No. 21410

# INTERNATIONAL ATOMIC ENERGY AGENCY
# and
# EGYPT

## Agreement concerning co-operation on the use of the sterile insect technique for eradication of the Mediterranean fruit fly (with annex and appendix). Signed at Vienna on 24 October 1982

*Authentic text: English.*

*Registered by the International Atomic Energy Agency on 29 November 1982.*

# AGENCE INTERNATIONALE DE L'ÉNERGIE ATOMIQUE
# et
# ÉGYPTE

## Accord relatif à la coopération dans le domaine de l'utilisation de la technique de l'insecte stérile pour l'éradication de la mouche méditerranéenne des fruits (avec annexe et appendice). Signé à Vienne le 24 octobre 1982

*Texte authentique : anglais.*

*Enregistré par l'Agence internationale de l'énergie atomique le 29 novembre 1982.*

# AGREEMENT[1] BETWEEN THE INTERNATIONAL ATOMIC ENERGY AGENCY AND THE GOVERNMENT OF EGYPT CONCERNING COOPERATION ON THE USE OF THE STERILE INSECT TECHNIQUE FOR ERADICATION OF THE MEDITERRANEAN FRUIT FLY

The International Atomic Energy Agency (hereinafter referred to as "the Agency") and the Government of Egypt (hereinafter referred to as "the Government");

Desirous of contributing to the efforts for eradicating the Mediterranean fruit fly which causes considerable damage to the economic development of some Member States, particularly in tropical and sub-tropical areas;

Desirous of utilizing the sterile insect technique for the eradication of the Mediterranean fruit fly in Egypt within an integrated pest management programme;

Desirous of facilitating the provision of contributions by other Member States of the Agency to the project hereinafter described and of ensuring the most effective deployment of such contributions; and

Mindful of the arrangements between the Directors General of the Food and Agriculture Organization of the United Nations (hereinafter referred to as "the FAO") and the Agency concerning the Joint FAO/IAEA Division of Atomic Energy in Food and Agriculture which was concluded on 8 November 1966;

Have agreed as follows:

## *Article 1.* PURPOSE OF THE PROJECT

To establish a Project within the Egyptian Ministry of Agriculture for the purpose of eradicating the Mediterranean fruit fly (*Ceratitis capitata* Wiedmann) from Egypt by use of the sterile insect technique within an integrated pest management programme (hereinafter referred to as "the Project"). The nature and scope of the Project are described in Annex I to this Agreement.

## *Article 2.* DURATION OF THE PROJECT

The project shall become operational when the parties to this Agreement determine that the contributions referred to in Articles 3, 4 and 5 are adequate for that purpose. The duration of the Project shall be four years from the date on which the Project becomes operational. The parties to this Agreement shall, not later than three years after entry into force of this Agreement, review the progress made in the Project and may thereafter, by mutual agreement, revise the duration of the Project.

## *Article 3.* CONTRIBUTIONS OF THE AGENCY

The Agency shall:

(*a*) Utilize its offices to seek pledges for a minimum of US$ 11,320,000;

(*b*) Make available to the Project appropriate advisory, technical and administrative services;

(*c*) Make available to the Project the research facilities and services of its Entomology Laboratory at Seibersdorf, Austria.

The Agency shall also disseminate all information obtained from the execution of the Project to Member States of the Agency and to Member States of the FAO.

[1] Came into force on 24 October 1982 by signature, in accordance with article 13.

*Article 4.* CONTRIBUTIONS OF THE GOVERNMENT

The Government shall:

(*a*) Pay annually to the Project US$ 615,000, or its equivalent in Egyptian pounds, at the UN rate of exchange applicable at the time of payment;

(*b*) Actively endeavour to provide through internal or external sources, a further US$ 5,540,000 or its equivalent in Egyptian pounds, over the duration of the Project, payable in portions as will be determined by the Project Committee;

(*c*) Provide Project staff in kind, as defined in Table 1 of Annex I, and

(*d*) Provide land in kind for facilities, as described in Section II.F of Annex I.

*Article 5.* OTHER OR ADDITIONAL CONTRIBUTIONS

The Project shall be empowered to receive contributions in cash or [in] kind.

Should experience indicate that more funds are required, the Parties of the Agreement shall consult each other with the view of revising the amount of the contributions mentioned in Articles 3 and 4.

*Article 6.* UTILIZATION OF CONTRIBUTIONS

The contributions mentioned in Articles 3, 4 and 5 shall be used to finance the following requirements as described in Tables 2 and 3 of Annex I:

(*a*) Facilities including adequate laboratories, medfly mass rearing complex, offices, and equipment, with all appropriate installations;

(*b*) The radiation (sterilization) source;

(*c*) The replacement of laboratory and field equipment and such additional equipment as may be recommended by the Project Committee;

(*d*) Vehicles;

(*e*) Office equipment;

(*f*) Utilities and services for the operation of said facilities and equipment;

(*g*) Appropriate maintenance, repair and insurance in respect of the vehicles and in respect of said facilities and equipment;

(*h*) The research work contracted in accordance with the Agency's procedures;

(*i*) The fellowships to be granted through the Agency to Project staff and to persons from Member States of the Agency or the FAO in accordance with Agency procedures;

(*j*) Expert services, and such other expert services as may be recommended by the Project Committee;

(*k*) The Agency Project Coordinator, the Project Co-Director, and two secretaries;

(*l*) The emoluments for and the necessary expenses of project staff; and

(*m*) Temporary local personnel.

*Article 7.* PROJECT COMMITTEE

(*a*) The Project Committee is responsible for establishing general policy, for approving the four-year work plan, the annual programme and budget and the overall implementation and direction of the Project. The Project Committee shall meet at least once a year.

(*b*) The Project Committee shall be composed of a Chairman appointed by the Minister of Agriculture of the Government and 3 representatives each from the Government

and the Agency. It shall meet as soon as practicable after the entry into force of this Agreement. The Government representatives also shall be appointed by the Minister of Agriculture.

(*c*) Decisions and recommendations of the Project Committee shall be made by an affirmative vote of at least five members including the concurring votes of two representatives of the Government and of two representatives of the Agency. A designated representative may appoint a named substitute with voting rights for the purpose of participating in a meeting of the committee.

(*d*) The Project Committee shall meet upon request of the Agency or the Government. Meetings of the Project Committee shall be open to observers designated by Member States of the Agency contributing to the Project, however, such observers shall have no vote on the decisions or recommendations of the Project Committee.

(*e*) Subject to the foregoing provisions, the Project Committee shall determine its own rules of procedure.

(*f*) The selection of the Project Director and Project Co-Director and the Project Co-ordinators referred to in Articles 8 and 9 hereof shall take into account the recommendations of the Project Committee.

*Article 8.* PROJECT DIRECTORATE

The Project Directorate shall consist of a Project Director assigned to the Project by the Ministry of Agriculture and a Project Co-Director assigned by the Agency. Both shall be subject to the provisions of sub-paragraph (*f*) of Article 7 of this Agreement. The Project Director and Co-Director shall be equally responsible to the Project Committee established in accordance with Article 7 of this Agreement, to the Minister of Agriculture, and to the Agency. They shall both be vested with executive authority for the technical direction of the Project. The Project Director and Co-Director shall be authorized to obligate IAEA and Egyptian funds within the limits established by the Project Committee and shall comply with the rules and regulations of the IAEA and the Government of Egypt respectively. The Project Director shall also ensure cooperation between local authorities and the Project. The local personnel referred to in sub-paragraph (*f*) of Article 6 of this Agreement shall be recruited by the Project Director in collaboration with the Project Co-Director. The Agency personnel referred to in sub-paragraph (*j*) of Article 6 of this Agreement shall be recruited by the Project Co-Director in collaboration with the Project Director. All personnel will act under the direction of both directors.

*Article 9.* PROJECT COORDINATORS

The Project Coordinator for Egypt shall be selected by the Ministry of Agriculture and shall act as liaison between the Project and the various ministries and national organizations involved in the Project. He will arrange for the purchase of all authorized equipment to be procured by Government funds.

The Project Coordinator for the Agency shall be selected by the Agency and shall act as liaison between the Agency and the Project for all Agency administrative and research matters. He will arrange for the purchase of all authorized equipment to be procured with Agency funds. He will serve as executive secretary to the Project Committee.

In their respective functions, the Project Coordinators shall report to the Project Committee and shall further advise the Project Director and Co-Director. Both coordinators will carry out their tasks in accordance with the rules of procedure established by the Project Committee.

*Article 10.* PRIVILEGES AND IMMUNITIES

The Government shall, in relation to the Project, accord to the Agency, its officials, property, funds and assets, the privileges and immunities set forth in the Agreement on the Privileges and Immunities of the IAEA,[1] which was accepted by the Government on 12 February 1963 (Agency document—INFCIRC/9/Rev. 2, 26 July 1967, and Agency document—INFCIRC/9/Rev. 2/Add. 4, October 1981).

*Article 11.* LIABILITIES

The Government shall assume liability for and shall hold the Agency harmless against all claims arising out of the execution of the Project.

*Article 12.* SETTLEMENT OF DISPUTES

Any dispute arising out of the interpretation or application of this Agreement that is not settled by negotiation or as may otherwise be agreed shall, on the request of either party, be submitted to arbitration. The Agency and the Government shall each designate one arbitrator, and the two arbitrators so designated shall elect a third, who shall be the Chairman. If within thirty days of the request for arbitration either Party has not designated an arbitrator, either Party may request the Secretary-General of the United Nations to appoint an arbitrator. The same procedure shall apply if within thirty days of the designation or appointment of the second arbitrator the third arbitrator has not been elected. A majority of the arbitrators shall constitute a quorum, and decisions shall be made by majority; other arbitral procedures shall be established by the arbitrators. Decisions of arbitrators, including all rulings concerning procedure and jurisdiction, shall be binding on both Parties. The expenses of arbitration shall be borne by the Parties as assessed by the arbitrators.

*Article 13.* ENTRY INTO FORCE

This Agreement shall enter into force upon signature and shall remain in force for the duration of the Project. The duration of the present Agreement may be extended on the recommendation of the Project Committee by an exchange of letters between the Parties hereto.

*Article 14.* AMENDMENTS

Upon the recommendation of the Project Committee, Annex I of this Agreement may be amended.

DONE in the English language in two originals on Sunday, 24th October one thousand nine hundred and eighty-two.

For the International Atomic Energy Agency:

(*Name and title*): Dr. HANS BLIX
Director General

For the Government of Egypt:

(*Name and title*): Dr. YOUSSEF AMIN WALLY
Minister of Agriculture and Food Security

[1] United Nations, *Treaty Series*, vol. 374, p. 147.

## ANNEX I

NATURE AND SCOPE OF THE PROJECT UNDERTAKEN BY THE AGENCY AND THE GOVERNMENT TO ERADICATE THE MEDITERRANEAN FRUIT FLY (*Ceratitis capitata*) FROM EGYPT BY THE USE OF THE STERILE INSECT TECHNIQUE

### I. *General*

The Mediterranean fruit fly (Medfly) infests citrus and stone fruit in all agricultural areas of Egypt and severely restricts the expansion of this portion of the agricultural sector. It not only reduces the quality of these commodities but also limits production of apricots, pears, peaches, mangoes and various varieties of citrus to levels insufficient to supply national needs.

The objective of this project is to assist the Government of Egypt to eradicate the Mediterranean fruit fly *Ceratitis capitata* Wiedemann from Egypt within a 4-year period utilizing an Integrated Pest Management (IPM) approach involving the release of sterile flies, the use of bait sprays and suitable quarantine procedures. Because of its economic feasibility, environmental acceptability and effectiveness for eradication, the Sterile Insect Technique (SIT) is an ideal system for the core of this IPM programme.

Within the first 18 months of the Project a facility capable of mass-rearing 1,000 million Medflies per week will be constructed, methods of sterilizing, packaging and release will be developed, a pre-eradication field ecology survey will be completed, and an appropriate infrastructure to carry out the eradication programme will be developed. A training programme will be initiated before the Project officially begins.

The estimated cash cost of the programme is US$ 19,320,000, of which the Agency is responsible for US$ 11,320,000 and the Egyptian Government is responsible for US$ 8,000,000 (see Tables 2, 3 and 4 for details). In addition, the Egyptian Government is responsible for employing local staff and for land on which to construct the mass rearing facility and other facilities as required.

### II. *The Project*

#### A. *Development Objective*

To increase quality and quantity of fruit and vegetable production in Egypt by eliminating the Medfly, a major deterrent; to develop the technical and administrative capability and the necessary infrastructure to eradicate the Medfly from Egypt and, if requested, to assist neighbouring countries in Medfly control/eradication programmes.

#### B. *Immediate Objective*

To assist the Government to eradicate the Medfly from Egypt utilizing an Integrated Pest Management (IPM) programme involving the release of sterile flies, the use of bait sprays and suitable quarantine procedures. The Project supports the high priority given by the Egyptian Ministry of Agriculture to the elimination of this pest.

#### C. *Special Considerations*

Sterile insect release projects against the Mediterranean fruit fly have eradicated the fly from the islands of Procida and Capri, controlled it over a large portion of Central America, and eliminated it from Mexico by means of a national pest management programme now in progress. The latter programme involves the mass rearing of 600 million flies/week with equipment and facilities largely designed by IAEA personnel. The SIT, because of its economic feasibility, environmental acceptability and effectiveness for eradication, is an ideal system for the core of this IPM programme. Egypt has a large nucleus of nationals with entomological expertise on which to base this Project.

#### D. *Background and Justification*

The Medfly infests citrus and stone fruit in all agricultural areas of Egypt and severely restricts the expansion of this portion of the agricultural sector. It not only reduces the quality of these commodities but also limits their production to levels insufficient to supply national needs. Egypt has more than 6.5 million acres of arable land, of which 1.25 million acres are used to produce crops

susceptible to Medfly attack. These crops, consisting of 27.5% citrus fruit, 4.5% stone fruit, and 68% vegetables and other fruit, amount to about 5.0 million tons annually, much of which must be sprayed periodically with pesticides to establish some degree of Medfly control. Costs per application range from US$ 40-60 per acre for imported pesticides alone. Pesticide residue problems for harvesters and consumers have also raised some concern as to the total dependence on this measure alone as a means of controlling this pest. Despite these pesticide treatments, a significant portion of the fruits on the market are found to be infested when harvested at maturity.

E. *Outputs and Activities*

1. *Management*

*a*. Outputs: To implement and manage the project to its satisfactory completion, to select optimal control measures alone or integrated for elimination of the Medfly in various ecosystems, to develop interdisciplinary cooperation and coordination of personnel within the Project and to develop follow-up monitoring and quarantine systems to prevent re-infestation of the areas from which the pest has been eliminated.

*b*. Activities: Project management is shown in Figure 1.

2. *Training of core staff*

*a*. Outputs: To strengthen project capability by providing training for supervisory personnel in the various phases of SIT procedures for Medfly eradication.

*b*. Activities: Provide *in situ* training by consultants; provide training at the Seibersdorf Medfly Laboratory, Mexican Medfly programme, and elsewhere. A second training programme will be conducted in Egypt to train laboratory and field technicians.

3. *Physical facility*

*a*. Outputs: Establishment of a fly-proof, physical facility with proper lighting, humidity and temperature controls, with the capacity of:

1. Mass rearing Medflies;
2. Packaging, marking and irradiating pupae;
3. Keeping a 3-months' inventory of diet constituents;
4. Conducting research and training;
5. Providing an area for administration of the Project.

*b*. Activities:

1. Installation and maintenance of equipment for Medfly egg production; aeration of eggs; preparation of larval and adult fly media; rearing and separation of larvae; maturation of pupae; boxing, marking and irradiation of pupae; and holding of adult flies for release.
2. Provision of expertise and space to conduct research and training and administer the Project.

4. *Mass rearing, irradiation and release*

*a*. Outputs: To develop, utilize and coordinate a trained staff capable of conducting all aspects of mass rearing, irradiation and release of sterile flies; assess effectiveness of releases; implement additional control measures where deemed necessary. This area is most critical, with the success of the project dependent upon its proper implementation.

1. To rear $1 \times 10^9$ Medflies per week;
2. Package, mark and irradiate $7.5 \times 10^8$ pupae/week or release;
3. Conduct a continuous training programme;
4. Conduct aerial releases;
5. Maintain quality control measures in all operational phases;
6. Release insects over prescribed areas;
7. Monitor effectiveness of release:
   *a*. Recommend increase or decrease of numbers of sterile flies for release to maintain favourable sterile and fertile ratios;

*b*. Recommend supplemental treatment (ground or aerial) to reduce adult Medfly populations.

*b*. Activities:

1. Train and supervise staff to:

*a*. Maintain adequate egg production;

*b*. Aerate eggs for proper maturation;

*c*. Mix medium and maintain production of healthy larvae;

*d*. Isolate larvae from medium and store for pupation;

*e*. Mark, package and hold pupae for maturation;

*f*. Irradiate pupae;

*g*. Maintain operational quality controls in all phases of production;

*h*. Plan and carry out sterile releases and supplemental strategy;

*i*. Conduct training courses and publish manuals on all aspects of SIT.

5. *Field facilities*

*a*. Outputs: To develop a network of technicians to locate and map all areas of potential Medfly breeding in Egypt, to evaluate sterile releases, to apply insecticides, and to sample Medfly densities.

*b*. Activities:

1. The organizational structure to evaluate field input will be based on the reports of data from representatives of grouped governorates. These groups will be represented by a field assistant;
2. To recruit and train 200 laborers to locate and map all potential Medfly breeding sites in Egypt;
3. To collect all flies captured in attractant traps to determine the ratio of released to wild males;
4. To sample fruit for infestation to determine the effectiveness of the sterile releases;
5. To apply insecticides baits when necessary to reduce high Medfly population densities;
6. To conduct quarantine procedures to prevent re-infestation.

6. *Public relations*

*a*. Outputs: To make farmers, agricultural organizations and the general public aware of the Project, its progress and objectives.

*b*. Activity: To recruit a public relations officer to define in detail, via the communications media available, the aim of the Project and publish periodic reports as to its progress towards achieving its goals.

F. *Inputs*

1. *Ministry of Agriculture*

*a*. The Ministry of Agriculture will appoint a Project Director who, in collaboration with the Project Co-Director, will be responsible for day-to-day operation of the Project, preparing annual programmes and budgets, recruitment of staff, training, etc. A Project Coordinator also will be appointed whose principal responsibility will be to coordinate project activities with the Egyptian authorities.

*b*. In addition, staff for administrative services, mass rearing, irradiation and release, and field services will be seconded or recruited by the Ministry. Table 1 lists the estimates of the national staff considered necessary for the project. Details of senior local staff are given in Appendix I and will be considered part of this document.

*c*. The Government will endeavour to contribute US$ 8,000,000 to provide for items as identified in Table 2. Additional contributions in kind, namely land and national personnel valued at US$ 5,000,000 and US$ 2,000,000, respectively, will be provided.

*d*. Exemptions from customs, levies and import duties shall be as follows:

Each Project expatriate employee will be permitted to import, exempt from customs duties: a reasonable amount of household goods, items, and personal effects, including one automobile and spare parts and accessories for same, provided that such properties are for the sole use of the employee

and his family. Each expatriate employee will also be permitted to buy a reasonable amount of food articles and household goods, free of duty, from the tax-free shop in Cairo.

2. *Agency Inputs*

*a.* The Agency shall appoint a Project Co-Director to be located in Egypt and a Coordinator to be located in Vienna.

*b.* International consultants. The Project will provide for 90 man-months of consultant services. This resource will be used to bring to the Project international specialists on the Sterile Insect Technique, insect ecology, facilities engineering, isotopes and radiation, etc.

*c.* National consultants. To take advantage of local scientific expertise, 15 man-months of national consultants are provided.

*d.* Training. Fellowships totalling 50 man-months will be provided in the scientific areas that the project emphasizes. The Agency's Seibersdorf Laboratory will be used whenever appropriate.

*e.* Study tours. 10 man-months of study tours are included in the project to enable key staff to visit institutions within and outside the region where SIT programmes against Medfly are now in progress.

*f.* The Agency's Entomology Laboratory is allocated US$ 100,000/year to provide back-up research, training and development in connection with the project.

*g.* Building and equipment. The major expenditure of US$ 10 million is for building and equipment.

*h.* Cost estimates. The cost figures for staff, expendables and equipment in Tables 2, 3 and 4 are absolute minimums. For normal operations, it is estimated that an addition of at least US$ 5 million will be necessary for the 4-year period. Donors will be approached to satisfy this requirement.

*i.* The Agency will convene technical committees, upon the advice of the Project Committee and Project Directorate, as may be needed.

G. *Preparation of Work Plan*

A detailed Work Plan for the Project will be prepared by the Director and Co-Director. This will be done at the start of the Project and revised annually, as required. A provisional Work Plan is attached to the Project document as Table 5.

H. *Project Committee*

The Project Committee will consider and approve, as appropriate, the Work Plan, annual programme and budget. Implementation of the Project Committee decisions will be the joint responsibility of the Project Director (Egypt) and Co-Director (Agency).

## III. *Schedule of Monitoring, Evaluation and Reports*

A. *Project Review and Evaluations*

The Project will be subject to periodic reviews and evaluation by outside experts, including a mid-project review in accordance with the policies and procedures established by the Project Committee.

B. *Progress and Final Reports*

Progress Reports of the Project will be prepared every six months by the Project Directorate. The Project Directorate also will prepare a draft Final Report four months before completion of the Project.

FIGURE 1. MANAGEMENT FLOW SHEET

*Figure 1*

MANAGEMENT FLOW SHEET

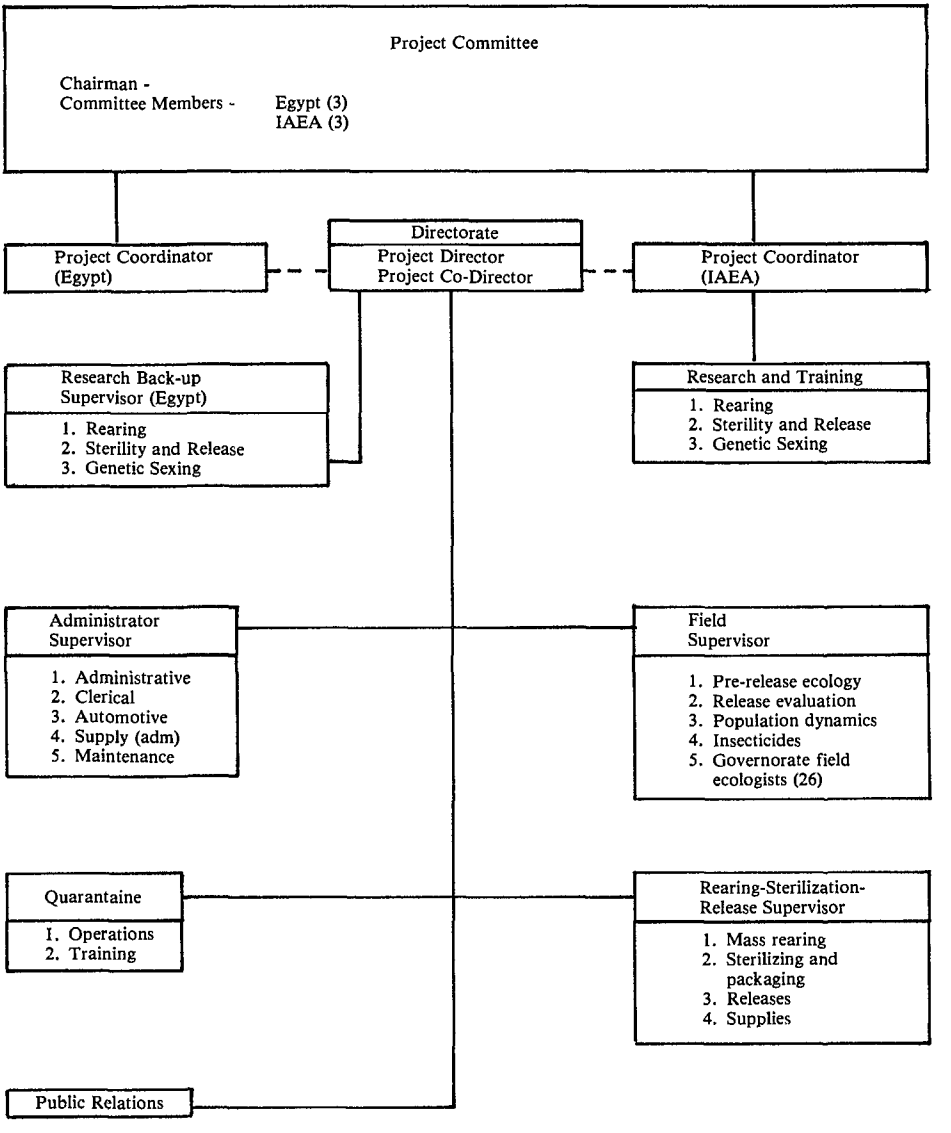

TABLE 1. ESTIMATED NUMBERS AND MAN-YEARS OF EGYPTIAN STAFF REQUIRED FOR THE PROJECT

| *Duties* | *Number* | *Man-years in Project year* | | | |
|---|---|---|---|---|---|
| | | *I* | *II* | *III* | *IV* |
| A. Mass rearing, irradiation and release activities | | | | | |
| Supervisor | 1 | 1 | 1 | 1 | 1 |
| Professionals | 23 | 10 | 20 | 23 | 23 |
| Technicians | 50 | 10 | 30 | 50 | 50 |
| Labourers | 200 | 10 | 100 | 200 | 200 |
| B. Field activities | | | | | |
| Supervisor | 1 | 1 | 1 | 1 | 1 |
| Professionals | 5 | 2 | 5 | 5 | 5 |
| Technicians | 15 | 13 | 15 | 15 | 15 |
| Labourers | 150 | 95 | 100 | 150 | 150 |
| C. Administrative support | | | | | |
| Supervisor | 1 | 1 | 1 | 1 | 1 |
| Clerical | 30 | 15 | 30 | 30 | 30 |
| Automotive | 50 | 30 | 50 | 50 | 50 |
| Supply | 20 | 10 | 20 | 20 | 20 |
| Public Relations | 10 | 3 | 10 | 10 | 10 |
| Maintenance | 40 | 20 | 40 | 40 | 40 |
| Labourers | 25 | 10 | 20 | 25 | 25 |
| D. Research and training | | | | | |
| Scientists | 4 | 4 | 4 | 4 | 4 |
| Technicians | 10 | 10 | 10 | 10 | 10 |
| Labourers | 15 | 15 | 15 | 15 | 15 |
| TOTAL | 650 | 260 | 472 | 650 | 650 |

TABLE 2. PROJECT BUDGET: EGYPTIAN CASH CONTRIBUTION
(*US$ × 1,000*)

| *Item* | *Year* | | | | *Total* |
|---|---|---|---|---|---|
| | *I* | *II* | *III* | *IV* | |
| A. Equipment | | | | | |
| Laboratory rearing | 25 | 175 | 50 | 50 | 300 |
| Field | 100 | 100 | 100 | 50 | 350 |
| Office | 25 | 50 | 25 | 0 | 100 |
| *Subtotal* | 150 | 325 | 175 | 100 | 750 |
| B. Supplies | | | | | |
| Rearing (diet) | 150 | 550 | 650 | 650 | 2,000 |
| Field | 150 | 150 | 150 | 150 | 600 |
| Release | 200 | 400 | 700 | 900 | 2,200 |
| Office | 75 | 75 | 75 | 75 | 300 |
| Utilities | 75 | 175 | 250 | 250 | 750 |
| Fuel | 75 | 75 | 100 | 100 | 350 |
| *Subtotal* | 725 | 1,425 | 1,925 | 2,125 | 6,200 |
| C. Maintenance | | | | | |
| Building/grounds | 25 | 75 | 100 | 100 | 300 |
| Vehicles | 50 | 50 | 50 | 100 | 250 |
| *Subtotal* | 75 | 125 | 150 | 200 | 550 |
| D. Travel, reports, etc. | 25 | 25 | 25 | 25 | 100 |
| E. Contingency | 100 | 100 | 100 | 100 | 400 |
| F. Personnel | | | *See II.F.1.* | | |
| TOTAL EGYPTIAN CONTRIBUTION | 1,075 | 2,000 | 2,375 | 2,550 | 8,000 |

TABLE 3. PROJECT BUDGET, AGENCY CONTRIBUTION
(*US$ × 1,000*)

| | Item | Year I | II | III | IV | Total |
|---|---|---|---|---|---|---|
| A. | Buildings and equipment | | | | | |
| | Building | 2,000 | 500 | 0 | 0 | 2,500 |
| | Rearing | 1,100 | 7 | 7 | 7 | 1,121 |
| | Sterilizing | 300 | 0 | 0 | 0 | 300 |
| | Release | 200 | 0 | 0 | 0 | 200 |
| | Office | 90 | 0 | 0 | 0 | 90 |
| | Buildings | 595 | 0 | 0 | 0 | 595 |
| | Vehicles | 550 | 0 | 0 | 0 | 550 |
| | Aircraft | 75 | 250 | 250 | 250 | 825 |
| | *Subtotal* | 4,910 | 757 | 257 | 257 | 6,181 |
| B. | Supplies | | | | | |
| | Rearing (diet) | 85 | 145 | 140 | 140 | 510 |
| | Field, insect attractants, etc. | 175 | 175 | 225 | 275 | 850 |
| | Office | 4 | 9 | 9 | 9 | 31 |
| | *Subtotal* | 264 | 329 | 374 | 424 | 1,391 |
| C. | Maintenance | | | | | |
| | Rearing | 18 | 100 | 100 | 100 | 318 |
| | Sterilizing | 20 | 40 | 40 | 40 | 140 |
| | Release | 15 | 20 | 25 | 25 | 85 |
| | Office | 3 | 4 | 4 | 4 | 15 |
| | Building | 30 | 40 | 40 | 40 | 150 |
| | Vehicles | 15 | 35 | 40 | 40 | 130 |
| | *Subtotal* | 101 | 239 | 249 | 249 | 838 |
| D. | Agency's Entomology laboratory | 100 | 100 | 100 | 100 | 400 |
| E. | Personnel | | | | | |
| | Personnel | 200 | 200 | 200 | 200 | 800 |
| | Consultants | 200 | 200 | 200 | 200 | 800 |
| | Fellowships, training | 50 | 20 | 20 | 20 | 110 |
| | *Subtotal* | 450 | 420 | 420 | 420 | 1,710 |
| F. | Contingency | 100 | 100 | 100 | 100 | 400 |
| G. | Miscellaneous | 100 | 100 | 100 | 100 | 400 |
| | TOTAL AGENCY CONTRIBUTION | 6,025 | 2,045 | 1,600 | 1,650 | 11,320 |

TABLE 4. SUMMARY OF PROJECT BUDGET
(*US$ × 1,000*)

| | Year I | II | III | IV | Total |
|---|---|---|---|---|---|
| Total Agency contribution | 6,025 | 2,045 | 1,600 | 1,650 | 11,320 |
| Total Egyptian cash contribution | 1,075 | 2,000 | 2,375 | 2,550 | 8,000 |
| GRAND TOTAL | 7,100 | 4,045 | 3,975 | 4,200 | 19,320 |

TABLE 5. PROVISIONAL SUMMARY PLAN OF IMPLEMENTATION

| Item | Month after Project initiated | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 4 | 6 | 9 | 12 | 18 | 20 |
| *Egypt* | | | | | | | |
| Nomination and selection of provisional project committee members | X | | | | | | |
| Recruitment of governorate field staff | X | X | | | | | |
| Nomination of Project Director | | X | | | | | |
| Workshop for training governorate and project staff ecologists | X | X | X | X | | | |
| Selection of mass rearing facility site | | X | X | | | | |
| Construction of mass rearing facility | | | X | X | X | X | |
| Mass rearing facility operational | | | | | | X | |
| Releases initiated | | | | | | | X |
| Ecological studies pre- and post-release (mapping, host plants, pest densities) | | X | X | X | X | X | X |
| Staffing and training | | X | X | X | X | X | X |
| *FAO/Agency* | | | | | | | |
| Training | X | X | X | X | X | X | |
| Development and evaluation of mass rearing equipment | X | X | X | X | X | | |
| Engineering report on proposed mass rearing facility sites | | X | | | | | |
| Consultancies to Egypt on back-up rearing facility and ecology | | X | X | X | X | X | X |
| Development of genetic sexing mechanism | X | X | X | X | X | | |
| Development of irradiator | | | X | | | | |
| Purchase and shipment of equipment and material to Egypt | | X | X | X | X | X | X |
| Development of quality control techniques—mass rearing, etc. | | | | X | | | |
| Evaluation of indigenous larval and adult diet | | X | X | | | | |
| Development of boxing, marking and aerial release techniques | | X | X | X | | | |
| Nomination of Project Co-Director | X | | | | | | |
| Nomination of Project Coordinator | X | | | | | | |

## APPENDIX I

### A. *Project Director and Project Co-Director*

The Project Director and Project Co-Director are responsible for the implementation and completion of the Project. They will manage the Project. If technical problems arise, the Directors will request advice from the Project Committee or from an *ad hoc* Technical Committee or consultants with expertise in the specific problem area. They also will be responsible for training. They will be assisted by supervisors of various project activities.

### B. *Supervisor of Mass Rearing, Irradiation and Release ("MRI&R Supervisor")*

He directs and supervises all facility operations through his assistants for mass rearing, sterilizing and packaging, sterile insect releases and supplies. Reports directly to the Project Directors and assists in the formulation of Project Policy.

1. *Assistant for Mass Rearing (1/Duty period)*

Directs and supervises mass rearing operations, egging, egg storage, procurement and seeding of larval medium and pupal isolation. Responsible for the production of scheduled quota of viable Medflies. He reports directly to the MRI&R Supervisor.

2. *Assistant for Sterilizing and Packaging (1/Duty period)*

Directs and supervises the packaging and marking of Medfly pupae in release containers and their irradiation. He reports directly to the MRI&R Supervisor.

3. *Assistant for Release (1)*

Directs and supervises the ageing of irradiated pupae and is responsible for their transport and loading in the aircraft and for the fly release crews and their operation. He reports directly to the MRI&R Supervisor.

4. *Assistant for Supplies (1)*

Directs and supervises the purchase of supplies. Maintains a 30-day inventory on all indigenous materials and a 90-day inventory of all imported products. He reports directly to the MRI&R Supervisor.

C. *Supervisor of Field Activities*

He is responsible for all field operations and, through his assistance for pre-release ecology, release evaluation, population dynamics, insecticide applications and his governorate representatives, he directs all field operations. He reports directly to the Project Directors and assists in the formulation of Project policy.

1. *Assistant for Pre-release Ecology*

Directs and supervises all field ecology, mapping host plant successions, pest densities and other studies necessary to determine the optimal integrated approach to be used in various areas. He reports directly to the Field Supervisor.

2. *Assistant for Release Evaluation*

Directs and supervises the evaluation of the sterile release and recommends increases or decreases in sterile-fertile Medfly ratios and requests supplemental control measures. He reports directly to the Field Supervisor.

3. *Assistant for Population Dynamics Determination*

Directs and supervises studies of insect populations, i.e., constant monitoring of the populations in order to formulate predictive models of pest population increases and/or decreases. He reports directly to the Field Supervisor.

4. *Assistant for Insecticide Applications*

Directs and supervises the formulation of pesticidal supplements to the release when considered necessary and evaluates their effectiveness. He reports directly to the Field Supervisor.

5. *Governate Representatives*

Each governate (26) will have a representative for the Project who will assist the Project ecologist in mapping, ecological studies, pre-release and post-release evaluations and other duties as assumed. They shall report directly to the Field Supervisor.

All positions described above are not isolated in their mission, assistants will operate singly or in groups as the demands of the field evaluations and problems mandate.

D. *Administrative Supervisor*

The Administrative Supervisor is responsible for the administrative, budgetary and clerical duties, purchasing, reporting, etc. Moreover, his responsibilities will extend to assignment of drivers and maintenance of vehicles, repairs and replacement. The facility maintenance crews will be under his supervision and the operation of the facilities will be his chief responsibility.

1. *Assistant for Administrative and Clerical Duties*

Directs and supervises administrative and clerical duties entailing recruitment, contracts, payroll, purchasing, reporting and related duties.

2. *Assistant for Maintenance*

Directs and supervises (*a*) the maintenance of the facility, to ensure continuous operation of the mass rearing, sterilizing, packaging and release equipment; and (*b*) repair and maintenance of vehicles, to assure their availability to the staff.

E. *Quarantine Officer*

The Quarantine Officer will interact with various national agencies regulating international and national movement of agricultural commodities to prevent the introduction of Medflies and their infested host material into areas where the pest has been eliminated. He will be directly responsible to the Directorate for performance of his duties.

F. *Public Relations Officer*

Responsible for keeping the media and interested organizations informed about the progress of the Project and assisting Project staff in preparing visual aids, talks, etc., for use in informing the general public.