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1969 NOV 4 PM 5 01

PD-AAA-949-A1

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ACTION

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FROM - TUNIS

SUBJECT - Noncapital Project Paper (PROP) - Agricultural Production and Research

REFERENCE -

*AARC
ITAD
TAB*

Country: Tunisia

Project No.: 664-11-¹¹⁰130-205

Submission Date: October 15, 1969

Original X Revision

Project Title: Agricultural Production and Research

U.S. Obligation Span: FY 1965 through FY 1974

Physical Implementation Span: FY 1966 through FY 1974

Gross life-of-project financial requirements:

U.S. Dollars \$2,712,000

U.S.-owned local currency 611,000

Cooperating country cash contribution 1,740,000

Other Donor (Ford Foundation) 550,000

Total \$5,613,000

OTHER AGENCY

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STATE
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OFFICE

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Program

10/24/69

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AGR: S...: Slitzenberger

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PART I - GENERAL INTRODUCTION TO AGRICULTURAL PRODUCTION AND RESEARCH ACTIVITY
(Project 205 and sub-projects)

A. Summary Description

One of Tunisia's primary on-going development objectives in the Four-Year Development Plan (1969-1972) is to move toward food self-sufficiency, while assuming that all strata of the population have a sufficient and balanced diet, and at the same time to decrease hard currency-draining imports of agricultural products. As part of the overall goal of helping Tunisia increase agricultural production during the Plan period, USAID/Tunisia has spearheaded a cereals production program begun in CY 1966. Current plans call for the continuation of technical assistance programs in the areas of cereals, and the initiation of full-fledged technical assistance for feed grain and forage crops, irrigation, rangeland development, poultry and livestock production improvement, and fruit improvement under this project activity. While the project concentrates on increasing production, the sub-goal of strengthening the GOT's agricultural agencies' ability to carry on research and extension services in these and related agricultural enterprises is complementary and necessary to successful long-term production results. The GOT's Production and Extension Service (PAV) and Research Institute (INPAT) have grown with the Accelerated Cereals Production Program and will be further tested and forced through the Project's activities, which already rely on these institutions for significant inputs of manpower and technical skills.

Mexican Wheats

Within the overall goal of rapidly increased agricultural production, the project's sub-activities have focused primarily on wheat improvement. In order to meet the GOT's goal of self-sufficiency in bread wheat by 1972, i.e., an increase of over 50% in wheat production using the base period 1965-67, the following hectareage has been programmed for the new high-yielding Mexican bread wheat varieties:

<u>Crop Year</u>	<u>Hectares</u>	<u>(Metric Tons) 1/ Yield/Hectare</u>	<u>(Metric Tons) Total Yield</u>
1968-1969	12,000	1.5	18,000
1969-1970	80,000	1.1	88,000
1970-1971	200,000	1.1	220,000
1971-1972	370,000	1.1	407,000
1972-1973	370,000	1.25	463,000
1973-1974	365,000	1.35	491,000

1/ These yields are in contrast to an average of about a .5 tons per hectare for Tunisian local strains which are somewhat later in maturity, grow taller and are less disease resistant.

Poultry

A short-term consultative tour during May-June 1969 (by an AID/W poultry advisor) showed that with a relatively modest technical assistance input, a permanent domestic supply of high quality breeding stock and of day-old chicks could be provided to Tunisian poultry producers by 1972. While a limited poultry infrastructure exists in Tunisia, present output in terms of quantity and quality of basic breeding stock, eggs, and poultry for meat is inadequate. Working within the GOT's Four-Year Plan goal of increasing the protein content of the Tunisian diet, the AID Advisor and l'Office d'Elevage in the Ministry of Agriculture developed the following production goals to be attained by the project's proposed central production center at Sidi Thabet under the direction of l'Office d'Elevage:

Annual Poultry Production

	<u>Current (1969)</u>	<u>Projected (1972)</u>
Egg Production	4,080,000	30,800,000
Chick Production	480,000	2,000,000
Poultry Meat for Consumption (kgs.)	170,000	1,240,000

Other

The project also embodies continued assistance through the Extension Service of the Ministry of Agriculture and appropriate research services in barley, forage and feedgrain crops and in fruit crops (citrus and apricots). Support will be provided for expanded research on pest control (prevalent insects and diseases) and improved crop varieties and for rangeland and irrigation development.

Benchmarks

The minimum levels of output and achievement which must be met as a requisite for continued U.S. contribution and participation consist of production targets which clearly demonstrate increased yields and increasing overall production in relation to traditional levels and quality of production. For wheat, the newly introduced short-stemmed improved bread wheat varieties must continue to out-produce traditional varieties with a favorable cost/benefit ratio. Similarly, for poultry production, qualitative and quantitative improvements should be greater than current production techniques and stock permit. For these and for the other technical assistance sub-activities of the project, GOT manpower and budgetary inputs must be

sufficient to insure continued production increases and full assumption of production management and research on the part of the responsible GOT agencies within the time frame of the duration of these sub-activities. Therefore, if the required candidates for participant training, adjoints techniques and ingenieurs for on-the-job training, and requisite specified counterpart project personnel are not provided by the GOT, and if GOT budgetary support does not increase proportionally in relation to USAID financial inputs and according to budget plans, careful review of sub-activities so affected would be warranted to determine whether or not AID support should continue.

INPUTS.

, p 1

For cereals production and research, USAID/Tunisia, in cooperation with the Rockefeller Foundation's Corn and Wheat Improvement Center (CIMMYT) in Mexico, the latter's technicians in Morocco and Tunisia (see Wheat Improvement in North Africa PROP of 28 February 1968 and AID/AFR Contract No. 573 of 28 June 1968), and the Ford Foundation-financed CIMMYT-hire technicians in Tunisia, will provide direct-hire and PASA technicians, dollar and dinar financing for commodities, and participant training in the United States and Morocco for Tunisian personnel associated with cereals production. For poultry production, the services of a direct-hire Poultry Advisor and consultant services, as necessary, together with dollar and dinar commodity support and participant training in the United States will be furnished. Technician services and limited commodity support and participant training, as required, will be provided to the sub-activities in forage crops and feedgrains, livestock, rangeland and irrigation development, and fruit production improvement. (The following tables present the overall budget plan for project inputs and a cost breakout of these inputs by sub-activity and life-of-project time span.)

NONCAPITAL PROJECT FUNDING - SUMMARY
(Obligations in \$000)

PROP DATE Mo./Day/Yr.
Original 10 15 69
Rev. No.
Project No. 664-11-130-205

Project Title: Agricultural Research & Production

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<u>Fiscal Years</u>	<u>L/G</u>	<u>Total</u>	<u>Cont^{1/}</u>	<u>Personnel Serv.</u>			<u>Part. Direct A.I.D.</u>	<u>Commodities Direct A.I.D.</u>	<u>Other Costs</u>	
				<u>Direct A.I.D.</u>	<u>PASA</u>	<u>CONT</u>			<u>Direct A.I.D.</u>	<u>CONT</u>
Prior Thru Act. FY 1969		929	21	407	24	21	223	234	20	-
Oper. FY 1970	G	194	15	60	45	13	54	20	-	2
Budget FY 1971	G	499	-	150	75	-	174	100	-	-
B + 1 FY 1972	G	579	-	200	75	-	204	100	-	-
B + 2 FY 1973	G	334	-	175	50	-	94	15	-	-
B + 3 FY 1974	G	177	-	100	-	-	72	5	-	-
All Subs.		-	-	-	-	-	-	-	-	-
Total Life of Project	G	2,712	36	1,092	269	34	821	474	20	2

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^{1/} Memorandum (nonadd) column

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Table. 3

Detailed Budget - Dollar Cost (\$000) Life of Project FY 1970 - FY 1974

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	<u>FY 70</u>	<u>FY 71</u>	<u>FY 72</u>	<u>FY 73</u>	<u>FY 74</u>	<u>Total</u>
1. <u>205 - General</u>						
A. <u>Technicians</u>						
<u>Direct Hire</u>						
Forage Crops Advisor	-	25	25	25	-	75
Feedgrain Advisor	-	25	25	25	-	75
Livestock Advisor	-	25	25	25	-	75
Citrus Production Advisor	-	-	25	25	25	75
Apricot Production Advisor	-	-	25	25	25	75
<u>PASA</u>						
Farm Irrigation Advisor	10	25	25	25	-	85
Agronomy Advisor (Forage & Range Lands)	10	25	25	25	-	85
B. <u>Participants - A.I.D. Direct</u>						
To be elaborated for each subactivity by project technicians and GOT counterparts within three months after a technician's assignment to project position and arrival at post. Amounts shown are current estimates of needs.	-	68	76	32	50	226
C. <u>Commodities</u>						
See comment under "B. 1." above	-	30	30	-	-	60
D. <u>Other Costs</u>						
Subtotal	20	223	281	207	100	831

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Table. 4

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II. 205.1 CerealsA. TechniciansDirect Hire

Agricultural Research Advisor

20 25 25 25 25 120

Agricultural Advisor

20 25 25 25 25 120

PASA

Soils Advisor/Production Agronomist

25 25 25 - - 75

B. ParticipantsA.I.D. Direct

New Starts @ \$6,000 each

48 18 - - - 66

Extensions @ \$6,000 each

6 66 84 18 - 174

C. CommoditiesLaboratory equipment and supplies, misc.
production and demonstration evaluation
supplies for demonstration machinery
& project vehicles.

10 10 10 5 5 40

D. Other Costs

- - - - - -

Subtotal

129 169 169 73 55 595

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	<u>FY 70</u>	<u>FY 71</u>	<u>FY 72</u>	<u>FY 73</u>	<u>FY 74</u>	<u>Total</u>
III. <u>205.2 Poultry Improvement</u>						
A. <u>Technicians</u>						
<u>Direct Hire</u>						
Poultry Advisor	20	25	25	-	-	70
<u>Contract</u>						
Poultry-Chick Sexer - 6 man months	13	-	-	-	-	13
B. <u>Participants</u>						
To be elaborated for each subactivity by project technicians and GOT counterparts within three months after a technician's assignment to project position and arrival at post. Amounts shown are current estimates of needs.	-	22	44	44	22	132
C. <u>Commodities</u>	10	60	60	10	-	140
D. <u>Other Costs</u>						
Contract overhead	<u>2</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>2</u>
Subtotal	45	107	129	54	22	357
Total all subactivities	<u>194</u>	<u>499</u>	<u>579</u>	<u>334</u>	<u>177</u>	<u>1,783</u>

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Table. 6

Other Financing (Estimated Commitments)
(\$000 equivalent)

	<u>Cum.</u> <u>Thru</u> <u>FY 69</u>	<u>FY 70</u>	<u>FY 71</u>	<u>FY 72</u>	<u>FY 73</u>	<u>FY 74</u>	<u>Total</u> <u>All Years</u>
<u>AID-Controlled</u>							
<u>Local Currency</u>							
U.S.-owned PL 480 104 (f) Grant	526 (444) ^{2/}	50 ^{1/}	20 ^{1/}	15 ^{1/}			611 (444) ^{2/}
Country-owned (Trust Fund from CY 1969 on)	213	35	55	58	52	29	442
<u>GOT Budgetary Contribution^{3/}</u>	48	120	220	260	300	350	1,298
<u>Ford Foundation</u>	75	110	110	110	110	35	550
<u>AID/W Regional TC/DG CILBYT Contract</u>	148	68	50	50	20	-	336
	<u>1,010</u>	<u>383</u>	<u>455</u>	<u>493</u>	<u>482</u>	<u>414</u>	<u>3,237</u>

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1/

Poultry and livestock subactivity, for construction of poultry facilities and purchase of commodities.
To be detailed in PROP for Project 205.2

TOAID A-

2/

Non-add. Grant made to Tunisian portion of Wheat Improvement in North Africa Project 698-11-130-173.

3/

Includes GOT Budget for Project 205.1 cereals subactivity only; other contribution will be known as respective subactivities' implementation plans become detailed.

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B. Setting

Summary and detailed analyses of the agricultural sector have been prepared in Agricultural Attache CERP-D Report, "Tunisia: Agricultural Situation and Policy" Rabat, 22 January 1969.; in TOAID A-1232, "Title XI and Agricultural Sector Analysis" dated 4 December 1968; and in the FY 1970 Program Memorandum; therefore, references to the environmental context of sub-activities will be presented only if significant changes have occurred subsequent to the ~~above~~ analyses.

C. Approach and Plan of Action

Since the overall project encompasses the improvement of select areas in agricultural production and research and for purposes of clarity of implementation and ease of evaluation, the project's sub-activities are grouped under the following headings and will be fully documented and evaluated as separate sub-activities:

Agricultural Production and Research - 664-11-130-205

General sub-activities in agricultural production and research not elsewhere classified.

Agricultural Production and Research - 664-11-130-205.1

Cereals Improvement Sub-activity

Agricultural Production and Research - 664-11-130-205.2

Poultry Improvement Sub-activity

This PROP treats two of the three sub-fields in detail: General and Miscellaneous Activities (Project 205) and the Cereals Activity (Project 205.1). A separate PROP is being prepared for the Poultry sub-activity. Current requested project funding includes the full complement of project inputs for FY 1970 and the estimated needs for subsequent years. Where appropriate and necessary for a clearer delineation of a sub-activity, a PROP revision may be developed subsequent to the arrival of a new project technician or a change in the environmental context affecting one or more sub-activities.

PART II - DESCRIPTION OF SUB-PROJECTSA. General Agricultural Production and Research Sub-activities
No. 664-11-130-205

The GOT's Four-Year Plan, 1969-1972, projects a need for overall agricultural production to increase at the rate of 7.6 percent per year, while production growth required just to fulfill domestic demand is projected at 7.1 percent. Considering the agricultural sector's performance during the period 1962-1963, among other indicators, it seems unlikely that this planned production expansion will be achieved. However, the Mission has selected the following priority areas in order to assist the GOT to approach attainment of the Plan goals.

- Cereals Production
- Poultry Improvement
- Forage and Feedgrains Crops
- Livestock Improvement
- Rangeland and Irrigation Development
- Citrus and Apricot Improvement and Production

Planned USAID strategy, inputs, goals and course of action for the last four priority areas are presented in this section of the PROP. The cereals sub-activity is detailed in Section B of Part II of this PROP, and as indicated previously the poultry industry sub-activity will be presented in a subsequent PROP submission.

I. Forage Crops and Feedgrains Sub-activity

If the GOT's planned growth rate of 8 percent per year in live animal production for the period 1969-1972 is to be realized in order to meet projected consumer demand, a substantial increase in the quantity and quality of feedgrains and forage production must be attained. The Plan's optimistic livestock goals are based entirely on the results of feeding trials under experimental conditions. Estimated forage production in 1968 was about 2,000 million forage units,^{1/} yet the estimated requirements just to achieve the meat production target for 1972 would be about 500 million additional units. This requirement only considers the needs for meat production to the exclusion of feed and forage needs for milk and egg production and herd maintenance. Therefore, without careful planning of a livestock feeding program, additional research and development in feedgrain and forage crop production, and rangeland and pasture utilization programs, the 8 percent per year increase in meat consumption demand is unlikely to be satisfied.

^{1/}One forage unit is equal in nutritional value to 1.0 kilograms of barley
 = 1.1 kilograms of broad wheat.

Beginning in FY 1971, USAID plans to provide the services of one direct-hire forage crop advisor and one direct-hire feedgrain advisor to the GOT's agricultural production service (PAV). These technicians also will work with other agencies involved in livestock and feed production, including the Office d'Elevage (Livestock Service), (CIVVM), the Accelerated Cereals Production Office, the GOT's agricultural research service (IRAT), and the World Food Program. During FY 1971, both technicians will concentrate on developing a comprehensive analysis and proposal for improved supplemental feeding programs and the provision of requisite feed inputs. This will include plans for extension and research directed toward self-sufficient feedgrain and forage production capability to meet an expanded grazing/supplemental feeding program for the entire commercialized livestock population. Feed and forage production targets will be coordinated within the crop rotation system for irrigated and dryland farming supervised by the PAV and the ACPP. At the beginning of FY 1971, one or more candidates from both the Office d'Elevage and the PAV will be sent to the United States for one-two years of advanced academic and practical training in feedgrain technology and forage crop production management.

Subsequent activity during FY 1972-1973 will involve continued implementation of the subactivity work plan, the improvement of counterpart technicians' technical skills, and the provision of guidance to returned participants. It is expected that the technicians also will provide their services to help resolve production management problems in feedgrains and forage crops arising at selected farms with large scale livestock operations.

2. Livestock Improvement Subactivity

In order to assist the GOT in its goal to increase live animal production by eight percent per year during the Plan period, beginning in FY 1971, a direct-hire livestock advisor will work directly with the Office d'Elevage to assist in the development of an overall livestock breeding, feeding, grading and marketing program. Since ample superior breeding stock already is available in Tunisia, primary emphasis will be placed on herd improvement through better breeding and selection management.

After this initial planning phase of the livestock advisor's assistance, working through the Office d'Elevage and the Ministry of Agriculture's extension service, the livestock advisor will develop a demonstration program aimed at large farm units which consists of practical methods of improving livestock through improved techniques of disease and parasite control, as well as better selection and management. Additionally, in conjunction with the USAID forage and feedgrain advisors, he will assist in the development of a demonstration program of improved grazing/supplemental feeding techniques to be implemented through the extension service.

During FY 1972-1973, the livestock advisor will continue implementing the demonstration program and will provide on-the-job training to counterparts and participants returned from short-term training during FY 1971 in extension livestock management education.

3. Rangeland and Irrigation Development

This subactivity focusses on land utilization and development in order to assist the GOT in reallocation and maximization of returns on reclaimed land, on marginal land released from cereals and olive production under improved land management programs, and on land to be brought into extended irrigation systems. Two Soils Conservation Service Advisors currently on the SCS team assigned to the Oued Merguellil Watershed Planning and Management Project (Project 664-51-120-018), will be retained for farm irrigation and rangeland development after the current PASA team contract terminates in January, 1970.

The rangeland advisor will continue to provide direct full-time assistance to the Water and Soils Conservation Division (CES) of the Ministry of Agriculture, which has been the Ministry's responsible division for the Oued Merguellil activity. Fifteen participants are scheduled to return to the CES during the period 1971-1972 and one of the main tasks of the rangeland advisor will be to assist in orientation of these returned participants. At the same time, the advisor will continue to advise the CES as required on conservation management in the Oued Merguellil and similar areas. From time to time his services will be needed by PAV and the Office d'Elevage in connection with the development of a sectoral pasturage, forage crop and livestock feeding program to be designed during FY 1971 under this project's forage and feedgrain subactivity (see Section 1 above).

The farm irrigation advisor will assist the rangeland advisor as required during FY 1970 at the Oued Merguellil watershed. Concurrently, he will begin working with the Accelerated Cereals Production Program and the PAV to develop secondary irrigation facilities and provide irrigation management assistance to the irrigation perimeters currently being developed at Saliama, Sbilha, Sbeitla and El Houaria. Major emphasis will be placed on the training of counterpart personnel, particularly with regard to the establishment of irrigated sectors for cereals and forage crop rotational production.

4. Citrus and Apricot Improvement and Production Sub-activity

The Four-Year Plan calls for a production increase of ten percent per year in fruit production which includes a 22 percent per year growth rate for fruit exports. In order to assist the GOT toward expansion and improvement of the primary contributors to long-range fruit production goals -- citrus and apricot crops -- beginning in FY 1972 the services of one direct-hire citrus advisor and one direct-hire apricot advisor will be made available to the GOT. Both technicians would be production management oriented, including marketing and pest control. While their services will not have an immediate effect on the attainment of GOT production goals framed for 1972, first-year technical assistance efforts will be directed toward a quality control program for citrus and apricots destined for exportation. In this connection, some consideration will be given to fruit processing since much of the inland-produced crop should be processed locally. In following years, based on plans developed with PAV during FY 1972, the technicians will assist with the supervision and implementation of citrus and apricot production programs on irrigated land. Current USAID/GOT irrigation development projects in the Oued Mabaana and El Maouaria areas will have been completed and large areas of land allocated to fruit crops by 1972. It is anticipated that the major thrust of the USAID

Fruit production management program will be directed toward these two fruit crops which are well adapted to Tunisian agricultural conditions.

After an assessment of GOT technicians' needs for overall fruit production management, candidates will be selected from the PAV and related agricultural divisions for one-two years of academic and practical training in the United States. On their return to Tunisia, these technicians, with the assistance of the USAID project technicians, will be reintegrated into the citrus and apricot production management program. Unless the scope of services of these two direct-hire technicians is altered by currently unforeseen situational changes, their services should be concluded during FY 1974.

B. Cereals Improvement Sub-activity - Project No. 664-11-130-205.1

1. Setting^{1/}

Wheat is the basic staple food crop of Tunisia. Present consumption of a population of 4.6 million is approximately 700,000 tons annually, or about 250,000 tons more than is being produced in the country today. During the past three years, the annual wheat deficit has been on the order of about 30 to 40 percent of total requirements and a major portion of this deficit has been met through PL 480 imports. A static trend in production, combined with a high rate of population growth, makes this "wheat gap" the most important agricultural production problem in Tunisia. The following table presents total national wheat production, importation and consumption data for the five-year production period, 1965-1969, with estimated production, importation and consumption for subsequent years through 1972.

Year ^{2/}	Wheat (000 Metric Tons)				Estimated		
	1965/66	1966/67	1967/68	1968/69	1969/70	1970/71	1971/72
Production	685	514	432	558	485	555	670
Imports	152	253	446	297	393	302	273
PL 480-Title I & II	(76)	(153)	(199)	(212)	(223)	(185)	(175)
Commercial	(76)	(100)	(243)	(66)	(65)	(117)	(98)
Other Concessional	-	-	(4)	(19)	(100)	-	-
Total Availabilities	337	767	873	845	878	857	943
Consumption ^{3/}	660	687	698	782	780	808	836
Seed and Losses	103	77	65	84	73	83	101
Exports ^{4/}	103	5	1	-	-	-	-
Stock Change	-29	-2	+114	-21	+25	-34	+6
Total Uses	337	767	873	845	878	857	943

^{1/}Additional "setting" is provided in TOAID A-1233, "PPIS FY 1970-Program Guidance No. 5; Cereals Research and Production", dated 12/04/68.

^{2/}Production Year/Consumption Year.

^{3/}Includes auto-consumption.

^{4/}Only durum wheat has been exported.

Barley production on approximately 450,000 hectares has averaged 200,000 metric tons per year during the past five years, whereas animal and human consumption runs at an average of 300,000 metric tons per year. Current projections show an increase in consumer demand for livestock products necessitating an increase of about eight percent per year in the improved livestock population in order to raise the dietary standards of the Tunisian population and provide more and better quality meat for the expanding needs of the tourism sector. Present feedgrain and forage crop availabilities are not adequate for even a modest supplemental livestock feeding program. Therefore, barley research and production activities will receive increased USAID technical assistance. This assistance, although given within the framework of the GOT's overall accelerated cereals effort, will support the USAID/GOT livestock, feedgrain and forage crop sub-activities to be initiated in FY 1971.

2. Progress to Date

In 1965, USAID/Tunisia first began to focus its efforts on increasing Tunisian wheat production in order to eliminate the wheat deficit. In order to achieve increased production to the extent of eliminating the wheat deficit, it was determined that improved wheat varieties and techniques of production were required. Early in 1966, on the basis of outstanding performance of the Mexican semi-dwarf varieties in Mexico, Turkey, India and Pakistan, USAID/Tunisia began formulating plans for a major wheat production program. Recognizing that AID, wherever possible, should be a catalyst, bringing together various parties in the pursuit of a common economic objective, USAID/Tunisia invited Dr. Norman Borlaug of CIMMYT in Mexico to come to Tunisia in April, 1966, to investigate the possibilities for a wheat improvement program. CIMMYT's potential participation held the promise of programming continuity and long-term staffing for research purposes, something AID could not assure.

Following Dr. Borlaug's initial visit, Drs. Gibler and Stalman from the Rockefeller Foundation, which is CIMMYT's major sponsor, came to Tunisia to study in depth the prospects for a major project which also would satisfy the need for a regional cereals improvement center in the Mediterranean Basin and the Middle East. In December, 1966, Dr. Samuel C. Fitzenberger was engaged by USAID/Tunisia to develop, in coordination with CIMMYT, the CCE and other potential contributors, such a regional program.

During 1967, while the foundations for joint participation in the regional program were being laid, USAID/Tunisia concentrated on using existing Mexican wheat strains in a production program designed primarily to narrow the domestic wheat gap and reduce the wheat import requirement as rapidly as possible. A task force, headed by Dr. Fitzenberger, and staffed with one USAID direct-hire soils advisor and temporarily-assigned U.S. Soils Conservation Service personnel from the Mission, chose selected regions of northern Tunisia in which to mount a Mexican wheat seed multiplication and demonstration program for the 1967/68 crop season. Approximately 800 hectares, located on 32 farms, were planted—3 varieties to each farm, of which four were the new Mexican strains and four were the local standard varieties. The results of this demonstration and multiplication program indicated on a farm scale the marked superiority of the Mexican wheats. Under conditions identical to those for the Tunisian-developed varieties, the Mexican wheat varieties yielded 30-50 percent more than the local varieties.

Unprecedented yields (for Tunisia) as high as 75 bushels per acre on non-irrigated land, and more than 100 bushels per acre on irrigated plots, were obtained for the best of the Mexican introductions.

So successful were the demonstrations, that during the summer of 1968, AID, CIMYT, the Ford Foundation, and the Tunisian Government jointly commenced what has become known as the Tunisian Accelerated Cereals Production Project (ACPP). Following on the highly favorable 1967/68 program, 500 tons of the high-yielding Mexican wheat varieties, imported under the Commodity Import Program, were sown to 12,000 hectares for the 1968/69 season under ACPP's guidance. A summary assessment of the current season's yields indicates that enough seed to sow more than 100,000 hectares is available for the 1969/70 season—more than two times the amount originally projected a year ago. Thus, from the 1969/70 harvest, given favorable weather conditions, more than sufficient Mexican seed could be made available to meet all of Tunisia's bread-wheat seed requirements.

3. Strategy

The objective of the cereals sub-activity is twofold: (1) to make Tunisia self-sufficient in wheat as soon as possible, thus contributing to an improvement in its balance of payments, and (2) to help create and test an administrative framework which will be capable of ensuring continued success in not only cereals but also in related fields of production, research and extension. In order to achieve the first objective, USAID/Tunisia technical assistance is but one component in a mix of assistance to the GOT. While three of the four CIMYT-hire technicians direct their efforts to cereals breeding, disease and pest research, and soil and fertility analyses, USAID/Tunisia technicians and one CIMYT-hire technician are primarily oriented toward sustained production. The latter provide technical and administrative stimuli to the cereals directorate in the Ministry of Agriculture, which is responsible for coordinating all inputs for a successful production/research effort, and ongoing day-to-day assistance to ACPP personnel in formulating and disseminating the package of technical knowledge and practices necessary at the farm-management level to ensure an accelerated and eventually self-sufficient cereals production program.

The basic organizational and administrative changes necessary for an accelerated, coordinated cereals program occurred during the summer and fall of 1968. Instead of the not uncommon situation of sub-divisions within a ministry competing for control of a priority program, the Ministry, after fairly constant pressure from the Mission and the other participating organizations, created a special steering committee, composed of representatives of all the primary GOT agencies which affect cereals research, production and distribution. At the same time, a coordinator at the deputy-minister level was appointed to the cereals program under whose active leadership the project overcame many extremely delicate and thorny administrative and logistic problems during the 1968-1969 crop year.

Thus, the cereals project already has achieved part of its desired administrative and organizational objectives. Remaining to be accomplished are the tasks of equipping the total organization with well-trained and experienced technicians.

In lieu of other means of providing long-term aid directed at the alleviation of shortages in staple food items, while the Mission continues to provide stop-gap PL 480 commodities to Tunisia, the Mission has chosen a technical assistance project focussed directly on a rapid increase in agricultural production as one of the best means of raising nutrition standards and promoting self-sufficiency (in concert with current USAID nutrition programs) in the agricultural sector. Instead of relying entirely on agricultural capital development projects that necessarily imply long gestation periods, or on agricultural and administrative training schools to provide technical and managerial skills to the agricultural sector, AID's relatively low-cost inputs to the cereals project help meet pressing demands on the agricultural sector - demands for both increased cereals production and better and more efficient production management.

The cereals improvement sub-activity is one important element in the USAID's strategy to meet the following separate but interrelated challenges facing the Tunisian people: to reduce the population growth rate, to increase food production, and to combat malnutrition. While the Family Planning project aims at stabilizing population growth at an acceptable rate of increase, the National Institute of Nutrition project provides the vehicle for a national coordinated effort toward improving dietary standards. Currently, the caloric intake of more than half the Tunisian population is insufficient to meet basic energy requirements. Sixty percent of this diet at an insufficient caloric level comes from cereals; and over 60 percent of the protein available in this substandard diet is based on cereals. While the USAID nutrition projects and Title II food distribution programs are aimed at both quantitative (caloric) and qualitative (protein and vitamin) improvement in Tunisian nutritional standards, the cereals activity provides the foundation for achieving a ready domestic source of the major element in the Tunisians' diet.

In addition to its direct contribution to providing an improved source of feed for the livestock and poultry industries, the cereals program will by 1972/1973, given average climatic conditions, make Tunisia independent of bread wheat imports, thereby eliminating another source of foreign currency expenditures (Tunisian imports of bread wheat and barley during CY 1968 were valued at 11.5 million dinars equivalent to \$21.9 million). While overall self-sufficiency in wheat currently is not projected to be met during the 1970's, the initial concentration on the high-yielding Mexican bread wheats, and subsequently on improved durum wheat and barley production, represents the optimum resource mix in order to minimize the use of foreign exchange for cereal imports. At this crucial point in Tunisia's agricultural development, when new agricultural priorities require substantial changes in production practices and in cropping patterns, in order to achieve optimum production/hectare allocations within the Four-Year Plan period, the cereals project currently serves as the best vehicle for an immediate AID impact on the agricultural sector.

4. Planned Targets, Results and Outputs

The overall objective of this sub-activity is to assist the GOT in its program to increase cereals production to the point of sustained self-sufficiency in wheat and other cereals production. Current Mission projections (see Table VIII) based upon a full technical assistance input as proposed in this FROP, indicate that the bread wheat gap would be closed by 1972; bread wheat production during crop year 1971/1972 would satisfy consumption requirements during CY 1972. While deficits in durum wheat and barley will continue through the 1970s, continued improvement in production management practices and all cereals varieties may hasten the arrival of self-sufficiency and will reduce the magnitude of cereal imports. Without supplementary technical assistance in durum wheat and barley research and production, this positive trend could not be realized.

The minimum staffing requirements for the cereals research and extension services will be met through the provision of Masters degree training for twelve Tunisians, all of whom will be integrated into the cereals program by 1973. In addition to on-the-job training in extension activities for approximately twenty adjoints techniques working directly with the project's senior technicians, seminars, conferences, and periodic study tours to the Moroccan wheat program will be provided to the extension and research services' personnel. On-the-job training of counterpart research and field trial/demonstration technicians is part of the CIMMYT-hire technicians/ scope of services.

In support of the dual goals of increased production and development of technical and administrative skills, the ACPP technicians will design and conduct an extension education/demonstration program consisting of (1) on-farm bread and durum wheat test demonstrations; (2) extension education on improved agricultural practices for all cooperating farms which include land preparation, seeding, fertilization, weed, disease and pest control, and harvesting techniques; and (3) further development of farm management practices related to cereals production for all cooperating farms.

The basic qualitative result required beyond the improvement of technical skills of Tunisian project personnel, is the development within the responsible GOT agencies under the cereals directorate of a capability to plan, coordinate and implement the series of actions necessary for a successful ongoing program. It will be the direct responsibility and function of the USAID cereals project director and his staff to stimulate and ensure the development of technical and decision-making expertise in the Tunisian counterpart staff, which will be focused on a coordinated production and research program. One measure of the extent to which this desired expertise develops will be the design and execution of detailed implementation plans for the whole program and its individual component activity areas by the GOT personnel. Not until a fair resemblance between these plans and actual outputs exists can this aspect of providing technical assistance to the ACPP be considered to be near completion. Given the present dynamic leadership and staffing of the cereals directorate, it is anticipated that this qualitative change could be effected by the end of crop year 1971/1972.

If these production goals, training targets and broad administrative and production management results follow the anticipated time frame, then USAID assistance to the cereals sub-activity could be phased out by the end of FY 1974.

Table 8

Cereals Production & Consumption 1969-1974

Crop Years	1968/1969		1969/1970		1970/1971		1971/1972		1972/1973		1973/1974							
	Ha.	Y	MT	Ha.	Y	MT	Ha.	Y	MT	Ha.	Y	MT						
Bread Wheat																		
Mexican (North)	12	1.5	18	80	1.1	88	200	1.1	220	370	1.1	407	370	1.25	463	365	1.35	491
Other (North)	110	.65	72	110	.74	81	50	.8	40	-	-	-	-	-	-	-	-	-
Irrigated				3	4.33	13	4	4.33	17	5	4.33	22	5	4.33	22	5	4.33	22
Other																		
Total Ha. ^{1/}	122			193			254			375			375			370		
Total Prod.			90			182			277			429			485			513
Total Prod. Net ^{2/}			77			155			235			365			412			437
Total Cons.			330			340			351			363			377			392
Bread Wheat Deficit			-253			-185			-116			+2			+45			+45
Durum Wheat																		
North	540	.43	230	472	.6	283	416	.8	333	305	1.0	305	305	1.05	320	310	1.1	341
Other ^{3/}			165			90			60			49			49			49
Total Prod.			395			373			393			354			369			390
Total Prod. Net ^{2/}			336			307			335			301			314			331
Total Cons.			450			468			485			500			515			530
Durum Wheat Deficit			-114			-161			-150			-199			-201			-199

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Table 3 (Contd)

	1968/1969			1969/1970			1970/1971			1971/1972			1972/1973			1973/1974		
	Ha.	Y	MT															
<u>All Wheat</u>																		
Total Hectarage ^{1/}	662			665			670			680			680			680		
Total Prod.		485			555			670			783			854			903	
Total Prod. Net ^{2/}		413			462			570			666			726			768	
Total Cons.		780			808			836			863			892			922	
Total Prod./Cons. Deficit		-367			-346			-266			-197			-166			-154	
<u>Barley</u>																		
North	193	.41	80	180	.41	74	120	.65	78	73.5	.92	68	73.5	.99	73	73.5	1.07	79
Other ^{4/}		113			113			113			113			113			113	
Total Prod.		193			187			191			181			186			192	
Total Prod. Net ^{2/}		164			159			162			154			158			163	
Total Cons.		314			330			345			361			376			392	
Barley Deficit		-150			-171			-183			-207			-218			-229	
<u>All Cereals</u>																		
Total Ha. ^{1/}	855			845			790			754			754			754		
Total Prod.		678			742			861			964			1,040			1,095	
Total Prod. Net ^{2/}		576			621			732			820			884			931	
Total Cons.		1,094			1,138			1,181			1,224			1,268			1,314	
Cereals Gap		-518			-517			-449			-404			-384			-383	

1/Hectarages given are for reported production only.
 2/Net Production (Gross production less 15% for seed and losses)
 3/Upward adjustment in production resulting from recent indications that durum wheat production has been higher than previously estimated by the Office of Cereals.
 4/Upward adjustment in production resulting from recent indications that barley production has been higher than previously estimated by the Office of Cereals.

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5. Course of Action

The course of action for the cereals sub-activity has been divided into (a) Production; (b) Technicians; (c) Participant Training; (d) Development of Cereals Research and Extension Facilities. These four subheadings are discussed below.

a. Production

Table VIII presents production targets for bread and durum wheat and barley during the life of project. These estimates assume average Tunisian climatic conditions, continued improvement in the farm production management situation, and the timely provision of related production inputs by responsible GOT agencies, e.g., credit, seed, fertilizer, equipment, etc.

During the period FY 1970-1971, primary emphasis will be given to the production program for the Mexican bread wheat varieties and to experimentation and research for durum wheat varieties. Concurrently, the ACPF will place secondary emphasis on barley research, demonstrations and production monitoring. Yet despite this temporary lower priority ranking and the phased reduction of the total area sown to barley from the 1969 level of approximately 450,000 hectares to 300,000 hectares by 1972, total production will remain constant. The elimination of marginal barley land (land to be used for other agricultural purposes) will permit more intensive production management and ACPF supervision for the better yielding areas, thereby ensuring substantially improved production inputs and practices resulting in increased yields per hectare.

Subsequent to the successful isolation and multiplication of one or more superior durum wheat varieties, a larger share of the technical assistance effort will be devoted to maximizing yields from durum wheat. While the initial ACPF concentration is on Mexican bread wheats, improved technical practices applied by participating farms to growing these varieties can be expected to carryover to their growing of durum and local bread wheats. In addition, the anticipated improvement in the provision of related inputs by responsible GOT agencies can be expected to extend not only to ACPF cooperating farms but also to the traditional producers of durum wheats. Therefore, the combination of these technical and logistical spread effects and of the controlled allocation of wheat hectareage to the better land and to the relatively better managed farms, indicates that durum and local bread wheat yields will begin to steadily increase over average traditional yields as early as the 1969/1970 season.

Since the isolation of one or more superior durums and their multiplication in sufficient quantity for release to producers for production purposes can be expected to take a minimum of three years, the yield expectations projected for durum wheat do not take into account the production of a superior durum wheat until the 1972/1973 season and then only to a negligible extent. However, after the two-year period of greatly expanded Mexican wheat production and the simultaneous perfecting of the specific package of agronomic practices for the Mexican varieties, ACPF technicians will be able to devote more time to durum wheat activities. (Continued production of the Mexican varieties in subsequent seasons should follow the path already created by the preceding technical assistance input.) Therefore, unprecedented average durum yield should be obtainable from 1971 on.

While the main thrust of the ACPD activities will be directed toward bread and durum wheat and barley improvement, in view of the rapidly increasing feed needs of the livestock sector, the ACPD will continue research, demonstration and evaluation activities in corn, sorghum, sunflowers, and certain leguminous crops (e.g. broadbeans). INRAT technicians, in cooperation with the experimental research stations at Beja and Manouba, will focus on varietal and fertilization trials. A COT-contracted foreign national technician, in the capacity of an Extension Specialist, will continue to assist ACPD and extension service ingenieurs and adjoints techniques with field demonstrations and the educating of farmers in cultural practices for these crops. While the areas available for corn, sorghum and sunflower plantings will remain restricted by farmer acceptance and current market demand, in order to meet the projected demand for supplemental feedgrains, these ACPD activities will provide the basis for subsequent successful production.

Cereals Projections

Additional assumptions and considerations underlying the projected production for cereals (shown in Table VII) center on the Mission's interpretation of cereals projections for 1972 found in the Four-Year Plan and on Mission expectations for the pace of development of farm management capabilities. The Plan calls for production levels of 556,000 MT of bread wheat and only 225,000 MT of durum wheat by 1972. The Plan's assumption of high substitutability of bread wheat for durum wheat relies on either an unrealistically rapid shift in consumer preferences or an unacceptable substitutability of bread wheat in products traditionally made from durum wheat. Therefore, since a maximum of only 25% of durum wheat requirements for semolina and pasta products can be met through bread wheat substitution, and since there is no evidence on which to forecast the rapid change in consumer preferences assumed in the Plan, Mission projections aim at a higher level of durum wheat production while maintaining slightly greater than self-sufficiency in bread wheat. As bread wheat stocks accumulate, they will be used as durum substitutes. The overall effect of this allocation will be to reduce the level of durum wheat imports which the Plan's allocation would necessitate. Consequently, since the Plan envisages a slightly different production mix, one of the important tasks facing the Mission and its cereals advisors will be to demonstrate the feasibility and the consequences of these two approaches to land allocation, i.e., the desirability of greater durum wheat production, yielding an overall increase in total cereals production, in order to reduce hard currency losses.

While expanded hectares in durum wheat and barley could accelerate the arrival of cereals self-sufficiency, current marginal lands are better suited to rangeland and forage purposes as opposed to continued cultivation for cereals. The returns to the livestock sector will be greater if a balanced program is implemented, a program which utilizes currently marginal cereal lands for grazing and forage production combined with concentrated production of barley and other feedgrains on appropriate lands. In addition, through the substitution of forage production and pasturage for marginal cereals production, resources currently applied to less than optimum cereals production can be diverted to more profitable activities. Thus, the proposed program, in lieu of a program aimed exclusively at cereals increases, will maximize current and future returns to the agricultural sector.

b. Technicians^{1/}

The present complement of experienced cereal research and production technicians provided directly or indirectly to the ACPF component divisions consists of the following: three USAID direct-hire and PASA technicians, four CIMMYT-hire technicians (one financed under an AID/W regional grant contract with CIMMYT and three financed by the Ford Foundation), five foreign national technicians contracted by the GOT for INRAT and the Extension Service, and GOT technicians (six Ingenieurs and twenty-four adjoints techniques). Six Tunisian ingenieurs (educated to the B.S. degree level in agronomy) are assigned directly to the ACPF. In addition, the ACPF staff has excellent working relations with the UN Specialized Agency and other donor technicians who periodically provide support to the cereal activities. One UN technician is assigned full-time to PAV and conducts cereal fertilizer demonstrations.

Since the arrival of CIMMYT-hire personnel and the assignment of GOT technicians to the program during the early part of FY 1969, all technicians have been working at or reporting back to one central headquarters building located next to INRAT and its experimental station in Tunis. (Construction of a cereals production center with supporting laboratories and offices to accommodate all future ACPF and extension service personnel commenced in July, 1969, and is expected to be completed within one year.)

Despite an initial language problem for the CIMMYT/GOT two-man teams for plant breeding, fertilization and experimental demonstrations, work relationships among the various technicians generally have been characterized by joint decisions, give and take of technical expertise, and coordinated action. Continued excellent relations between the USAID project chief and both the GOT cereals directorate coordinator and the GOT director of the ACPF have enabled planning and implementation to proceed smoothly. Due to an enlarged Mission and regional agricultural program, the USAID cereals project chief has become the Agricultural Division Chief. While the Agricultural Division Chief still will maintain active liaison with GOT counterparts, when the proposed direct-hire agricultural research advisor arrives, the latter will become USAID cereals project chief and ACPF co-director. A direct-hire agronomy advisor, recently assigned to Tunisia, has responsibility for production management in the western half of the wheat areas of north and central Tunisia and a PASA agronomist with over five years experience in North Africa, including 1-1/2 years with the cereals project, will continue to head the production management team in the eastern division. Their teams are composed of adjoints techniques stationed at key areas throughout all of the wheat-growing areas. Frequent contact for on-the-job follow-up instruction has led to a rapid increase in the ability of the adjoints techniques to fulfill their functions as educational and production management extension agents for the ACPF. More GOT adjoints techniques will join this extension system in line with the annual increases in ACPF-supervised hectares. By the end of the 1971/1972 crop year, a sufficient number of extension agents should be adequately trained and experienced so that the assignment of only one USAID agronomist will be required. His services will be gradually phased out of the cereals program as returned participants and Tunisian-educated ingenieurs fill required agronomist positions in the Extension Service. This development of a self-sufficient extension cadre should be achieved during FY 1974 at which time the services of the USAID production agronomist can be terminated.

^{1/}See Table IX on page 25 for descriptive list of technicians.

Table. 9

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		<u>ACPP PERSONNEL</u>		
<u>Position</u>	<u>Sponsor</u>	<u>Function</u>	<u>Assignment Started</u>	<u>Period (FY). Finish</u>
1. Coordinator	Ministry of Agriculture	Adm. and actively coordinate interministerial activities and cereal directorate	1st 1/2 69	ongoing
2. Food & Agriculture Officer	USAID	Provide overall guidance to USAID technicians and liaison with ACPP Coordinator	2nd 1/2 69	2nd 1/2 74
3. Project Co-director	GOT	Direct ACPP activities with USAID counterpart; assume full responsibility before completion USAID input.	1st 1/2 69	ongoing
4. Project Co-director	USAID	Direct ACPP activities with GOT counterpart; USAID project chief	1st 1/2 69	2nd 1/2 74
5. Production Agronomist	USAID	Production Management and extension team co-supervisor (Eastern and Western Regions)	1st 1/2 73	2nd 1/2 74
6. Production Agronomist	GOT	Ditte	1st 1/2 73	ongoing
7. Extension Production Management Agronomist contract financed	CIMMYT/AID	Supervisor development of regional extension production management program in Extension Service (Tunis)	1st 1/2 70	2nd 1/2 71
8. Extension Production Agronomist	GOT/Extension Service ACPP	Ingenieur counterpart of CIMMYT Ext. Agronomist	1st 1/2 70	ongoing
9. Production Agronomist	USAID	Production Management and extension team supervisor (Western Region). Assumes position No. 5	1st 1/2 69	2nd 1/2 72
10. Production Agronomist	GOT	Ingenieur counterpart of Western Région supervisor	2nd 1/2 70	2nd 1/2 73

Table. 9 (Cont'd)

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ACPP PERSONNEL

	<u>Position</u>	<u>Sponsor</u>	<u>Function</u>	<u>Assignment Period (FY)</u>	
				<u>State</u>	<u>Finish</u>
26	11. Farm Irrigation Advisor	USAID	Advisor to extension service for cereal crop irrigation techniques.	1st 1/2 70	2nd 1/2 73
	12. Production Agronomist	USAID/PASA-SCS	Production management and extension team supervisor (Eastern Region)	1st 1/2 69	2nd 1/2 72
	13. Production Agronomist	GOT	<u>Ingenieur</u> counterpart of Eastern Region supervisor	70	2nd 1/2 72
UNCLASSIFIED	14. Production Management Agronomist	CINRYT	Supervise production research and production demonstrations	1st 1/2 69	73
	15. Production Management Agronomist	GOT/INRAT-ACPP	<u>Ingenieur</u> counterpart of CINRYT Production Management Agronomist	1st 1/2 69	ongoing
	16. Fertilizer Use Specialist	CINRYT	Supervise fertilizer research and production demonstrations	1st 1/2 69	73
	17. Soil Fertility & Fertilizer Section Chief	GOT/INRAT-ACPP	With CINRYT fertilizer counterpart supervises fertilizer demonstrations and strengthens INRAT soil fertility research.	1st 1/2 69	ongoing
585	18. Cereal Breeder	CINRYT	Supervise cereal improvement research	1st 1/2 69	1st 1/2 74
TOAID A-	19. Cereals Improvement Section Chief	GOT/INRAT-ACPP	With CINRYT breeder counterpart direct cereal improvement research	1st 1/2 69	ongoing
	20. Assistant Cereal Breeder	GOT/INRAT-ACPP	Assists cereal improvement research technicians	1st 1/2 71	ongoing

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Table. 9 (Cont'd)

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27	<u>Position</u>	<u>Sponsor</u>	<u>ACPP PERSONNEL</u>		<u>Assignment Period (FY)</u>	
			<u>Function</u>	<u>State</u>	<u>Finish</u>	
	21. Irrigation Management Section Chief	GOT/Extension Service ACPP	Development Irrigation program for wheat and related crops in rotation. Assisted by USAID farm irrigation advisor.	2nd 1/2 70	ongoing	
	22. <u>Adjoint Technique</u>	GOT/INRAT-ACPP	Assist CIHMYT Production Agronomist with emphasis on weed control program	2nd 1/2 69	71	
UNCLASSIFIED	23. <u>Adjoints Techniques</u>	GOT/ACPP	Production management extension team:	2nd 1/2 69	ongoing	
			9 adjoints - Beja Region 7 " - Jendouba-Le Kef 7 " - Tunis-Mateur Others to be assigned as needed			
	24. Secretaries, Mechanics Drivers, Day Laborers	GOT/Ford Foundation	(Financed under GOT ACPP budget, Ford Foundation grant, and USAID PL 480 104 (f) grant	Duration of project as needed		

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The USAID Project Chief/ACPP Co-director will continue full-time services in the cereals program until all other USAID technical assistance inputs are completed satisfactorily; this point in time should be reached during FY 1974.

It is expected that full CIMMYT participation will continue until a sufficient complement of Tunisian technicians completes academic training and is thoroughly integrated into the ACP system, i.e., until 1972-1973.

c. Participants and Training

The goal of developing a cadre of Tunisian technicians and administrative personnel capable of carrying on cereals research and extension education under the ACP system will be accomplished through:

- (1) USAID-financed U.S. academic training for technicians in all cereals-related disciplines, who on return to Tunisia will assume positions in the ACP system and its supporting agencies (see Table X).
- (2) Intensive 6-month training in cereals production management for 14 persons at CIMMYT in Mexico, financed under an AID/W regional grant contract with CIMMYT (see Table X).
- (3) Several one-to-two week observation/study tours each year to see the USAID/CIMMYT wheat program in other cooperating country programs such as Turkey for 15-20 middle and upper level Tunisian cereal technicians and administrators from ACP system-supporting GGT agencies. Financing is provided under the P.L. 480 104(f) grant to the USAID/Tunisia Cereals project.
- (4) Several one-to-two week research/study tours biannually to the cereals Dryland Research Laboratory in Lebanon or Turkey for senior ACP system technicians and ACP system administrators. Financing is provided under the PL 480 104(f) grant to the USAID/Tunisia cereals project.
- (5) On-the-job training for ingenieurs and adjoints techniques and periodic one-three day demonstration seminars for adjoints techniques in production management practices and specific seasonal production management problems. OJT is supervised by senior Tunisian, USAID, and CIMMYT technicians. Seminars will be led by appropriate senior technicians according to seminar topics.

While current projections for the timing and the number of participants for U.S. and Mexico training programs are based on project needs, unforeseen situations, such as changes in Tunisian personnel, slower academic progress of participants, and provision of fewer candidates for OJT and US/MEXICO training programs etc., would retard the timeliness of all project objectives. During FY 1969,

Table 10

Participant Training for ACPF Personnel

<u>Specialization USAID-financed</u> ^{1/}	<u>C.F. Date</u>	<u>Antic. Comp. Date</u>	<u>Former Position</u>	<u>Future Assignment</u>
1. Micro-testing of bread wheats (non degree North Dakota State Univ.)	1/69	5/69	- Superintendent of Technology Laboratory at IIRAT	Cereal Breeder IIRAT
2. Plant Breeding (MS degree)	8/69	6/72	IIRAT Plant Breeder	Bioclimatologist IIRAT
3. Agroclimatology (MS degree)	8/69	6/72	IIRAT Climatology <u>Ing.</u>	Chief of Communications Media Sec. Ext. Service
4. Agricultural Extension Education/ Communications Media (MS degree)	8/69	6/72	Extension Service Communications Media	Phytopathologist, IIRAT
5. Plant Pathology (MS degree)	6/70	6/73	ACPF <u>Ingenieur</u>	Cereal Technologist "
6. Seed & Cereal Technology (MS degree)	6/70	6/73	<u>Ingenieur</u>	Chief of Soil Fertility Section IIRAT
7. Soil Fertility (MS degree)	6/70	6/73	IIRAT <u>Ingenieur</u>	Agronomist, Extension Service
8. Production Agronomy (MS degree)	8/70	6/73	Extension Service <u>Ing.</u>	Rural Engineering Economist Extension Service
9. Rural Engineering Economist (MS degree) (Farm mechanization)	8/70	6/73		Extension Irrigationist
10. Farm Irrigation (MS degree)	8/70	6/73		Extension Service
11. Weed Control (MS degree)	6/70	6/73		Direction of Production
12. Agricultural Economics (Cooperatives) (MS degree)	8/70	6/73		
13. Agricultural Administration - Cooperatives (MS degree)	8/70	6/72	ACPF co-director	Direction of Production
14. Entomology (MS degree)	8/71	6/74	IIRAT technician	Cereal Entomologist
15. Production Agronomy (MS degree)	8/71	6/71	ACPF <u>Ingenieur</u>	IIRAT Agronomist IIRAT

^{1/} During FY 1970, new financing of \$6,000 is being provided for the continuation of MS degree training in Plant Breeding for a participant who will return in 1971 to a professorship in genetics at the Tunisian National Agricultural College.

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Table 10 (Contd)

Participant Training for ACPD Personnel

	<u>C.F.</u>	<u>Antic.</u>		
	<u>Date</u>	<u>Date</u>	<u>Former Position</u>	<u>Future Assignment</u>
<u>CIMMYT (AID/W Regional Grant-financed)</u>				
16. Epiphytotics (non-degree) (U.S. & Mexico)	12/69	6/69	- INRAT Plant Protection Specialist -	
17. Extension Agronomy (non-degree) (CIMMYT, Mexico)	2/69	8/69	4 ACPD Adjoints Techniques to return to ACPD Regional Extension Teams	
18. " " " "	9/69	2/70	4 Ditto	
19. " " " "	2/70	8/70	6 Ditto	
			<u>14</u>	

Additional training at CIMMYT to be determined later.

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because of GOT agricultural technician manpower shortages, several ACPF technicians and adjoints techniques could not be released from the project for planned training programs in the U.S. and Mexico. The shortage of trained manpower in the agricultural sector will continue for a number of years and a special effort will have to be made by the Mission to ensure that potential trainees and new Tunisian ACPF personnel are made available on schedule.

d. Development of Cereals Research and Extension Facilities

(1) Planning

The ACPF will continue to initiate implementation work plans covering all phases of research, extension, demonstration, production, seed multiplication and other activities directly and indirectly related to the successful achievement of all cereals project goals. As stated earlier in this PROP, one of the criteria used for assessing the progress toward the development of competent Tunisian staff and line personnel for cereals research and production will be the speed and thoroughness with which these implementation work plans can be devised and adopted by the Tunisian counterpart organization. This planning performance factor also will provide one measure of the effectiveness of the USAID's technicians' transferral of technical and managerial skills to their counterparts. In concert with the other project objectives, the success of the planning and implementation activities will provide the basis for continuing assessment of the appropriate and required USAID technical assistance input.

(2) Research

INRAT cereals research capability will be refined and expanded through the continuation of a research program in comparative varietal evaluation of newly-introduced and developed varieties, including bread and durum wheats, barley, and to a lesser extent corn and sorghum. This program will ensure the continuous supply of superior varieties adapted to changing environmental and disease conditions. Similarly, fertilization and production agronomy research will be continued each season at INRAT Stations and at approximately 25 farm locations located throughout the cereals growing regions of Tunisia. A greenhouse for controlled conditions simulating the broad range of climatic variations found in the different cereal areas will be constructed at INRAT as soon as phytopathology support on the part of the GOT can be assured. These facilities will provide the research basis both for controlling the various cereal diseases encountered in the North African environment and for updated information, such as proper fertilization, irrigation, and weed and pest control, in order to allow the constant revision and refinement of the package of technical recommendations to be disseminated to producers through the extension teams.

(3) Extension

The demonstration trials also will provide on-farm examples of optimum production management and will serve as focal points for field days designed to acquaint non-participating farmers in an area with the potentials of cereals grown with proper applications of improved practices from the production management package.

(4) Cereals Multiplication Program

All cereals pure-seed multiplication is carried out by the Cooperative Centrale des Semences et Plants Selectionnees (a GOF agency). Continued coordination between the ACPF plant breeding and evaluation staff and the CCSPS will provide sufficient quantities of pure bread and durum wheat and barley seed to meet projected hectareage plantings. In addition, the ACPF, in cooperation with the FAO and the OMVVM (Office pour la Mise en Valeur de la Vallee de la Medjerda), continues experimental plantings of corn and sorghum which are expected to be multiplied by the CCSPS following increasing consumer demand.

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Department of State

Proj. No 6640205
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TELEGRAM

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ORIGIN AID-40

INFO OCT-01 AF-07 E-04 IGA-02 /054 R

66640
DRAFTED BY: AFR/ID/AG:LS PEEK
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AFR/DP:WBOLLINGER (PHONE)
AFR/NA:G VARRATI (PHONE)
DISTRIBUTION: 3D
ACTION: AFR
INFO: AAPC, SRD, TAB, PRR, 40P

R 192332Z NOV 69
FM SECSTATE WASHDC
TO AMEMBASSY TUNIS

035069

UNCLAS STATE 194907

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SUBJECT: NON-CAPITAL PROJECT PAPER (PROP) - AGRICULTURAL
PRODUCTION AND RESEARCH

REFERENCE: TOAID A-585

ALTHOUGH AGENCY APPRECIATES OVERALL EXCELLENCE REF. PROP,
PARTICULARLY CEREALS IMPROVEMENT SUB-ACTIVITY, BELIEVE DESIRABLE
USAID DEVELOP SEPARATE PROP SUB-ACTIVITY A. (GENERAL
AGRICULTURAL PRODUCTION ---) PROVIDING MORE DETAIL UNDER FORMAT
SIMILAR THAT USED CEREALS SUB-ACTIVITY (205.1). SUGGEST SUBMIT
WITH SEPARATE POULTRY SUB-ACTIVITY PROP NOW PENDING.
ROGERS

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