info)

4. What steps can be, and are being, taken to meet the shortages of English-speaking participants? Can modifications in qualifications be made to ease the situation without adversely affecting the project?

5. As mentioned in our response to the first PAR, U.S. advisors have shown a clear understanding of the project and have demonstrated an ability to solve problems when they arise. However, the project is scheduled for termination at the end of FY 72, and less than two years of U.S. advisory assistance remain to be completed. Given that the goal of doubling production is set for 1980, will the project be far enough along by 1972 to assure that this objective is met?

JOHNSON

SEND TO AMMAN

INFO ANKARA

AID 1380-1
(7-71)

DEPARTMENT OF STATE
AGENCY FOR
INTERNATIONAL DEVELOPMENT

1. Cooperating Country

JORDAN

Page 7 of 7 Pages

2. PIO/T No.

278-139-3-26062

3. Copy Control or

Attachment No. 1

PIO/T

PERMANENT REPRESENTATION
OF THE TECHNICAL
SERVICES

4. Project/Activity Name and Title

278-11-30-139

Wheat Research and Production

DISTRIBUTION:

5. Approval No. Symbol:

72-113-1004

6.A. Allocation No. and Change

354-50-278-00-69-33

6.B. Fund Allotted to:

A.I.D./W ProAg

7. Obligation Period

ARRIVAL REGIONAL FUNDS

obligated ProAg

8. Funding Period (Mo., Day, Yr.)

From 11/1/72 to 12/31/1975

Administrative Expedition

9.A. Start Date to Start (Mo., Day, Yr.)

Between November 1, 1972 and September 30, 1973

9.B. Completion Date of Services (Mo., Day, Yr.)

December 31, 1975

10.A. Type of Action

A.I.D. Grant

Cooperating

Country Contract

Partial Agency

Service Contract

Other

10.B. Authorized Agent

AID/W

Estimated Financing		(1)	(2)	(3)	(4)
		Previous Total	Contract	Debit/Enc	Total to Date
11.	\$1,000,000 32%				
Maximum A.I.D. Financing	A. Dollars	58,660			58,660
	B. Classified Local Currency				
12.					
Cooperating Country Contributions	A. Counterpart				
	B. Other				

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13. Mission Reference

AMMAN 1783

STATE 71169

14. Instruction to Authorized Agent

AID/W is requested to negotiate and execute a contract with a U.S. University to render the services (Phase II) provided in Block 19, Scope of Technical Services.

It is estimated that the total costs of the contract will approximate \$233,000 of which about \$55,000 are available under this PIO/T and the balance of \$178,000 is covered under PIO/T No. 278-139-3-0003 (\$108,315) and PIO/T No. 278-139-3-3-3003 (\$70,000).

for Robert M. Mills
Minister of Agriculture

15. Clearances - Show Office Symbol, Signature and Date for all Necessary Clearances

A. The specifications in this contract work are technically satisfactory

B. Funds requested are available

AGR: *M. W. Mahan* Date *Nov. 21, 1972*

CONF: *M. W. Mahan* Date *April 21, 73*

C. The scope of work lies within the purview of the existing and approved Agency Program

PRG: *Robert M. Mills* Date *Feb 21, 1973*

JAO/PROC

Date

16. For the cooperating country: The terms and conditions set forth herein are hereby agreed to

17. For the Agency: International Development

18. Date of Signature

Signature and Date:

M. Nuri Shraf

Signature:

Robert M. Mills

4/25/73

Title: President, JAO

Title: Acting Director, USAID/J

AID 1236-1 14-101	Country: JORDAN	PIOT No.: 278-139-3-20062	Page: 7 of 7
Project Title: Wheat Research and Production			

SCOPE OF WORK

10. Scope of Technical Services

A. Objective for which the Technical Services are to be used: To assist the Jordanian Ministry of Agriculture develop and disseminate an improved system of wheat technology by 1975 which will provide an important input to the Government of Jordan target of doubling annual wheat production by 1980.

The technical services are divided into two phases:

PHASE I: A recognized expert (Dr. Norman Goetze) in the field of wheat production improvement was contracted and accompanied an AID specialist (Donald R. Yeaman) to Jordan to determine the problem areas in conducting applied wheat research and a wheat promotion program under dry land and irrigated conditions. Observation of the present wheat research and extension practices and the capability of the Agricultural Research and Extension Directorate was included in their study.

PHASE II: On the basis of the study made under Phase I above, the work plan detailed hereunder has been developed:

C. Technicals

(1) Number	(2) Specialized Field	(3) Grade and/or Salary	(4) Duration of Assignment (Start-End)
1	Full time Senior Advisor		12
1	Soil Fertility		3
1	Irrigated Wheat Specialist		3
1	Commercial Spry Specialist		3

(For details, See Continuation Sheet)

(2) Duty Post and Description of Technical Services
See Continuation sheet

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(3) Language requirements

(4) Access to Classified Information

The full time Senior Advisor should be cleared through CONFIDENTIAL, but if security clearance delays arrival of advisor beyond August 1, 1973 it is suggested that he be brought forward and security clearance completed in due course. Access to classified information is not essential for the short term consultants.

(5) Dependents Will Will Not Be Permitted to Accompany Technicals (full time Senior Advisor only).

D. Funding of Technical Services

(1) By AID: 236,975 for Phase I and Phase II (2) By Government of Jordan: In-kind

AID 1250-1 12-701	Cooperating Country JORDAN	PIO/T No. 278-139-3-20062	Page 2 of 7 Pages
PIO/T	Project/Activity No. and Title 278-11-130-139 - Wheat Research and Production		

20. Equipment and Supplies (Related to the services described in Block 19 and to be procured outside the Cooperating Country by the supplier of those services)

A. (1) Quantity	(2) Description	(3) Estimated Cost	(4) Special Instructions
	Types, quantities and detailed specifications of demonstrational commodity items will be determined by the Contractor and the GOJ Project Supervisor in consultation with USAID/J	\$20,000	..

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B. Financing of Equipment & Supplies

(1) By AID - \$ 20,000

(2) By Cooperating Country -- In-kind

21. Special Provisions

- A. This PIO/T is subject to AID (controlling) (PASA Implementation) regulations.
- B. Except as specifically authorized by AID, or when local law is authorized under the terms of a contract with a U.S. Supplier, services authorized under this PIO/T must be obtained from U.S. sources.
- C. Except as specifically authorized by AID/W, the purchase of commodities authorized under this PIO/T will be limited to the U.S. under Geographic Code 000.
- D. Other (specify)

AID 1550-1 (8-70)	Cooperating Country JORDAN	PIQ/T No. 278-139-3-20072	Page # of # Pages Page # of 7 Pages
PIQ/T	Project/Activity No. and Title 278-11-130-139 - Wheat Research and Production		

22. Reports by Contractor or Participating Agency (Indicate type, content and format if data required, including language to be used if other than English, frequency or timing of reports, and any special requirements)

Twenty five (25) copies of End-of-Tour Report of the advisors to be provided to USAID/J for distribution. Three copies of Monthly Reports and other reports as requested by USAID/J Agriculture Division. All reports are to be submitted in English.

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23. Background Information (Additional information useful to interested Agency and Participating Contractor or Participating Agency; if necessary cross reference Block 13.C(4) above.)

History of earlier work in this area is available in AID/W and in the cooperating country.

24. Relationship of Contractor or Participating Agency to Cooperating Country and to AID

A. Relationships and Responsibilities: The advisors and consultants will be administratively assigned to the Agriculture Division, USAID/J.

B. Cooperating Agency (Host): The Director of the Agricultural Research and Extension Directorate of the Ministry of Agriculture and the Project Supervisor of the Wheat Research and Production Project.

C. AID Liaison Official:

Chief of Agriculture Division,
USAID/J
and/or
Acting Director
USAID/J

JORDAN

278-139-3-20062

PIO/T

Project/Activity No. and Title

278-11-130-139 - Wheat Research and Production

LOGISTIC SUPPORT

25. Provisions for Logistic Support

A. Specific Items (Insert "X" in applicable column of right. If entry needs qualification, insert asterisk and explain below in C. "Comments")	In Kind Supplied By		From Local Currency Supplied By	
	AID	Cooperating Country	AID	Cooperating Country
(1) Office Space		X		
(2) Office Equipment		X		
(3) Housing and Utilities	X			
(4) Furniture	X			
(5) Household Equipment (Stoves, Refs, etc.)	X			
(6) Transportation in Cooperating Country		X		
(7) Interpreter Services		X		
(8) Secretarial Services (In Jordan)	X			
(9) Printing and Reproduction	X			
(10)				
(11)				
(12)				
(13)				
(14)				
(15)				

B. Additional Facilities Available From Other Sources

Subject to regulations in effect at post.

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C. Comments

- * USAID/J policy is to provide the same housing facilities, furniture, and utilities to fulltime contract advisors as to direct-hire personnel. If available, similar facilities will be provided to short-term consultants with consequent reduction of per diem.

CONTINUATION SHEET

PIO/T No.: 278-139-3-20062

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BLOCK 19: SCOPE OF TECHNICAL SERVICES (CONTD.) **MICROFILMED FROM BEST
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B. DESCRIPTION (Contd.)

PHASE II (Contd.)

Jordan's wheat Research and production programs now have organizational problems and inadequate research activities to support the existing farmer demonstration programs. The overall input of the wheat programs is being seriously hampered by the lack of research coordination and problem orientation on individual projects. The Ministry of Agriculture recognized the administration and coordination problem and is assigning a full time senior project supervisor to administer the wheat project. Experience to date verifies that more uniform stand and less competition from weeds would make more efficient use of the limiting resource, water, and that improved soil fertility would give an economic response. There are questions about the relative efficiency of the local low analysis of phosphorus and the treble super phosphate available in the import market. Sulphur has been masked by meeting Nitrogen requirements with Ammonium Sulfate. Work needs to be expanded by higher rates of Nitrogen and by varieties which are more tolerant of lodging or which have physiological potential in field for both dry land and irrigated lands.

To assist the Government of Jordan in solving the above problems and to further develop an institutional capability within the Ministry of Agriculture to conduct a modern adaptive wheat research and dissemination program, USAID will provide a University contract team of technical experts for a period of approximately two years. Work by this team will include a review of the administrative and technical problems of the department of Research and Extension and work with the Director of that Department and with the Project Supervisor to improve the Department capability in planning, designing, implementing and directing a Wheat Research Program. The review will produce: A) A Master Plan for Research Methodology in wheat production summer fallow practices, sprayer equipment use; soils classification and fertility analysis; B) the Development of Training Programs in Field Plant technique, collection and analysis of Research Data for both irrigated and Rain-fed Wheat Production, organization of Farmer field days, and the preparation of technical bulletins and other mass communication material for Radio and TV Programs. (The review would be due 60 days after the contract is signed).

In addition to the advisory services described above, the Contractor will provide:

(a) Participant Training

Training of selected Jordanian participants in the United States for a period as recommended by the advisors. Selections will be as mutually agreed upon by the Contractor and the Ministry of Agriculture in consultation with USAID/J. Estimated total costs \$42,000.

(b) Demonstrational Commodities

See Block 20.

CONTINUATION SHEET

PIO/T No. 278-139-3-20062

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BIDDER 19: SCOPE OF TECHNICAL SERVICES (CONT'D)

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C TECHNICIANS (CONT'D)

The University technicians will include:

- (a) A Full-Time On-Site Senior Advisor having broad agronomic training coupled with agricultural administration experience for one year. His major goal will be to develop expertise among the Jordanian administrative, research and extension activities for the establishment of a coordinated wheat program. He will train the Jordanian project supervisor to systematically review project activities and implement constructive innovations to more effectively utilize program resources.
- (b) A Short-Term Soil Fertility Specialist to visit Jordan (July-September 1973) and again in 1974 during the same time period. He will develop and train his Jordanian counterpart in details for mapping and classifying agricultural soils and will instruct field personnel in the collection of soil samples for chemical and physical analyses to be used in ascertaining fertilizer use. He will develop and train his counterpart in setting up fertilizer rate and kind trials;
- (c) A Short-Term Irrigation Wheat Management Specialist to visit Jordan (July-September 1973). He will train his counterparts in designing experiments to improve wheat production in irrigated crop rotation. He will return to Jordan during the following harvest season (April-June 1974) to evaluate the first intensive work and to modify the research and demonstration activities to suit the conditions at that time.
- (d) A Short-Term Herbicide Sprayer Specialist to visit Jordan (November 1973 - January 1974). He will evaluate the current status of herbicide research and demonstration programs and assist the Government in establishing a program with commercial spraying firms to upgrade their efficiency.

Determination of the requirements of additional advisors shall be made after the arrival of the on-site Senior Advisor.

AID 1359-1X (7-71)	DEPARTMENT OF STATE AGENCY FOR INTERNATIONAL DEVELOPMENT	1. Cooperating Country JORDAN	Page 1 of 2 Pages
		2. PIO/T No. 278-139-3-30039	3. <input type="checkbox"/> Original or Amendment No. <u>1</u>
PIO/T	PROJECT IMPLEMENTATION ORDER/TECHNICAL SERVICES	4. Project/Activity No. and Title Wheat Research & Production 278-11-130-139	

DISTRIBUTION	5. Appropriation Symbol 72-1131004		6.A. Allotment Symbol and Charge 354-50-278-00-69-31		6.B. Funds Allotted to: <input type="checkbox"/> A.I.D./W <input checked="" type="checkbox"/> Mission	
	7. Obligation Status <input type="checkbox"/> Administrative Reservation <input checked="" type="checkbox"/> Implementing Document				8. Funding Period (Mo., Day, Yr.) From _____ To _____	
	9.A. Services to Start (Mo., Day, Yr.) Between _____ and _____				9.B. Completion date of Services (Mo., Day, Yr.)	
	10.A. Type of Action <input checked="" type="checkbox"/> A.I.D. Contract <input type="checkbox"/> Cooperating Country Contract <input type="checkbox"/> Participating Agency Service Agreement <input type="checkbox"/> Other					
	10.B. Authorized Agent AID/W					
	Estimated Financing		(1)	(2)	(3)	(4)
	\$1.00=		Previous Total	Increase	Decrease	Total to Date
	11. Maximum A.I.D. Financing	A. Dollars	70,000	-0-		70,000
		B. U.S.-Owned Local Currency				
	12. Cooperating Country Contributions	A. Counterpart				
B. Other						

13. Mission References Comman 2934	14. Instructions to Authorized Agent CM/ROD/NESA is requested to amend contract AID/SA-C-1024 to include the short-term specialist described in Block 19 and extend the contract through December, 1975. All other provisions remain the same, no additional funding is required.
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15. Clearances - Show Office Symbol, Signature and Date for all Necessary Clearances.	
A. The specifications in the scope of work are technically adequate NESA/TECH/PSD: JJYoung <i>[Signature]</i>	B. Funds for the services requested are available
C. The scope of work lies within the purview of the initiating and approved Agency Programs NESA/ME:WFaulkner <i>[Signature]</i>	D.
E. NESA/TECH:BTurner <i>[Signature]</i>	F.

16. For the cooperating country: The terms and conditions set forth herein are hereby agreed to Signature and date: _____ Title: _____	17. For the Agency for International Development Signature: <i>[Signature]</i> Title: Chief, NESA/TECH/PSD	18. Date of Signature 5/15/75
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AID 1350-1X (9-70) PIO/T	Cooperating Country JORDAN	PIO/T No. 278-139-3-30039	Page 2 of 2 Pages
	Project/Activity No. and Title Wheat Research and Production 278-11-130-139		

SCOPE OF WORK

19. Scope of Technical Services

A. Objective for which the Technical Services are to be Used

Conduct economic analysis of wheat production.

B. Description

Improved wheat growing practices applicable in Jordan could increase average yields by 50% to 70% over traditional practices. Research underway, but not yet completed, probably will show even more promising results. Farmers, however, have been very slow in adapting these new practices. An Agricultural Economist should analyze this issue and recommend solutions. The two-month TDY technician should:

1. Examine the cost/price implication to the farmer of the improved practices being demonstrated, that is, the adequacy of the financial incentive to the farmer.
2. Briefly examine the private sector's capacity to provide the needed inputs on a timely and competitive basis, particularly machinery, fertilizers, and seeds.

C. Technicians

(1) (a) <u>Number</u>	(b) <u>Specialized Field</u>	(c) <u>Grade and/or Salary</u>	(d) <u>Duration of Assignment (Man-Months)</u>
1	Agr Economist		2 mm

(2) Duty Post and Duration of Technicians' Services

Amman, Jordan, - two months

(3) Language requirements

None

(4) Access to Classified Information

None

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(5) Dependents Will Will Not **Be Permitted to Accompany Technician**

D. Financing of Technical Services

(1) By AID - \$ -0-

(2) By Cooperating Country - -0-