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NONCAPITAL PROJECT PAPER (PROP) REVISED

MEDITERRANEAN FRUIT FLY CONTROL IN NORTH AFRICA

13p

Country: Regional (Tunisia and Morocco)

Project No. 698-51-190-171

Submission Date:

Original: 19 August 1968

Revised: October 14, 1970

Project Title: Mediterranean Fruit Fly Control in North Africa

U.S. Obligation Span: FY 1969 through FY 1973

U.S. Implementation Span: FY 1970 through 1974

Gross life-of-project financial requirements:

U. S. Dollars	$331,100
U. S. owned Local Currency	
AID controlled L/C (Trust Fund)	50,200
Cooperating Country Budget Contributions	357,600
Total all sources	$738,900

A. SUMMARY DESCRIPTION

The Mediterranean Fruit Fly (*Ceratitis capitata*) is a major economic pest in North Africa. It is estimated that in Tunisia alone it causes $3 to $5 million worth of damage to citrus, apricots, and other export fruit crops. It is cited as the most damaging pest affecting fruit production in Morocco. In both countries it causes substantial losses of foreign currency earnings. Chemical methods alone do not give permanent control of fly populations, and in fact tend to destroy beneficial insects while increasing production costs and poisonous residues on the fruit. The sterile fly method of control which was pioneered in the U.S. offers a means of suppressing fly populations in a relatively short period of time in limited areas and eradicating the insect throughout North Africa in the long run.

This project evolved from a bilateral one of the same title with Tunisia (664-11-110-235). It will provide U.S. technical assistance to Morocco and Tunisia in developing and implementing a program to control the Medfly. It is anticipated that, eventually, other North African countries will become involved, thus making possible the effective suppression and ultimately the eradication of the fly in the region.

The project will have three primary objectives:

1. Suppress the Medfly population in pilot test areas selected in each of the two countries. This will be accomplished by the combined techniques of sterile fly releases and cultural and chemical control methods.

2. Develop and demonstrate procedures for surveillance and detection of any resurgence of fly populations in the pilot test areas.

3. Train Moroccan and Tunisian entomologists and technicians in mass rearing and various suppression techniques to enable them to expand the control program throughout each country and, hopefully, to assist neighboring countries in similar programs in the future.

The project thus fits in with one of AID's principal goals for development in Morocco and Tunisia, namely: increased agricultural production. It will contribute significantly to AID's efforts to strengthen crop production research and ultimately will result in increased foreign exchange earnings by improving the quality of fruit produced and reducing the amount of fruit unfit for export.

The U.S. will provide two entomologists. One has already been assigned to the project as PASA Leader-Coordinator. He is stationed in Tunisia and is responsible for coordinating all aspects of the program. The other entomologist to be recruited will be assigned to Morocco. In addition short term consultant services will be required after the departure of the entomologist.

The U.S. will also provide a total of $91,400 worth of commodities, including a radiation unit for Morocco, traps, dyes, attractants, rearing materials, and other necessary commodities for both countries.

The Governments of Morocco and Tunisia will provide Laboratory facilities, personnel, transportation, and other support needed to fully implement the program.

The monetary inputs planned are presented on the next 2 pages.

Technical Services:
Tunisia, Morocco

MEDITERRANEAN FRUIT FLY OBLIGATIONS
(U.S. $000)

	FY 1969	FY 1970	FY 1971	FY 1972	FY 1973	TOTALS
Technician Cost	65,700	-0-	40,000	59,000	21,000	185,000
Commodities	20,400	-0-	46,000	15,000	10,000	91,400
Participants	-0-	-0-	25,000 1/	17,000	-0-	42,000
Other Costs	-0	-0-	4,000	4,000	4,000	12,000
TOTALS	86,100	-0-	115,000	95,000	35,000	331,100
Recapitulation by Country						
Tunisia	55,500	-0-	36,000	27,000	-0-	118,500
Morocco	30,600	-0-	79,000	68,000	35,000	212,600
TOTALS	86,100	-0-	115,000	95,000		331,100

1/ $11,000 will be used for the training of Moroccan and Tunisian participants at the International Atomic Energy Agency in Vienna.

ATTACHMENT II

MEDITERRANEAN FRUIT FLY HOST COUNTRY CONTRIBUTIONS

($000)

		CY 70	71	72	73	74	Total
I	Government of Tunisia						
	Trust Fund						
	Operational Travel	2.2	3.8	1.9	-	-	7.9
	Post Assignment and Home Leave	1.4	-	1.4	-	-	2.8
	Rent and Utilities	2.6	7.6	3.8	-	-	14.0
	Miscellaneous Contract Services	6.0	4.8	2.4	-	-	13.2
	Vehicles and Parts	5.0	2.9	1.5	-	-	9.4
	Local Transportation	-	1.9	1.0	-	-	2.9
	Sub-Total	17.2	21.0	12.0	-	-	50.2
	Loans						
	104 (f) Loan for Airplane Services	38.0					38.0
	Sub-Total	38.0					38.0
	GOT Budget-INRAT Sterile Fly Laboratory						
	Personnel	19.0	20.0	10.0	-	-	49.0
	Laboratory Utilities and Miscellaneous Expenses	5.8	5.8	3.0	-	-	14.6
	Sub-Total	24.8	25.8	13.0	-	-	63.6
	GRAND TOTAL	80.0	46.8	25.0	-	-	151.8
II	Government of Morocco						
	Airplane Services	-	-	20.0	35.0	35.0	90.0
	Laboratory Equip. and Expendable Supplies	-	18.0	10.0	10.0	10.0	48.0
	Laboratory Building	-	20.0	-	-	-	20.0
	Tech. and Secretarial Pers.	-	17.0	17.0	17.0	17.0	68.0
	Vehicles and Maintenance	-	9.0	3.0	3.0	3.0	18.0
	Other	-	3.0	3.0	3.0	3.0	12.0
	GRAND TOTAL	-	67.0	53.0	68.0	68.0	256.0
	Total Both Countries	80.0	113.8	78.0	68.0	68.0	407.8

B. SETTING

This project relates directly to AID's program of assistance to Tunisia and Morocco in their efforts to increase agricultural production. In both countries maximum fruit production and full development of fruit export potential can be achieved only if the Medfly populations are effectively suppressed. In both countries ecological conditions make feasible the application of the sterile fly control method. However, initial U.S. support, leadership, and coordination of efforts is required. In Tunisia basic studies on the ecology and occurrence of the Medfly have been conducted in recent years, a nucleus of personnel has been trained, and a laboratory for mass rearing and irradiation of the fly has been established partly with assistance from the U.S. In Morocco preliminary activities were started in the first quarter of FY 71.

The financial input for the facilities and personnel of this project will give a high return because they can be used not only to control the Medfly but also to suppress other insects of economic importance.

C. STRATEGY

The soundness of the sterile fly control method has been demonstrated by successful programs conducted by the USDA in the Mariana Islands against the Melon Fly and the Oriental Fruit Fly. The FAO International Atomic Energy Agency has also demonstrated its effectiveness against the Medfly in Spain and in Central America. The method will be applied fully in this project. It requires:

1. The selection of a test site which, from an ecological standpoint, is physically isolated.

2. An Ecological Survey of fly population fluctuations, movements, succession of hosts, and host geographics in order to determine the timing and the methods of treatment needed to achieve population suppression.

Studies to this effect have been conducted in Tunisia and they now serve as the basis for the Tunisian phase of the project. While the conventional approach to insect control is to apply chemical treatment when population is high so as to reduce damage, the sterile fly technique involves the combined use of biological (sterile fly release) cultural, and chemical control methods when insect populations are at their lowest levels due to environmental adversity. The total fly population suppression concept is unlike conventional chemical application control with less effect on the total environment.

Demonstration of the effectiveness of the sterile fly technique in a few key fruit growing areas should provide the stimulus for extending its application to all fruit growing areas of the two countries. In Tunisia, the pilot test study is being implemented in Metline, Ras El Djebel, and Raf-Raf, areas encompassing 150,000 ha. of which 55,000 are partially planted in citrus and other host crops. Later the program will be expanded to the Soukhra and Cap Bon areas. In Morocco, Beni Mellal, Marrakech, and Chichaoun are suitable pilot test areas. Final selection will be made later, pending completion of the ecological studies.

Effective control of the Medfly will not become a reality without an effective quarantine program. In each country, cooperation with the extension and plant protection services will be fostered in

order to generate public understanding of and participation in the program, particularly as the program moves out from the pilot areas.

A minimum of two entomologists, one from each country, will be selected for advanced degree training in ecology, mass rearing and extension at the University of Hawaii or another American university. A minimum of six participants will be selected for training in mass rearing at the laboratory of the International Atomic Energy Agency in Vienna, Austria. Other short term, intra-regional training will be provided as required.

Cooperation with the educational institutions in both countries will be developed to permit and encourage students to use the project facilities to supplement their training, especially in radiation biology. Thus, each country will develop a staff of scientific personnel for the program which may be utilized later to solve other insect control problems.

Because of its advanced readiness, Tunisia is being promoted as the training center in North Africa for use of the sterile fly technique of control. Other significant aspects of this regional project are: (1) the free interchange of information and experience derived from the separate country phases; (2) the utilization of laboratory and test sites in both countries for study and observation by personnel of both participating countries and possibly of other countries in the region; and (3) the holding of seminars and specialized conferences to intensify the free flow of technical and other information related to the control of the Medfly.

D. PLANNED TARGETS - RESULTS AND OUTPUTS

The overall objective of this project is to facilitate the development in Tunisia and Morocco of the capability to plan and execute insect control programs using the sterile fly technique without U.S. assistance. The preliminary phases of the project are now well underway in Tunisia and mass releases of sterile flies began in the third quarter of FY 70. The preliminary phase was started in Morocco during the first quarter of FY 71. It is anticipated that both countries will have the capability to operate the pilot program on their own by June 1974. Any further U.S. technical assistance in Med fruit fly eradication may be considered at that time.

Specific targets are:

1. Continue the ecological studies in both Morocco and Tunisia to determine whether the Medfly is found in the major citrus growing areas throughout the year or moves to the orchards only during the most favorable periods. Such information is essential in choosing the particular strategy that will maximize population suppression.

2. Continue the pilot test begun in Tunisia in January 1970, following reduction of the fly population by cultural and chemical control methods. Begin releases of sterile flies in Morocco as soon as the necessary information on fly population trends is available.

3. Achieve total population suppression in the pilot test area in Tunisia in early 1972.

4. Develop detailed plans to expand the pilot test program into nationwide programs as soon as the demonstration of the effective-

ness of the method has been made. A special program will have to be designed for each of the two countries.

5. Assist in developing a public information and a quarantine program in cooperation with the extension and plant protection services in each participating country.

6. Facilitate cooperation between countries and their institutions in implementing the project.

7. Train at least two Tunisian and Moroccan entomologists in the U.S. and at least six technicians in Vienna, Austria.

8. Sponsor at least one seminar each year, commencing in FY 71 with participants from Tunisia, Morocco and possibly other North African countries.

The success of the program will be determined by: (1) the extent to which suppression of the medfly has been achieved in the pilot test areas; (2) the provision of sufficient trained entomologists and technicians to permit the participating countries to extend the control program into areas other than the treated ones; (3) the extent to which fruit damage has been reduced and quality improved in the test areas.

E. COURSE OF ACTION

1. The U.S. will provide the services of two entomologists through PASA with the USDA. One has already been assigned to the project who will act as leader-coordinator of all phases of the project and will direct the activities in Tunisia. The entomologist has had extensive

experience in the control of the Medfly and similar species. He is working closely with the Institute National de la Recherche Agronomique de Tunisie (INRAT) and the Direction de la Recherche Agronomique (DRA) in Morocco. His major duties will include directing and coordinating the pilot tests in both countries, instructing host government technicians in the release and distribution methods, and advising on the technical aspects of mass rearing of the flies and the utilization and coordination of personnel.

The other U.S. entomologist to be recruited will be assigned to Morocco. Under the guidance of the leader-coordinator, he will conduct the ecological studies and carry out control activities.

2. A minimum of eight Tunisian and Moroccan technicians will receive training in the United States and Austria. Other short term intra-regional training will be provided as required. Participants will receive intensive laboratory and field training in rearing of flies, survey trapping, population sampling techniques, release methods, and the methodology of the sterile fly technique.

3. The U.S. will purchase a total of $91,400.00 worth of commodities, including a radiation unit for Morocco. Such a unit was purchased for Tunisia under the previous bilateral project (664-11-10-233) and is now in operation.

4. The Tunisian Government has shown its interest in the project by the construction of a modern plant to house the radiation unit which is designed to produce 20 million sterile flies per week.

It is also providing a nucleus of personnel who are actively engaged in carrying out the preliminary phases of the program. The Government of Morocco will provide adequate laboratory space to house the radiation unit, and personnel for the local phase of the project. Project local costs in Morocco will be met through local currency generation from the Agriculture Sector loan of the PL 480 Title I sales proceeds and the Trust Fund.

5. The organization, planning and execution of the project shall be carried out by the Institut National de la Recherche Agronomique de Tunisie (INRAT) and the Moroccan Direction de la Recherche Agronomique (DRA) in close coordination with USAID Tunis and Rabat.

AID 1020-24 (10-69)

26 JAN 1971

Proj. No. 6980171

AGENCY FOR INTERNATIONAL DEVELOPMENT (A.I.D.)

PROJECT AUTHORIZATION

1. PROJECT NUMBER 698-11-190-171	3. COUNTRY NORTH AFRICA REGIONAL	4. AL 0157
2. PROJECT TITLE MEDITERRANEAN FRUIT FLY CONTROL		5. AUTHORIZATION DATE January 21, 1971
		6. PROP DATED 15 July 1970

7. LIFE OF PROJECT

a. Number of Years of Funding: 05
Starting FY 1969; Terminal FY 1973

b. Estimated Duration of Physical Work After Last Year of Funding (in Months): None

8.

FUNDING BY FISCAL YEAR (in U.S. $ or $ equivalent)	DOLLARS		P.L. 480	LOCAL CURRENCY Exchange Rate: $1 = .525 TD			
				U.S. OWNED		HOST COUNTRY	
	GRANT	LOAN	CCC + FREIGHT	GRANT	LOAN	* JOINTLY PROGRAMMED	OTHER
Prior through Actual FY 1970	86,100						
Operational FY 1971	115,000			50,200		80	CY 1970
Budget FY 1972	95,000					113.8	CY 1971
B + 1 FY 1973	35,000					78	CY 1972
B + 2 FY						68	CY 1973
B + 3 FY						68	CY 1974
All Subsequent FY's							
TOTAL	331,100			50,200		407.8	

9. DESCRIBE SPECIAL FUNDING CONDITIONS OR RECOMMENDATIONS FOR IMPLEMENTATION, AND LIST KINDS AND QUANTITIES OF ANY P.L. 480 COMMODITIES

*Host countries (Tunisia and Morocco) contributions are allocated on a Calendar Year basis. Tunisia's contribution to the project is $80,000 in CY 1970. Morocco will not make a financial contribution in CY 1970. Funds programmed for CY 1973, CY 1974 will be Moroccan Funds; no funds planned from Tunisia in CY 1973 and CY 1974.

10. CONDITIONS OF APPROVAL OF PROJECT

The following cables are to be considered as amendments to the PROP:

1. TUNIS-5070 dated October 21, 1970,
2. RABAT-4875 dated November 9, 1970,
3. RABAT-5484 dated December 19, 1970.

(Use continuation sheet if necessary)

11. Approved in substance for the life of the project as described in the PROP, subject to the conditions cited in Block 10 above, and the availability of funds. Detailed planning with cooperating country and drafting of implementation documents is authorized.

This authorization is contingent upon timely completion of the self-help and other conditions listed in the PROP or attached thereto.

This authorization will be reviewed at such time as the objectives, scope and nature of the project and/or the magnitudes and scheduling of any inputs or outputs deviate so significantly from the project as originally authorized as to warrant submission of a new or revised PROP.

A.I.D. APPROVAL	CLEARANCES	DATE
Samuel C. Adams, Jr. (SIGNATURE)	AFR/NA, Elmer J. Moore	1-15-71
	AFR/DP, David Shear	1/19/71
AA/AFR (TITLE)	AA/AFR, Philip Birnbaum	1/21/71
1/21/71 (DATE)	A/CONT	

AFR/NA/TUN/CRSadler:12-17-70