

Emergency Prevention System (EMPRES) for
Transboundary Animal and Plant Pests and Diseases
(Desert Locust component - Central Region).

4th Meeting of EMPRES Liaison Officers

Asmara, Eritrea

November 26-28, 1996

The 4th meeting of EMPRES Liaison Officers was hosted by the government of Eritrea and was attended by the following participants:

EMPRES Liaison Officers:

Mr. A.A. Abdalla (Sudan)
Mr. Abdurahman Abdulahi (Ethiopia)
Mr. A.S.A. Al-Abry (Oman)
Mr. J.M. Al-Shehri (Saudi Arabia)
Mr. F.M. Bahakim (Yemen, unable to attend)
Mr. H. Elmi Amir (Djibouti)
Mr. A.H. Karrar (DLCO-EA)
Mr. Mehari Tesfayohannes (Eritrea)
Mr. M.S. Simary (Egypt)

Donor Representative:

Mr. S. Krall (Germany/Switzerland)

Invited:

Mr. A. Showler (USA)

FAO Staff:

Mr. C. Elliott (Chairman, Senior Officer, Migratory Pest Group, AGPP)
Mr. M. Taher (Secretary, Commission for Controlling the Desert Locust in the Central Region, RNE)
Mr. Munir Butrous (EMPRES, National Professional Officer)
Mr. B. Zelazny (EMPRES, Planning Officer, AGPP)
Mr. C. Mushi (UN Volunteer, FAO Somalia)

Resource Person:

Mr. C. Kooyman (LUBILOSA Project, Nairobi).

The meeting was opened by Mr. Tekleab Mesghena, Director of Agricultural Research and Extension Services of the Ministry of Agriculture, and by Mr. W.J. Phillips, FAO Representative to Eritrea. Mr. Tekleab welcomed the participants to Eritrea and emphasised the threat of the Desert Locust to the crop production of his country. When faced with Desert Locust infestations, Eritrea is making every effort to contain and if possible eradicate any outbreak, using the participation of rural people as its main strength. The role of EMPRES and the support of donors are important for strengthening such efforts.

Mr. Phillips said that the principal objectives of the meeting were to review past and plan future EMPRES activities. He noted that the coming year will see the start of an expanded EMPRES programme to which additional donors are contributing. In this connection, Mr. Phillips welcomed the donor representative present and expressed appreciation on behalf of FAO and affected countries for donor support to the EMPRES programme.

The adopted Agenda of the meeting is attached as Annex I. The discussions and conclusions of the meeting can be summarised as follows:

1. Early Warning

1.1 Survey Operations

Survey activities during 1996 in the respective countries were described by the participants and are summarized as Annex II.

1.2 E-mail network

The Liaison Officers and FAO staff will investigate how remaining problems with the e-mail network could be overcome, including:

- establishing e-mail in Yemen , Djibouti and Egypt;
- establishing a weekly routine for contacts among Liaison Officers and FAO;
- identifying problems with lost messages (Ethiopia);
- identifying and ordering more user-friendly software (Ethiopia, Eritrea, Oman);
- identifying and obtaining suitable software for decoding attachments;
- identifying costs involved in receiving large attachments (e.g. bulletins) and how they might be reduced.

It was requested that the Desert Locust bulletins should be sent through the e-mail in DOS text format to the Liaison Officers of Ethiopia and Oman until the current problems with decoding attachments have been solved.

1.3 Exchange of survey results

The meeting recommended:

- to make more use of e-mail for transmitting or exchanging survey results;
- that Liaison Officers copy all survey results to the Secretary of the Central Region Commission , or pass it through him (the Secretary will help remind EMPRES countries to report regularly);
- that the Secretary of the Commission includes Eritrea, Ethiopia, Djibouti, Somalia and DLCO in his distribution list for circulating important survey results which are of immediate interest to the surrounding countries;
- that Liaison Officers report regularly on the situation (e.g., weekly) even if no locusts have been found.

1.4 Information sources (scouts, nomads, met. departments, etc.) from outside the Plant Protection Services.

Reports still awaited from Yemen and Egypt are expected by the end of January 1997. Following their submission, one of the five authors will visit the other countries under a TCDC consultancy in order to collect more information, analyse the results and produce a combined report on the subject.

1.5 Improved availability of meteorological information.

A project proposal which had been prepared and endorsed by the Central Region Commission was discussed. The meeting noted that apart from the Commission countries, the proposal would be of interest to Ethiopia, Djibouti, and Somalia. Further, Eritrea is interested in regional coordination activities under such a project. It was recommended to hire a consultant for revising the project document in collaboration with FAO staff.

1.6 Vegetation maps based on remote sensing.

Progress in Eritrea in this field was reviewed which included demonstration of remote sensing work at the Eritrean Civil Aviation Authority (CAA). Ground-truthing of corrected vegetation maps will start in January 1997 in Eritrea and the maps will then be made available to survey teams on a trial basis. Starting early 1997 the Eritrean CAA will also make uncorrected vegetation maps of surrounding countries available. Liaison Officers from Ethiopia, Sudan, Saudi Arabia and Egypt expressed interest in receiving these uncorrected maps for investigating their possible use to guide survey teams.

The meeting noted that the above activities in Eritrea which are and have been supported by Belgium, the U.K. and the U.S.A. are expected to be successfully concluded in 1997. In the future there may be also possibilities of collecting data in the surrounding countries for correcting vegetation maps.

Oman expressed interest again in developing its own regional remote sensing centre and would be able to assign in early 1997 an expert for training in the procedures of processing remote sensing images.

The advantages of having, in addition to NOAA vegetation maps, high resolution locust biotope maps were discussed by the meeting. In the Central Region, only the Tokar Delta is so far covered by such a biotope map. The offer by GTZ to produce more of these biotope maps was very much welcomed by the meeting and the participants were encouraged to suggest particularly important breeding areas for mapping.

2. Early Reaction

2.1 Desert Locust Campaigns

Control operations were only carried out in Yemen. They are summarized in Annex III. It was recommended that Liaison Officers should send their country reports of Desert Locust activities in advance for the Liaison Officer meeting. Such reports should also include plans for survey and control operations in the coming seasons.

The need to estimate the total infested area in a country was emphasized by the meeting. This is already attempted in some countries (e.g. Sudan) but EMPRES should develop procedures for this in all countries.

2.2 Aerial Spraying Workshop

A successful workshop on aerial and ground spraying was held in Ethiopia from 4-9 November 1996. The meeting recommended that follow-up activities should include (1) national workshops initially in Saudi Arabia (October 1997 proposed), Sudan, Egypt, and Oman; (2) checking that participants are using the knowledge acquired; (3) the development of assessment protocols and monitoring equipment calibration and other parameters during aerial spraying operations, (4) purchase of basic field equipment and (5) testing the use of satellite navigation systems for spraying aircraft.

2.3 Campaign Evaluation and Economic Studies

The meeting noted that work on campaign evaluation started recently and will be an important EMPRES activity. The procedures and draft guidelines will be further developed as part of this activity. Mr. Munir Butrous was assigned the role of overall coordination for the work.

The economic studies have been linked to the campaign evaluation because they involve in many cases the same procedures of data collection and analysis. Further activities planned for 1997 in the region include the collection of data on crop losses (if necessary by special teams) and a regional workshop (tentatively scheduled for May 1997) which will review the current status and plan further EMPRES activities in this field. Egypt and Oman each offered to host this workshop.

2.4 Contingency Planning

Contingency plans were developed in Ethiopia. Ongoing and further activities in this area were discussed by the meeting. Planned activities include training of the Planning Officers and the development of contingency plans for very large infestations.

3. Research

3.1 Mycopesticide Trials

Mycopesticides are being developed by the LUBILOSA project, USAID and GTZ as an alternative to chemical locust control. The current status of this research and recent field trials in the Sudan by EMPRES and LUBILOSA were reviewed. Under EMPRES mainly operational (large-scale) trials will be required in the future. It will be also necessary to analyze more thoroughly the advantages and disadvantages of mycopesticides in comparison to synthetic chemical pesticides. This may involve additional field trials.

3.2 Research Programme in the Central Region

Guidelines for the submission of research projects were presented to the meeting and discussed. Participants were encouraged to discuss with universities and research institutes which research topics from the list of agreed research areas are of interest to their countries. It

was requested that Liaison Officers submit initial outlines of research projects to FAO before mid of 1997.

3.3 Information Exchange on Desert Locust Research

The meeting discussed the need for EMPRES Liaison Officers to have more ready access to research literature and reports. Electronic versions of literature on important locust species have been already distributed to the Liaison Officers. It was decided to collaborate in this field with the Central Region Commission which has also identified the need for improving information exchange on research.

3.4 Norwegian Project

The meeting was informed of a new EMPRES project supported by Norway which is mainly executed in West Africa but can also contribute to EMPRES activities in the Central Region. The project, among others, is attempting to develop more efficient and environmentally safer pesticide application techniques by testing reduced dosages in combination with advanced satellite navigation systems, and by conducting large-scale barrier treatment trials. The project is also developing improved methods for evaluating the efficacy and maintaining the safety of spraying operations.

3.5 Desert Locust Research by GTZ and USAID

The meeting was informed of on-going locust research by GTZ and USAID which is aimed at the development of mycopesticides, and involves tests on botanicals and chitin synthesis inhibitors with the goal of safer and more environmentally friendly locust control. The projects are and have been also contributing to other research areas like economic studies and remote sensing.

4. General

4.1 Status of recruitment of EMPRES staff and donor contributions

The meeting was informed of donor contributions to the programme which have been received or are expected by FAO. Contributions have been approved by USA, Japan, the Central Region Commission and FAO. Contributions from Switzerland and Germany are expected in the near future and a major contribution by the Netherlands appears likely for early 1997. The GTZ/SDC representative pointed out that additional contributions could be considered by the German Government, especially when critical locust situations developed. It was noted that the German and USA contributions are theoretically restricted to African EMPRES countries, but that it will probably be possible to support also activities in Yemen.

The recruitment of 3 additional EMPRES staff members (EMPRES Coordinator, NPO -surveys and APO - strategies) has been initiated and is expected to be completed in early 1997. The recruitment of 2 additional international staff members is also planned for 1997 and the post of an additional NPO has been budgeted to start in the beginning of 1998.

4.2 Operational agreements with EMPRES countries

Following the discussions at the last EMPRES meeting, a legal agreement has been prepared by FAO and is being submitted officially by the Director-General of FAO to the

EMPRES countries. The agreement is mainly designed to give EMPRES a legal and operational status.

4.3 EMPRES Vehicles

The vehicles supplied so far include Sudan (3), Yemen (2), Ethiopia (2) and Eritrea (2). One vehicle was on order for Egypt and one is planned for Djibouti during 1997. The vehicles already delivered were being used under strict instructions that they be used for EMPRES activities, and be under the control of the FAO Representatives' offices. Log books should be completed for each trip and a report on use provided to the FAO Repr. each month. The importance of complying with these instructions was stressed since they would help to prolong the life of the vehicles to a maximum. It was noted that exceptions could be made to help meet other pest emergencies but only on a case-by-case basis, with the agreement of the FAO Repr. and for specific short trips. Liaison Officers were requested to make sure that the instructions were correctly followed.

4.4 Status of training project

The mandate of EMPRES to coordinate all training activities on Desert Locust in the participating countries was stressed by the meeting and discussed. The separate training project endorsed during the last EMPRES meeting had been also approved now by the Central Region Commission. The proposal now needs to be finalized by FAO and submitted to donors for consideration.

4.5 Collaboration with related projects (USAID, GTZ)

The meeting was informed of related locust projects implemented by USAID and GTZ. Close collaboration with EMPRES and these projects is already on-going and could be intensified in the future, in particularly in the field of training.

4.6. EMPRES Central Region Steering Committee

It was noted that, according to the Programme Document, the mandate of the Steering Committee was to provide overall supervision of the Programme, ensure political and financial support, and assist in coordination between EMPRES, the Central Region Commission, DLCO-EA and DLCC.

The meeting discussed the membership of the Steering Committee. It was agreed that a relatively small number of participants would help to make the Committee more effective. The meeting recommends the following composition:

Donors:

FAO (two participants), Germany (also representing Switzerland), Netherlands, USA, Japan (6)

EMPRES:

Coordinator (1)

Regional Organizations:

Central Region Commission, DLCO-EA (2)

Locust-affected countries:

3-rotating.

Total 12.

The meeting agreed that the choice of the three locust-affected countries should be made by the Liaison Officers by ballot. The ballot was held and for the first Steering Committee, tentatively scheduled to be held in conjunction with the 1997 DLCC next February, the three countries selected were Eritrea, Sudan and Yemen, with Ethiopia as an alternate in the event that one of the other was not available. Participation should be at a high level, possibly at Minister level and consideration be given to the Regional representatives being the Chairmen of the Commission and DLCO respectively.

4.7. Annual Progress Report

The meeting agreed that EMPRES (Central Region) would produce an Annual Progress Report at the end of 1997. The Coordinator would be expected to take the lead in preparing the report. Contributions would be required from the Liaison Officers but their content would be defined by the Coordinator. It was clarified that the Progress Report would cover all elements of the Central Region programme. The Progress Report would follow the standard format at FAO. Discussions would be held with donors, possibly at the Steering Committee, to ensure that donor reporting requirements were met.

5. Workplan for 1997

The meeting prepared a Workplan for 1997 following the format of the EMPRES (Central Region) programme document which is now being implemented. All activities listed in section D of the programme document are included in the Workplan, using the same numbering system. However, no action has been planned for some activities during 1997. The Workplan is attached as Annex IV.

6. Other Matters

It was recommended that future Liaison Officers' meetings include a review of past activities includes a review of the workplan and of the recommendations of the previous meeting in order to identify any outstanding activities.

7. Next Meeting

The offer from Egypt to host the next meeting of EMPRES Liaison Officers was appreciated and accepted. It was recommended to hold this meeting in September 1997.

**Emergency Prevention System (EMPRES)
for Transboundary Animal and Plant Pests and Diseases
(Desert Locust Component)**

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Central Region

**4th Meeting of EMPRES Liaison Officers
(Asmara, 26-28 November 1996)**

Adopted Agenda

Tuesday, 26 Nov. 1996

Opening

Adoption of Agenda

Adoption of report of 3rd meeting of EMPRES Liaison Officers

Status of Early Warning activities

- Survey operations - status/constraints (country statements)
- Information exchange (consultancy report, e-mail connections, exchange of survey results by e-mail, collaboration with Central Region Commission)
- Access of information from outside the plant protection services (status of study)
- Improved availability of meteorological information (collaboration with Central Region Commission)
- Remote sensing project
- Proposed Workplan for 1997 (Early Warning)

(During lunch breaks on 26/27 November 1996: demonstration of Eritrean Early Warning System)

Wednesday 27 Nov. 1996

Status of Early Reaction activities

- Desert Locust campaigns (country statements)
- Aerial Spraying Workshop (summary by Karrar/Abdurahman/Munir)
- Campaign evaluation and economic studies (discussion on guidelines, status of activities)
- Contingency planning and other activities of NPO (Munir Butrous)
- Proposed Workplan for 1997 (Early Reaction)

Research

- Mycopesticide trials (summary by Abdalla)
- Status of Central Region research programme
- Information exchange on Desert Locust research
- Research on pesticide application techniques in West Africa (summary of Norwegian project)
- Research by GTZ and USAID projects
- Proposed Workplan for 1997 (Research)

Thursday 28 Nov. 1996

General

- Status of recruitment of EMPRES staff and donor contributions
- Operational agreements with EMPRES countries
- EMPRES vehicles
- Status of training project
- Collaboration with related projects (USAID, GTZ)
- EMPRES Central Region Steering Committee
- Annual Progress Reports

Finalization of workplan and recommendations

Other matters

Next meeting

STATUS OF SURVEY AND EARLY WARNING ACTIVITIES

DJIBOUTI

Surveys were conducted in winter breeding areas using two DLCO-EA vehicles. No Desert Locusts were reported or detected. Only Tree Locusts were seen and controlled. Good rains received during early November and the situation has become favourable for Desert Locust breeding and invasion. Lack of equipment and other facilities have affected Desert Locust activities.

EGYPT

Infestations of solitary stages were reported at a density of 5-10 locust/ha in newly cultivated areas near Lake Nasser and the south eastern desert. Heavy rains fell during mid and end of November 1996 between the Red Sea and the Nile Valley. No control operations were conducted against Desert Locusts since last year.

ERITREA

No Desert Locust infestations were reported and no breeding took place. Some solitaries (3 adults) were detected in Asmara on the 17th and 18th of November. Heavy rains fell in the 2nd half of November 1996 and the situation along the coast of the Red Sea is favourable now for Desert Locust breeding.

ETHIOPIA

During surveys conducted from July to November 1996, no Desert Locusts were reported. A Task Force Committee was formed with staff of the Min. of Agric., DLCO-EA and the Met. Dept., . The Committee met weekly to evaluate the situation and take the necessary actions, the Committee also reactivated following the FAO alert in July 1996. Following heavy rainfall, the situation along Somalia border is now favourable for Locust breeding .

OMAN

The Desert Locust situation is **calm**. Teams are regularly surveying the breeding areas. No locusts have been reported, but Tree Locusts were detected and treated. Little rain fell between May 1996 and November 1996.

SAUDI ARABIA

No Desert Locust activity was recorded, until October 1996. Ground survey teams and two helicopters surveyed Gezan, Asir, Mekka and Geddah (about 50 flying hours utilized). Up to early November the surveyed areas were dry. During the last two weeks, the west coast received heavy rains. There are no constraints or problems, the country is well prepared in terms of aircraft, pesticides, vehicles etc.

SOMALIA

Surveys in North Somalia revealed no locust activity, only some scattered solitaries were reported. After recent heavy rains in November 1996 infestations are expected to develop. DLCO-EA carried out aerial surveys in June-July 1996 to identify possible areas of locust infestations.

SUDAN

The summer breeding areas in the western, northern, central and eastern parts of the country revealed no locust activity in June - October apart from one swarm which was reported north of Darfur and could not be detected or followed because of security reason. Solitary immature Desert Locust adults were reported in the winter breeding areas of the Tokar Delta (density range 20-50 locust/ha). In this area the vegetation is now green, soil is moist, crops include sorghum, millet, cotton and vegetables.

YEMEN

The summer breeding areas of Yemen experienced heavy rains in mid June 1996. During field surveys in mid July small scale breeding was detected over about 1500 hectares in the Lahij Governate between Wadi Abrain and Wadi Tuban. In the beginning of August 1996, breeding over an additional area of 1700 ha was reported from the coastal plains of the Abyan Governate between Zingbar and Ahwar. At the same time breeding was also reported from the Shabwah Governate (initially from Al Khada'a, Faidh and Zubbad) and the Al Jawf Governate (Al Khanjar and Al Saed). In the beginning of September 1996 the Marib Governate also reported Desert Locust infestations.

Between 16-18 November 1996 light to moderate rains were reported from the Tehama coastal plains. No locust activities have yet been reported from these winter breeding areas and survey teams will visit this area in the coming weeks. The winter breeding areas in the eastern plains of Aden only experienced light rain or traces of rain during the third week of November. Surveys were on-going in the last week of November.

STATUS OF DESERT LOCUST CONTROL ACTIVITIES

YEMEN

Ground control operations using vehicle mounted ULV sprayers started in the summer breeding areas as soon as infestations were detected (see Annex II). Mainly Fenitrothion 96% and Dursban 45% were used. In the Lahij Governate 1500 ha of 3-5 instar hoppers were controlled between 22 July and 10 August 1996 (Wadi Tuban and Wadi Abrain). In the Abyan Governate 1700 ha of transient adults and gregarious hoppers were controlled from 11-17 August 1996 at Al Kulasi, Al Khabr, Maseb and Am Sahelah. In the Shabwah Governate 6760 ha were treated between 12 August and 8 November 1996 at Awshah, As Sawdah, Al Jaw AL Ahmar, Zat Aljar, Al Khada'a, Zulaimayn, Ataq, Ash Shubaykah, Jibah and Mushaf. In the Al Jawf Governate 8360 ha of gregarious hoppers and adults were treated between 12 August and 27 October 1996. In the Marib Governate 400 ha of hopper bands were treated from 10-12 October 1996.

Constraints experienced during the control operations include:

1. the presence of bee keepers who do not permit spraying (considerable time was lost on negotiations and moving the bee colonies out of the infested areas);
2. certain areas (e.g. in the Marib Governate) were inaccessible for security reasons; also land mines are present in some locust breeding areas;
3. infestations were spread out in small patches over very large areas causing making it time consuming to locate and treat many small patches.

1997 Workplan

1. Coordination of EMPRES Activities

Activity 1.1 Establishment of EMPRES field unit

Outstanding recruitments for 1997 include the EMPRES Coordinator, Senior Field Officer, Senior Expert (research/strategy), NPO (surveys) and the APO (strategies). An additional NPO is planned to start at the beginning of 1998.

Activity 1.2 Regional coordination of EMPRES activities

EMPRES Liaison Officers will follow-up on the approval/signature of the following agreements:

1. Agreement to use the TCDC scheme for EMPRES consultancies (outstanding only in Ethiopia and Egypt).
2. Endorsement of the EMPRES programme document (outstanding for Egypt, Saudi Arabia and Oman)
3. Legal agreement to be submitted officially by the Director-General of FAO to the EMPRES countries.

Activity 1.3 Coordination with relevant activities of other organizations

EMPRES staff will explore collaboration with other projects. Of particular interest are bilateral training activities in the region which are already on-going under projects like the AELGA (USAID) project.

Activity 1.4 Monitoring progress and providing overall management directions and political support

The first EMPRES Steering Committee is tentatively planned to be held on 28 February and 1 March 1997 in conjunction with the 34th session of the Desert Locust Control Committee.

2. Improved Survey and Early Warning

Activity 2.1 Provide surveyors with better access to information on rainfall and vegetation distribution

- Access of information from outside the plant protection services (Yemen, Egypt to provide report by January 1997, FAO to arrange TCDC consultancy for completing the study).

- Evaluation of satellite vegetation maps (Eritrea - ground truthing and use of corrected images; Sudan, Ethiopia, Saudi Arabia, Egypt - investigate possible use of uncorrected images).
- Oman to assign expert for data processing, FAO to arrange training, software and communication link to satellite receiving station.
- FAO and Central Region Commission to arrange for the preparation of a project document for the meteorological project.

Activity 2.2 Improving survey operations

Regional and national training courses on survey procedures and GPS use (Liaison Officers to identify national training needs, EMPRES staff to assist in organisation of courses).

Activity 2.3 Develop a detailed program for systematic surveys in key breeding areas

Country-specific analysis of survey procedures; study on swarm location/tracking (EMPRES staff to initiate this activity).

Activity 2.4 Support survey operations when required

Activities will be initiated when additional surveys are required which cannot be supported from existing Government resources.

Liaison Officers to provide information on (1) availability of aircraft (fixed-wing and helicopter) in their countries for aerial locust surveys and control in neighbouring countries (costs, likely seasons of availability, conditions of contracts); (2) regulations and possible restriction of aircraft coming into their countries. Liaison Officers and EMPRES staff to prepare tentative schedule for aerial surveys.

Activity 2.5 Promoting the learning process during survey operations

No activity planned for 1997 (the results of a relevant Expert Consultation in Oman in December 1995 are still valid).

Activity 2.6 Establish standardized procedures for storing, analyzing and exchanging survey data

Survey data storage and exchange (FAO to provide a prototype software by March 1997 and meet training requirements).

Activity 2.7 Improve national forecasting activities

No activity planned for 1997.

3. Regional Information Exchange System Linked to FAO Headquarters

Activity 3.1 Design of communication network

Activity completed, but design might need review at a later stage.

Activity 3.2 Installation of communication network

Improving the e-mail network (Liaison Officers will investigate problems and solutions; EMPRES staff to provide assistance and support).

Computer training (Liaison Officers to propose training schedule and investigate suitable companies, FAO to provide assistance and support).

4. Improved Early Control Capacity

Activity 4.1 Review campaign organization and campaign execution

Campaign evaluation will continue in Eritrea, Yemen, Sudan and Saudi Arabia and might expand to other countries. The campaign evaluation guidelines will be modified where required and finalized before the end of 1997.

Systems for storing and analyzing campaign data will be developed in combination with the campaign evaluation work.

Activity 4.2 Training on control operations

Follow-up work to the regional aerial spraying workshop (Ethiopia, November 1996) will include:

1. Saudi Arabia (tentatively planned for October 1997), Sudan, Egypt, and Oman will organize national spraying workshops. FAO EMPRES staff and consultants will provide assistance as required and as available.
2. Monitoring that participants of the workshop are using and disseminating the procedures which were taught in the workshop (EMPRES staff, consultants Liaison Officers).
3. Development of assessment protocols which will provide information on equipment calibration, type and dosages of pesticides, safety procedures used, methods used for checking efficacy, etc. (EMPRES staff, consultants in collaboration with counterparts).
4. Identify and purchase of essential equipment items for spraying operations (EMPRES and national staff).
5. The satellite navigation system for spraying operations will be tested in the region (EMPRES, DLCO-EA, countries).

Other training requirements will be analyzed (EMPRES staff and Liaison Officers).

Activity 4.3 Support ground and aerial control operations when required

Activities will be initiated when critical situations develop and insufficient resources are available from the Government (EMPRES staff in consultation with Liaison Officers).

Activity 4.4 Monitoring efficacy of control operations

Collaboration with Norwegian project. Detailed activities to be arranged by EMPRES staff in consultation with Liaison Officers.

Activity 4.5 Adapting control procedures by learning

No activities planned for 1997.

Activity 4.6 Monitoring the safe use and environmental impact of pesticides

Collaboration with LOCUSTOX and Norwegian project is foreseen and should be arranged by EMPRES staff in consultation with Liaison Officers. The feasibility of upgrading a regional residue analysis laboratory (e.g. DLCO) or using other laboratories in the region will be studied.

5. Improved Methods and Strategies for Desert Locust Management

Activity 5.1 Analysis of impact of control operations

Detailed activities will be planned and initiated by EMPRES staff in consultation with Liaison Officers. This is conditional on the approval of EMPRES contributions by the Netherlands, Switzerland and Germany and the recruitment of international staff funded through these contributions.

Activity 5.2 Collection of field data

Detailed activities will be planned and initiated by EMPRES staff in consultation with Liaison Officers.

Activity 5.3 Cost/benefit ratio of control operations

Country case studies will be continued in Eritrea, Yemen, Sudan and Saudi Arabia in combination with the campaign evaluation work.

A regional workshop on Desert Locust economics will be held in May 1997 (tentatively) in Egypt or Oman. The workshop will review the status of the economic studies and will make concrete plans for future activities in the region.

Activity 5.4 Supporting field research in traditional locust breeding areas

The Liaison Officers will discuss suitable research activities with researchers in their countries and will submit outlines for research projects. Received outlines will be processed according to the established guidelines.

EMPRES will collaborate with the Central Region Commission in improving accessibility of information in Desert Locust research.

EMPRES will collaborate and/or coordinate with research on mycopesticides, chitin-synthesis inhibitors, and possibly botanicals. Operational field trials using mycopesticides and chitin-synthesis inhibitors will be initiated once suitable locust populations develop. USAID, LUBILOSA and GTZ projects serve as possible collaborators in the Central Region. Environmental impacts, including effects on honey-bees, will be initiated by EMPRES and national staff.

Activity 5.5 Improving the routine collection and storage of data on locust populations and control operations for research purposes

Detailed activities will be planned and initiated by EMPRES staff in consultation with Liaison Officers.

Activity 5.6 Workshops reviewing survey and control operations

No activities planned for 1997.

6. Rapid Deployment Plans and Contingency Arrangements

Activity 6.1 Contingency arrangements at the national level

National planning officers will be trained and additional contingency plans (e.g. for very large infestations) will be developed (EMPRES staff and consultants in collaboration with Liaison Officers and other national staff).

Activity 6.2 Establishment of strategic stocks of equipment and supplies

Detailed activities will be planned and initiated by EMPRES staff in consultation with Liaison Officers.