



**REPORT**

**EMERGENCY PREVENTION SYSTEM (EMPRES) FOR  
TRANSBOUNDARY ANIMAL AND PLANT PESTS AND DISEASES  
(DESERT LOCUST COMPONENT)**

**Fifth Meeting of the EMPRES Liaison Officers  
(Cairo, 23-25.09.1997)**

**Plant Protection Service  
Food and Agriculture Organization of the United Nations  
1998**

## INTRODUCTION

1. The 5th Meeting of EMPRES Liaison Officers for the Central Region was hosted by the Regional Office for the Near East, of the Food and Agriculture Organization of the United Nations in Egypt, and was attended by the following participants (see Annex 1):

EMPRES Liaison Officers:

Mr. Abbas Ali Abdelmoghni (Yemen)  
Mr. Abdurahman Abdulahi (Ethiopia)  
Mr. A.H.Karrar (DLCO-EA)  
Mr. Ali M. Ali (Sudan)  
Mr. H. Elmi Amir (Djibouti)  
Mr. J.M. Al-Shehri (Saudi Arabia)  
Mr. Mehari Tesfayohannes (Eritrea)  
Mr. M.S. Simary (Egypt)  
Mr. Tahal Al-Zadjali (Oman)

FAO Staff:

Mr. M.M. Taher (Secretary of the Central Region Commission)  
Mr. C. Elliott (Senior Officer, Migratory Pest Group, AGPP) (Chairman)

FAO-EMPRES Staff:

Mr. A. Showler (Coordinator, EMPRES Central Region)  
Mr. C.. U. Pantenius (Senior Field Officer)  
Mr. M. Butrous (National Programme Officer)

Invited Guest:

Mr. Mohamed Abdallahi Ould Babah (Mauritania)

2. The meeting was opened by Mr. A. Tabet, FAO Representative a.i. for Egypt, on behalf of Mr. A. Bukhari, Assistant Director General, Regional Representative for the Near East. He welcomed the participants and highlighted the challenge to food production posed by the Desert Locust (DL) and quoted in the Bible and the Koran. He expressed his expectation that the new approaches being promoted by EMPRES, for example emphasizing early interventions and fostering national capacities within the member countries, will help finally to overcome this difficult problem. He noted that EMPRES has already made considerable progress towards achieving its overall objectives.

3. The Chairman, Mr. Elliott, introduced the new team members and welcomed Mr. Mohamed Abdallahi Ould Babah, as an observer and as representative of the envisaged EMPRES Western Region. Furthermore, he informed the participants of the budgetary situation for the EMPRES Central Region Programme and highlighted the positive response of the donor community. So far the amount of USD 8.1 million out of projected USD 9.97 million has been allocated to the programme.

## AGENDA

4. After the inclusion of minor amendments; the Agenda was adopted.
- Third day 10.30 h : Any Other Business

## **PRESENTATIONS, DISCUSSIONS AND RECOMMENDATIONS**

### **Philosophy and Approach of EMPRES**

5. Mr. Showler introduced the participants to the philosophy of the EMPRES Programme, which is geared to a participatory approach. Consequently he emphasized the responsibility that rested on the EMPRES Liaison Officers (ELOs) for future achievements. He explained the role of the programme in catalysing and promoting national strengths and resources to enable them to face the DL threat in the most effective and economic way. He stressed that the philosophy of EMPRES is based on good partnership and fruitful collaboration.

### **Locust Situation Country Reports for 1997**

#### **Sudan**

6. The report covered the activities during summer breeding season in Western, Central and parts of Eastern Sudan. In late May, two swarms of medium density infested approx. 200 ha in Swakin. Later they dispersed into nearby mountains and could not be followed. In early September, two mature swarms infested an area of approx. 22,000 ha in Kassala near Odi and Amm Adam. The control teams managed to spray 1,600 ha. In Western Sudan the weather conditions are reported as quite favourable. In Central Sudan low density gregarious DL were detected. No egg-laying has so far been observed in the Dueim area. A few pockets of DL were also reported from the Shendi area, Northern Sudan. The current situation was rated as being calm, but in general, the climatic conditions remain favourable for DL breeding.

7. The participants expressed some concern about the reports from Sudan and questioned the efforts to detect and follow DL. In response, the delicate vehicle situation was highlighted, which made it very difficult to conduct appropriate surveys in 13 different areas. In addition it was stressed that it is difficult to conduct surveys in the border areas with Egypt and Eritrea, for security reasons. The use of military personnel as resource persons and the reactivation or initiation of joint survey missions were discussed.

#### **Eritrea**

8. Widespread rainfall had occurred during July all over the summer breeding area. The rains stopped in August. Vegetation on the eastern coastal areas dried up. No DL were reported until June. During survey operations, a few solitary adults full of eggs were detected south of Massawa, and some higher numbers to the north. Also some scattered adults were detected in the traditional breeding areas like Sheib and Shelshela. During August hopper patches dispersed over an area of 2000 ha were found on the Naro plains. One control operation on a 70 ha field of pearl millet was carried out in September. 150 litres of Fenitrothion 50 % EC were applied.

#### **Djibouti**

9. The DL situation was calm due to the dry climatic conditions. Surveys conducted along the borders with Ethiopia and northern Somalia reported no Desert Locust breeding.

#### **Somalia**



10. Surveys by DLCO-EA and Mr. Mushi were performed in Northern Somalia during June. Scattered solitary adults were detected around Jebel Almis. By late July scattered solitary adults were reported near Biji and Abdulqadir. Total flying hours amounted to > 12 h. DLCO-EA promised to provide a long-range aircraft, as soon as it was ready, to help improve survey capacity in Somalia. The security situation in Northern Somalia is still uncertain so that only limited ground surveys can be carried out for the foreseeable future.

### **Ethiopia**

11. The situation in general is very calm due to erratic rainfall. Apart for some Acacia trees, the whole vegetation in the south-east and eastern parts of the country is dry. MoA staff and 30 scouts carried out several surveys in south east and eastern Ethiopia and reported to the MoA on weekly basis, but no DL was detected. The only constraints were communication problems caused by non-functioning telephone lines.

### **Egypt**

12. Although rainfall was reported as being good, the DL situation was rated as calm. A significant population of DL was detected and controlled around Lake Nasser (500 ha), and Wadi Diib (30 ha). These areas are now under for constant observation. Two survey / control teams are currently in the field: one along the border with Sudan and one around Lake Nasser.

### **Saudi Arabia**

13. Due to the successive rainfalls, Saudi Arabia faced heavy DL activities during February '97 to June '97 along the Red Sea coastal plains. Approx. 48,000 sqkm were infested. 70 ground teams and 4 aircraft conducted control operations on a total area of 340,000 ha along the west coast. The overall cost for the control operations amounted up to USD 4.5 million.. The current situation was described as calm due to high temperatures and lack of vegetation.

14. The participants acknowledged the tremendous efforts made by Saudi Arabia in facing this heavy DL invasion. It was stressed that the control achievements of Saudi Arabia had most likely averted major DL invasions into the neighbouring countries.

### **Yemen**

15. Surveys were conducted during March, but no DL was detected. In late May and early June swarms were reported from Sadaa, in Safra District. By July and August, mature copulating and egg-laying DL and hoppers were reported in the Erga and Hadid areas of Shebwa Governate. The total infested area was estimated to approx. 40 sqkm. However, due to the relatively low DL density and to drying up vegetation, no control operations were felt to be necessary. Still, the area is kept under constant observation.

### **Oman**

16. After unusually heavy rainfall, solitary DL were reported from Rustaq during May and June.

## **Recommendations**

17. The following **Recommendations** were made:

- ⇒ Countries should accept that it was often possible that locust populations found, had originated within own territories and had simply been missed by survey teams. Neighbouring countries should not always be blamed. Instead improvements in national survey capacity should be sought.
- ⇒ ELOs should distribute frequent informal information updates to neighbouring countries during critical situations.
- ⇒ Greenness maps should be used to determine survey areas, but with caution.
- ⇒ An *ad hoc* committee was established to brainstorm on how to proceed towards reactivating joint surveys between Sudan and Eritrea, and Sudan and Egypt (Mr. Simary, Mr. Butrous, Mr. Mehari, Mr. Ali).
- ⇒ EMPRES to give support to Saudi Arabia on research for improved campaign operations.
- ⇒ Clarifications should be obtained from FAO on reactions to reports by the Forecasting Unit and on uncertainty about the use of NDVI images.
- ⇒ Yemen and Sudan to take the opportunity provided by current infested areas to carry out locust population dynamics studies and barrier treatment trials. Saudi Arabia to prepare and undertake studies on invading swarms and the impact of control measures.
- ⇒ Eritrea to hire a 'link-man', initially with EMPRES support, to improve the scouting and training network in Eritrea.
- ⇒ Since little or no evaluation of the environmental impact of DL spraying is being conducted in the Region, such studies should be promoted by EMPRES.

## **Report on Progress**

18. Mr. Showler gave an overview on the achievements of the Programme since the 4th ELO Meeting (ELOM) (see Annex 2). The following amendments were suggested:

- ▷ Title: 1997 instead of 1977
- ▷ 2.1.4 Document not completed, FAO forwarded document for comments
- ▷ 4.2 Training on *survey and control* operations

During the following discussion, the concern was raised that too many activities are projected at one time. It was explained this arose from the different perceptions and expectations from the donors and other parties to EMPRES, and it would be necessary to prioritize the different activities.

## **Current and Projected EMPRES staffing**

19. The participants were informed of the current personnel and staffing level in the programme. Of the two remaining NPO positions described in the project document, it was planned only to fill one with an NPO for training. In addition one international staff member and, if possible, one APO, financed out of Dutch funds, will be recruited. The planned NPO position for meteorology will be changed into short term consultancy contracts. Furthermore,

the recruitment of an international staff member to be based at FAO HQ, financed out of IFAD funds, for the coordination of research including economic studies is being considered.

### **Progress on Recommendations made at the last ELOM**

20. The current status of the recommendations made at the 4th ELOM (see Annex 3) was presented.

The following remarks were made by participants:

#### **1.2 E-mail network:**

- The new Liaison Officer for Oman will arrange for the transfer of the e-mail address from the old Liaison Officer.
- Djibouti is now accessible on e-mail through UNDP, and messages are passed on to the ELO within one day.
- Sudan: no e-mail connection so far, except at the FAOR, but it is expected soon. Communication still relies on fax facilities provided by the FAO Rep's office and PPD.
- The participants are requested to give fast responses to messages received.

#### **2.2 Aerial Spraying Workshop:**

- Change to: Aerial Spraying *and* Survey Workshop

#### **Re. recommendation no. 4.**

- clarification on confusing procurements of field equipment was given. Mr. Butrous explained that 20 pc. Compass, 20 pc. Hygrometer, 20 pc Anemometer, 20 pc. Stopwatch, 20 pc. Eye Lens, 1 pc. UV light and Oil sensitive paper were procured and should be delivered to all countries. The ELOs are requested, to report on the receipt of these items to Mr. Butrous.

### **Central Region Commission (CRC)**

21. Mr. Taher informed the participants on the current state of the relationship between EMPRES and the CRC. He described the collaboration between the two FAO bodies as good but they remain informal, as long as no official linkages are defined. This situation is leading in a number of cases to duplication of efforts such as in training, research and communication. Mr. Taher said that he considered EMPRES gave strength to the Central Region and filled a very useful gap, because it covered countries important for Desert Locust but not yet members of CRC.

22. Following the discussion, it was **recommended** that:

⇒ FAO define clearly the relationship between CRC and EMPRES.



### **EMPRES Workplan and Contribution of EMPRES Liaison Officers**

23. The first issue discussed was the system of monitoring and the use of resources other than Plant Protection staff. A study on this subject had already been carried out, under authors' contracts, in Egypt, Eritrea, Ethiopia, and Sudan, and was under preparation in Yemen. To complete the picture the same study was **recommended** to be carried out by the Liaison Officers in Djibouti, Oman and Saudi Arabia. Abdurahman Abdulahi the Ethiopian ELO is to be recruited as a consultant to compile the reports. He would also collect other information and compile the Djibouti, Oman, Somalia and Saudi Arabia studies after completion.

24. The other issue raised was the importance of coordination. Dr. Karrar explained the role of DLCO in coordinating activities with Plant Protection Services and other organizations in the region.

### **Linkage and Role of Donors**

25. It was **recommended** that when donors wish to sponsor bilateral research in support of EMPRES in any of the Central Region countries, they should obtain the necessary authority and clearances from the appropriate Ministry. EMPRES can only facilitate and coordinate such activities if requested, but the authorisation must come from the country itself. National participation should be inherent in such projects and activities.

### **Steering Committee/Stakeholder Meeting**

26. The goal of the Steering Committee is overall supervision and support of EMPRES. According to the project document, a Steering Committee meeting is to be held about once a year. The first Steering Committee meeting was originally planned to take place after the Economic Studies on Desert Locust Workshop, but was postponed because it was felt that first it was necessary to establish membership, timing and other arrangements in consultation with high level representatives of locust-affected and donor countries. Such a consultation will take place at an informal stakeholders meeting to be held in parallel to the FAO biennial Conference in November 97.

### **Locust Reporting, Scouting and DLCO**

27. ELOs pointed out the difficulty and the cost incurred in sending reports to the eight member countries. It was clarified out that this was not in fact required. ELOs should not send raw data and analysis reports to each other. For all CRC members, data and reports should be addressed to Rome, copied to the CRC in Cairo, or vice-versa (in which case the CRC immediately forwards them to Rome). For non-CRC members, reports and raw data should be sent exclusively to Rome.

28. Scouting networks need to be delineated and modalities for their improvement developed and undertaken.

29. The FAO Forecasting Unit needs to continue to provide as much information as possible on important Desert Locust activities to relevant countries, to keep them well

abreast of such situations. The FAO Forecasting Unit should also suggest to country authorities and ELOs, in the most proactive manner possible, where surveys should most urgently be directed.

30. FAO is required to sort out the overlap of activities between EMPRES and CRC. This issue was discussed thoroughly by the participants.

### Training

#### 31. Advanced Degree Programme

- Advanced specialized courses (Diploma - M.Sc.) in Desert Locust management should be established in the Region.
- Discussions had been initiated with the University of Khartoum. The EMPRES Coordinator to discuss the matter further during his proposed visit to Sudan in November 1997.
- A similar approach is suggested in other EMPRES member countries.
- The student attendance for the advanced courses is usually a minimum of 10 students each time and at each venue.
- Funds could be availed from EMPRES, CRC, DLCC and donors.
- A Fellowship system should be considered, following the standard FAO procedures.

#### 32. Regional and National Training Programmes

- Both training levels to be executed by national and/or regional trainers.
- The meeting was briefed about the training courses held in Lake Zeway (Ethiopia), November 1996 and Silwood Park (England) June 1997.
- The difficulties encountered by the participants in the Silwood Park training course regarding lodging and some of the substantive topics were discussed.
- The meeting recommended that future training courses be held within the region.
- The Train-the-Trainer component and advance planning elements are essential and it was recommended that they always be incorporated into training curricula.
- It was **recommended** that Differential GPS be, if possible, included in the Saudi Arabia training course in October 1997. Also Saudi Arabia welcomed the idea of inviting a participant from Oman to attend; CRC would make funds available for his participation.
- A mission, possibly involving LOCUSTOX, will be fielded to examine the possibilities for addressing environmental concerns in the Central Region, and to develop a viable workplan to accomplish necessary activities. According to the findings of the mission, a Regional Workshop on environmental aspects of Desert Locust control could be developed in 1998.
- Egypt agreed to accept trainees from CRC and EMPRES member countries in their national training courses.
- The Sudan national training course is expected to be held before the end of 1997.

### Solicited Research Initiatives

33. A list of research areas was distributed last year to CRC/EMPRES countries, asking them to identify interest, but it elicited no response. It was agreed that a revised list developed jointly by CRC and EMPRES should be circulated by each ELO to the relevant



institutions in his country, with the aim of identifying particular areas of interest. M.Sc. research could also be covered in this activity.

34. Both CRC and EMPRES promised to avail the funds after consultation with Rome. Also member countries are expected to contribute, making funds available themselves and solicit bilateral assistance where appropriate.

### **Remote Sensing/Meteorology**

35. Terms of reference for three consultants have been prepared by the Survey NPO in Yemen. They will visit the member countries by the end of 1997 or early 1998 to determine the best way to improve survey data collection. This survey/meteorological/remote-sensing team will identify existing capabilities and suggest ways to improve upon them, including the development of an NDVI data collection station in Muscat.

36. Queries on meteorological issues and data collection should be forwarded to the Survey NPO Yemen. The mission is suggested to come up with proposal for a six months output. An earlier proposal on a meteorological network in the region should be taken into consideration by the team.

### **Biocontrol Work**

37. LUBILOSA and Montana State University (MSU) are the two major institutions involved in bio-control research work. The EMPRES Coordinator will meet with both institutions in October 1997 for considering and organizing their activities in the Central Region.

38. The issue of using exotic strains of biopesticides was discussed in view of possible adverse impacts on other organisms. ELOs will discuss ongoing programmes, in the light of this concern, with the joint mission from the two institutions which is expected to visit the Central Region.

### **Addendum to Existing Workplan**

39. Mr. Showler agreed to circulate a modified/updated Workplan for participants' comments. The finalised Workplan is attached (Annex 4).

### **Indicators**

40. The participants were briefed on the objectives and the ideas involved in developing progress indicators for the framework of the programme. It was highlighted that a system of indicators is mainly to be understood as giving guidance in the process of implementing the activities and as a means to measure progress towards the achievement of the objectives. It was clearly understood that the indicators have to reflect the particular capacities and resources of each member country. Only on that basis and with direct participation of the ELO, can realistic indicators can be expected. It was concluded that EMPRES shall work out a general proposal for the development of indicators and shall ask the ELO for comments and observations.

## **Any Other Business**

### **Inventory:**

41. All Liaison Officers in the Central Region were reminded to complete and sign the EMPRES inventory list. It would be updated every year. The EMPRES Administrative Officer will be handling the inventory issue.

### **News Letter:**

42. The idea of having an EMPRES News Letter was raised. The participants agreed that there was a need to publicise EMPRES achievements and that a Newsletter was in principle very welcome. But the participants were informed that at the moment there is no free capacity to handle it. Currently it is planned to publish publicity brochures about once every two years.

## **Next EMPRES Liaison Officers Meeting**

43. Time: September 1998  
Venue: Option 1 : Oman late August 1998, to be confirmed  
Option 2 : Ethiopia, September 1998, confirmed

## LIST OF PARTICIPANTS

**DJIBOUTI**

Mr Hussein Elmi Amir  
 Chief, Crop Protection Unit (SAF)  
 Ministry of Agriculture  
 P.O. Box 224  
 Tel: 341774/341496  
 Fax : 354010

**EGYPT**

Mr Mohamed Samir Simary  
 Director-General  
 Locusts and Agro-aviation Affairs  
 Ministry of Agriculture  
 Dokki, Cairo  
 Tel: 3488974  
 Fax: 3493184

**ERITREA**

Mr Mehari Tesfayohannes  
 Head, Plant Protection Service  
 Ministry of Agriculture  
 P.O. Box 1048, Asmara  
 Tel: 291.1.181077  
 Fax: 291-1-181415  
 E-mail : Mehari.EMPRES@er.punchdown.org

**ETHIOPIA**

Dr Abdurahman Abdulahi  
 Senior Entomologist  
 Ministry of Agriculture  
 P.O. Box 62347, Addis Ababa  
 Tel: 186975  
 Fax: 614996  
 E-mail : MOACPD@padis.gn.apc.org

**OMAN**

Mr Talal Sumar Al-Zadjali  
 Director of Agricultural Affairs  
 Ministry of Agriculture & Fisheries  
 P.O. Box 467-Madinat Sultan Qaboos  
 Tel: 00968-696287  
 Fax: 00968-696271  
 E-mail: 104647.2612@compuserve.com

**SAUDI ARABIA**

Mr Jaber Mohammed Al Shehri  
 Director-General, Locust Control Centre  
 P.O.Box 7208  
 Jeddah 21462  
 Tel: 6204085  
 Fax: 6204085  
 E-mail: 104075.306@compuserve.com

**SUDAN**

Mr Ali Mohamed Ali  
 Head, Desert Locust Control Section  
 Liaison Officer  
 Plant Protection Department  
 Ministry of Agriculture  
 Khartoum North, P.O. Box 14  
 Tel: 337495  
 Fax: 339423

**YEMEN**

Mr Abbas Ali Abdulmoghni  
 Director, Desert Locust Control Centre  
 Locust Control Centre  
 Ministry of Agriculture  
 Shaoub P.O. Box 26, Sana'a  
 Tel: 9671-250980/250956/228036  
 Fax: 9671-228064



**FAO**

Mr Clive Elliott  
Senior Officer, Migratory Pests, AGPP  
Tel: 0039-6-57053836  
Fax: 0039-6-57055271  
E-mail: Clive.Elliott@fao.org

**EMPRES CENTRAL REGION STAFF**

Mr Allan Showler  
EMPRES Coordinator  
P.O. Box 1101, Asmara, Eritrea  
Tel: 00291-1-181077 (Ext.246)  
Fax: 00291-1-181690  
E-mail : Ashowler@EMPRES gemel.com.er

Mr Christian Ulrich Pantenius  
EMPRES (NPO)  
P.O. Box 5536, Addis Ababa, Ethiopia  
Tel: 186975  
Fax: 614996

Mr Munir Butrous  
EMPRES (NPO)  
P.O. Box 1117, Khartoum  
Tel: 00249-11-335380/339423  
Fax: 00249-11-335380/339423

**REGIONAL ORGANIZATION****Commission for Controlling the Desert Locust  
in the Central Region**

Mr Mahmoud M. Taher  
Secretary  
Commission for Controlling the Desert Locust  
in the Central Region  
FAO Regional Office  
P.O.Box 2223, Cairo, Egypt  
Tel: 00202-3316136/3372229/3373475  
Fax: 00202-3495981/3616804  
E-mail : Mahmoud.Taher@field.fao.org

**Desert Locust Control Organization for Eastern Africa**

Mr A. Karrar  
Director  
Desert Locust Control Organization for Eastern Africa  
P.O. Box 4255, Addis Ababa, Ethiopia  
Tel: 611465  
Fax: 611648

**EMPRES PROGRAMME PROGRESS REPORT  
JANUARY - SEPTEMBER 1997**

**PRESENTED FOR EMPRES LIAISON OFFICERS MEETING  
SEPTEMBER 23-25 1997  
CAIRO, EGYPT**

**1. COORDINATION OF EMPRES ACTIVITIES**

**Activity 1.1 Establishment of EMPRES field unit**

EMPRES Coordinator, Allan Showler, began duties February 22, arrived Asmara 8 March.

Senior Field Officer, Christian Pantenius, began duties early July, arrived Addis Ababa 16 July.

NPO-Control, Munir Butrous, began duties October 1996 in Khartoum.

NPO-Survey, Fouad B'Hakim, began duties early May in Sana'a.

APO-Strategies, Jan Breithaupt, began duties late February in Sana'a.

NPO-Training and NPO-Meteorology expected to be hired first half of 1998. EMPRES staff has formulated Terms of Reference for both and these have been submitted to FAO/Rome for further action.

Additional APO is not expected until later in 1998 and is expected to be sited in Cairo. EMPRES Coordinator has hired an Administrative Officer and a Driver. Both positions will be formalized with FAO prior to the end of 1997, particularly if trust funds can be used for their salaries.

EMPRES Senior Field Officer is expected to hire a Secretary and a Driver prior to the end of 1997, and these positions should be formalized in 1998.

**Activity 1.2 EMPRES Liaison officers will follow up on the approval/signature of the following agreements:**

**1.2.1 Agreement to use the TCDC scheme for EMPRES consultancies**

Completed in all countries except Yemen.

**1.2.2 Endorsement of the EMPRES program document**

See 1.2.3 below.

**1.2.3 Legal agreement to be submitted officially by the Director-General of FAO to the EMPRES countries**

Completed in all countries except:

Egypt - in progress, expected before end of 1997

Djibouti - in progress, expected before end of 1997 (signed now)

Oman - in progress, expected before end of 1997

Saudi Arabia - in progress, expected before end of 1997

**Activity 1.3 Coordination with relevant activities of other organizations**

Ongoing - EMPRES has established working relationships with the Arab Organization for Agricultural Development, USAID/AELGA, GTZ, ODA/NRI, Montana State University biocontrol project, LUBILOSA, and DLCO. Plans are underway to connect with ICIPE, NORAD program on differential GPS, and GIFAP.

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

DLCC was held as scheduled. EMPRES Steering Committee is currently being re-thought. Establishment of the Steering Committee will likely be done at an EMPRES Stakeholders Meeting to be assembled by FAO/Rome in late 1997 or early 1998.

**Activity 1.5 EMPRES Liaison Officers Meeting - September 1997**

Completed.

**2. IMPROVED SURVEY AND EARLY WARNING****Activity 2.1 Provide surveyors with better access to information on rainfall and vegetation distribution****2.1.1 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)**

Report from Yemen has not been made available. Follow up by EMPRES has been made. EMPRES is proceeding with getting Author's Contract instead of TCDC going by October. A consultant has been identified.

**2.1.2 Evaluation of satellite vegetation maps (Eritrea - ground truthing and use of corrected images; Sudan, Ethiopia, Saudi Arabia, Egypt - investigate possible use of uncorrected images)**

In progress. EMPRES has developed Terms of Reference for a team composed of remote sensing, survey, and meteorology specialists to travel to the countries listed above and carry out this activity before the end of 1997. This team will carry out other functions as well.

**2.1.3 Oman to assign expert for data processing, FAO to arrange training, software and communication link to satellite receiving station**

In progress. EMPRES Coordinator visited Oman in August and implementation of this activity will commence prior to the end of 1997.

**2.1.4 FAO and Central Region Commission to arrange for the preparation of a project document for the meteorological project**

Project document completed by FAO and Central Region Commission.

**Activity 2.2 Improving survey operations**

No national training needs have been identified by EMPRES countries. EMPRES is prepared to assist in the organization of courses when needs are identified by EMPRES Liaison Officers. FAO/Rome had taken the



responsibility of suggesting an approach on both national and regional levels - no guidelines have been issued.

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

FAO/Rome has issued guidance on each EMPRES country submitting monthly reports and more frequent reports if locust situations dictate. EMPRES has disseminated the guidance to all EMPRES Liaison Officers.

**Activity 2.4 Support survey operations when required**

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

Ongoing.

**2.4.2 Liaison Officers to provide information on (1) availability of aircraft (fixed-wing and helicopter) in their countries for aerial locust surveys and control in neighboring 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.**

No reports have been made available. EMPRES has set up modality for cooperatively doing aerial survey with DLCO, including in Somalia.

**Activity 2.5 Promoting the learning process during survey operations**

No activity planned for 1997.

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

FAO has created survey forms and prototype software.

**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**

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

See map detailing communication links among EMPRES countries. Liaison Officers and EMPRES have nearly completed an e-mail web among countries. Now e-mail links exist for Eritrea, Ethiopia, Egypt, Saudi Arabia, Oman, and Yemen. Sudan is exploring the possibility but costs appear to be too exorbitant to justify installation for the moment, but e-mail can be sent to FAOR in Sudan. Costs are likewise exorbitant for Djibouti, but fax has been installed; it

is up to MoA/Djibouti to agree to fund the cost of running the fax, however. There is no e-mail to Somalia, but this option will be explored if EMPRES officer in Hargesia acquires his own office.

Fax connections exist among Ethiopia, Eritrea, Sudan, Yemen, Egypt, Oman, Saudi Arabia, Djibouti and Somalia (through UNDP). There are a few problems, still, however. MoA and EMPRES fax in Sudan does not connect with certain countries (e.g., Eritrea); Djibouti MoA fax unreliable, best option is to use MoF fax. Attempts to correct these problems are ongoing.

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

Ethiopia had a course. Proposals from EMPRES Liaison Officers have not been submitted. EMPRES has, in some cases, provided encouragement to do so.

#### **4. IMPROVED EARLY WARNING CONTROL CAPACITY**

**Activity 4.1 Review campaign organization and campaign execution**

1992-4 campaign evaluations completed with the exception of Saudi Arabia. It is hoped that a campaign evaluation from Saudi Arabia will be completed prior to the end of 1997. Two EMPRES staff have been assigned to compile evaluations into a single document with lessons learned and constructive recommendations.

**Activity 4.2 Training on control and survey operations**

- 4.2.1a Saudi Arabia:** Course planned for October 1997, preparation ongoing.
- 4.2.1b Sudan:** Course tentatively planned for November, preparation ongoing.
- 4.2.1c Oman:** Completed.
- 4.2.1d Egypt:** Course under discussion, tentative plans underway for late 1997. Will be planned and conducted by the Egyptian MoA with EMPRES assistance if requested.

**4.2.2 Monitoring that participants of the workshop are using and disseminating the procedures which were taught in the workshop (EMPRES staff, consultants, Liaison Officers)**

Indicators will be developed by EMPRES staff to measure impacts of training. Liaison Officers should draft yearly summary of progress in this specific regard to their operations as well.

**4.2.3 Development of assessment protocols which will provide information on equipment calibration, type and dosages of pesticides, safety procedures used, methods for checking efficacy, etc. (EMPRES staff, consultants in collaboration with counterparts)**

EMPRES and NRI consultant, with assistance from Liaison Officers have developed a spray form that encompasses these aspects of operations.

**4.2.4 Identify and purchase of essential equipment items for spraying operations (EMPRES and national staff)**

Meteorological equipment has been procured and distributed among many

of the EMPRES countries. Those countries that have not received them should identify needs for meteorological equipment (for spray operations) and for spraying. Proposals for funding should be submitted to the EMPRES Control Officer (Munir Butrous) and the EMPRES Senior Field Officer for review.

**4.2.5 The satellite navigation system for spraying operations will be tested in the region (EMPRES, DLCO, countries)**

FAO/Rome has agreed to initiate this activity regarding the differential GPS. Discussions are ongoing. EMPRES anticipates testing to start in late 1997 or early 1998.

**Activity 4.3 Support ground and aerial control operations when required**

Ongoing. No action yet required.

**Activity 4.4 Monitoring efficacy of control operations**

See 4.2.5.

**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**

With the arrival of the EMPRES Senior Field Officer, this activity will commence. Discussions have been initiated.

**5. IMPROVED METHODS AND STRATEGIES FOR DESERT LOCUST MANAGEMENT**

**Activity 5.1 Analysis of impact of control operations**

Funds just made available from Germany, Netherlands, and Switzerland. EMPRES can now begin planning appropriate uses for these funds. The following areas are likely to receive funding contingent largely upon the outcomes at this meeting: biocontrol, differential GPS testing, ecotoxicology. The funds, of course, can be used for other things, too, such as training, instituting ecotoxicology facilities, EMPRES staffing, services, and procurements of equipment and materials for EMPRES and EMPRES member countries.

**Activity 5.2 Collection of field data**

Field data is being gathered and synthesized presently in the form of the systems monitoring reports and the campaign evaluations. Field data is also collected on survey results and will be collected from the spray forms developed as a result of the Lake Zway training course. Now that the EMPRES Senior Field Officer has arrived, a systematic effort can commence whereby field data is collected and distributed to the appropriate entities.

**Activity 5.3 Cost/benefit ration of control operations**

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

FAO/Rome is undertaking this activity as part of the EMPRES Program.

As follow-on to the recent economic study (as presented at the workshop just prior to this meeting), a special study has been formulated to carry out this action.



- 5.3.2 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 economics studies and will make concrete plans for future activities in the region**

Completed.

**Activity 5.4 Supporting field research in traditional locust breeding areas**

- 5.4.1 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**

No outlines have been received. Central Region Commission distributed a list of possible topics to ascertain country interest in specific topics, but received no response. EMPRES has begun to initiate another attempt to identify country interests in research topics.

- 5.4.2 EMPRES will collaborate with the Central Region Commission in improving accessibility of information in desert locust research**

This activity has been initiated through discussions with the Central Region commission. One EMPRES staff has been assigned to commence identification of and contact with research institutions and entities.

- 5.4.3 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, LUBILOS and GTZ projects serve as possible collaborators in the Central Region. Environmental impacts, including effects on honeybees, will be initiated by EMPRES and national staff**

**Mycopesticides:** EMPRES has been interacting regularly with LUBILOS and USAID on mycopesticide research approaches. Partly as a result of EMPRES coordination, USAID's Montana State University (MSU) mycopesticide research program has agreed to develop formal links with LUBILOS. MSU field trials were expected to be carried out in Eritrea in summer 1997, but lack of suitable locust populations and failure of lab colonies precluded this for the time being. LUBILOS has initiated some work in Sudan, though this work is in its earliest phases. At this time, the current MSU program contract with USAID is reaching its end, and the program has gone into a bidding process to determine how USAID funding will be directed in the future. In any case, EMPRES may opt to provide funding to MSU/LUBILOS on a cost-sharing basis with donors. EMPRES is in the process of developing a team from MSU, LUBILOS, and EMPRES to visit selected EMPRES countries to formulate a more systematic approach to conducting mycopesticide research in the region. MSU has already made one visit to Ethiopia and found interest in pursuing mycopesticide research there.

Chitin-synthesis research in the Central Region has not been initiated.

EMPRES member countries have been and will be solicited for interest in this field. Donor interest will also be explored.

Botanical research is being conducted in Eritrea on sesame with very mixed results. This research is conducted as a minor part of the USAID/MSU program on mycopesticides. EMPRES member countries have been and will be solicited for interest in this field. Donor interest will also be explored.

Research of this nature depends much on funding provided by GTZ, the Netherlands, and Switzerland. Now that some or all of that funding has become available, EMPRES can take increasingly concrete action.

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

Spray form and survey form have been developed and distributed. Survey forms are being collected by the FAO/Rome Desert Locust Forecasting Unit and spray form information will be collected by EMPRES Control Officer, FAO/Rome, and the Central Region Commission. Locust population dynamics research has been urged to EMPRES member countries without indication of interest. EMPRES will solicit the EMPRES member countries again.

**Activity 5.6 Workshops reviewing survey and control operations**

"No activities planned for 1997."

## **6.0 RAPID DEPLOYMENT PLANS AND CONTINGENCY ARRANGEMENTS**

**Activity 6.1 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)**

Most or all national training courses will involve contingency planning at all levels of operation. Planning officers in EMPRES countries have not been identified (they should be) and one EMPRES staff has been assigned to assist in the development of contingency scenarios at national and regional levels. This staff member has, and will continue to visit EMPRES countries to access information and will begin drafting contingency plans in collaboration with national planning officers once they are identified.

**Activity 6.2 Establishment of strategic stocks of equipment and supplies**

With the recent arrival of the EMPRES Senior Field Officer, this activity can commence in late 1997 and in 1998. This will be done in collaboration with the EMPRES Liaison Officers, the EMPRES APO developing the contingency scenarios (see 6.1) and the EMPRES Control Officer.

**PROGRESS ON THE RECOMMENDATIONS OF THE 4<sup>TH</sup> MEETING  
OF EMPRES LIAISON OFFICERS  
(November 1996, Asmara, Eritrea)**

This progress report only identifies and discusses those items in the EMPRES Liaison Officers report that have been tagged as being recommendations. Some of them will be dealt with later in this EMPRES Liaison Officers meeting when the 1997 EMPRES workplan progress is presented.

**1.2 E-mail Network:** To be discussed as part of EMPRES workplan progress report.

**1.3 Exchange of Survey Results Recommendations and Progress:**

Rec. 1. To make more use of e-mail for transmitting or exchanging survey results.

Status: Where e-mail connections have been feasible, reports are being sent by this means. In some cases, e-mail establishment has been too new to properly verify this.

Rec. 2. 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).

Status: It seems that this is limited to situations where locust outbreaks have occurred, and not routine monthly reporting. Secretary of Commission should likely emphasize this need, or redefine the sort of information of primary interest to him as appropriate.

Rec. 3. 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.

Status: This seems to be occurring to some extent, but it is likely that carrying out this responsibility should be strengthened. It is hoped that the next EMPRES APO will be placed in Cairo to better institute this (and other) capabilities that will sooner or later fall under the purview of the Central Region Commission.

Rec. 4. That Liaison Officers report regularly on the situation (e.g., weekly) even if no locusts have been found.

Status: This need has been made apparent to all of the EMPRES Liaison Officers through EMPRES staff (NPO-Survey). Weekly reports have been determined, through dialogue with FAO's Locust Forecasting Unit, to be superfluous. Monthly reports will suffice during routine (recession) periods. More frequent reporting has been urged when locust population dynamics indicate a departure from recession status.

**1.4 Information Sources from Outside the Plant Protection Services**

The TCDC consultancy has been initiated. However, in some cases, the country reports have not been timely.



## **1.5 Improved Availability of Meteorological Information**

Rec. 1. To hire a consultant for revising the project document in collaboration with FAO staff.

Status: EMPRES NPO-Survey has been initiating the formulation of a team composed of remote sensing, meteorology, and survey specialists to establish a workplan for optimizing collection, networking, and application of this information with an aim to improve the potential for more effective surveillance.

## **2.1 Desert Locust Campaigns**

Rec. 1. 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.

Status: This will hopefully be addressed by EMPRES member countries as part of the solicited research program being initiated by EMPRES and the Central Region Commission. Much of this work will as well fall to the EMPRES NPO-Survey and to the EMPRES Senior Field Officer in the upcoming year.

## **2.2 Control and Survey Spraying Workshops**

Rec. 1. National workshops initially in Saudi Arabia (October 1997 proposed), Sudan, Egypt, and Oman.

Status: Preparations in Saudi Arabia are underway. Oman completed. Sudan is in preparation. Egypt is in preparation.

Rec. 2. Checking that participants are using the knowledge acquired.

Status: Too early to determine at this point. Will discuss concept of "indicators" later in this meeting.

Rec. 3. The development of assessment protocols and monitoring equipment calibration and other parameters during aerial spraying operations.

Status: Spray forms have been developed by NRI and EMPRES.

Rec. 4. Purchase of basic field equipment.

Status: Completed, especially for meteorological equipment. Basic equipment needs are to be specified by the EMPRES Liaison Officers.

Rec. 5. Testing the use of satellite navigation systems for spraying aircraft.

Status: FAO/Rome had agreed to investigate possibilities for conducting such tests in the Central Region. This investigation was initiated and awaits action.

## **2.3 Campaign Evaluation and Economic Studies**

Rec. 1. Collection of data on crop losses in the region.

Status: Will be part of the next phase of the economics work being planned as part of EMPRES through assistance of GTZ.

Rec. 2. Regional workshop (tentatively scheduled for May 1997) which will review the the current status and plan further EMPRES activities in this field. Egypt and Oman each offered to host this workshop.

Status: No action taken. The initiative for this activity should be generated from EMPRES Liaison Officers (particularly Oman and Egypt).

## **2.4 Contingency Planning**

Rec. 1. Planned activities include training of the Planning Officers and the development of contingency plans for very large infestations.

Status: EMPRES APO in Yemen is working with EMPRES Liaison Officers to develop such contingency plans at national and regional levels for varying scenarios. This will be a gradual undertaking. Planning Officers have yet to be identified by most of the EMPRES member countries.

## **3.2 Research Program in the Central Region**

Rec. 1. It was requested that Liaison Officers submit initial outlines of research projects to FAO before mid of 1997.

Status: No action. EMPRES has opted to generate a list of research topics that have been distributed among the EMPRES Liaison Officers to determine where potential interests lie. Further discussion later in this meeting.

## **3.3 Information Exchange on Desert Locust Research**

Discussed later in this meeting.

## **4.6 EMPRES Central Region Steering Committee**

Discussed later in this meeting.

**EMPRES CENTRAL REGION  
1997 WORKPLAN**

**EMPRES LIAISON OFFICERS MEETING  
CAIRO, 23-25 SEPTEMBER 1997**

This workplan will be updated at each future EMPRES Liaison Officers Meeting in view of the fact that most EMPRES activities are dynamic and extend from year to year. The general headings of the workplan, however, must remain unmodified as they appear in the EMPRES Program document.

**1. Coordination of EMPRES Activities**

**1.1 Establishment of EMPRES field unit**

Addition of NPO-Training will be sought. Also, recruitment of an international staff will likely be completed prior to the end of 1998 on Netherlands contribution for strategy development. There is a possibility of adding an APO either in 1998 or 1999 to follow through with the work of the current APO.

**1.2 Regional coordination of EMPRES activities**

1.2.3 Agreement to use the TCDC scheme for EMPRES consultancies (outstanding only in Egypt).

1.2.2 Legal EMPRES agreement to be completed in Egypt, Oman, Djibouti, and Saudi Arabia.

**1.3 Coordination with relevant activities of other organizations**

EMPRES staff will explore collaboration with other relevant projects.

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

It is planned to hold a stakeholders meeting as an informal gathering in November 1997 and to invite all Central Region and donor country representatives to establish the composition and function of the EMPRES Central Region Steering Committee.

**1.5 EMPRES Liaison Officers Meeting**

Tentatively to be held in August 1998.

**2. Improved Survey and Early Warning**

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

2.1.1 Access of information from outside the plant protection services. Systems monitoring reports will be prepared by Djibouti, Saudi Arabia, Oman, and Somalia in addition to those prepared or in preparation by Egypt, Yemen, Ethiopia, Sudan, and Eritrea. The reports from Egypt, Yemen, Sudan, Ethiopia, and Eritrea will be compiled by a regional consultant. The reports from Saudi Arabia, Oman, Djibouti, and Somalia will be addressed in 1998.

2.1.2 Evaluation of satellite vegetation maps (Eritrea - ground truthing and use of corrected images; Sudan, Ethiopia, Saudi Arabia, Egypt - investigate possible use of uncorrected images).

2.1.3 Oman to assign expert for data processing, FAO to arrange training, software and communication link to satellite receiving station.

2.1.4 FAO and the Central Region Commission to arrange for a workplan to determine and address remote sensing, survey, and meteorological concerns and needs in an integrated fashion.

## **2.2 Improving survey operations**

Identification and construction of best fit survey networks and technologies. This will involve initiation and continuation of research and training activities in this area. EMPRES will determine, in consultation with the EMPRES Liaison Officers, the best fit modalities for establishing survey networking.

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

Country-specific analysis of survey procedures; study on swarm location/tracking.

## **2.4 Support survey operations when required**

Activities to 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 neighboring 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. Liaison Officers for Egypt and DLCO to take a lead role in coordinating this action. Completion expected by end April, 1998.

## **2.5 Promoting the learning process during survey operations**

Ongoing.

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

Survey data storage and exchange (FAO to provide training on the use of software).

## **2.7 Improve national forecasting activities**

No activity planned. Forecasting will remain the responsibility of the FAO Forecasting Unit in Rome.

# **3. Regional Information Exchange System Linked to FAO Headquarters**

## **3.1 Design of communication network**

Activity completed. Maintenance of communication network remains as an ongoing task.

## **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**

### **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.

### **4.2 Training on control operations**

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

- 4.2.1 Saudi Arabia - planned for October 1997, Sudan planned for November 1997, Egypt will be done unilaterally by the Egyptian MoA with EMPRES assistance as requested, Oman to be planned still.
- 4.2.2 Monitoring that participants of the workshop are using and disseminating the procedures which were taught in the workshop.
- 4.2.3 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., has been completed. Follow-up on the use of this form, and the application of the data generated is required.
- 4.2.4 Identify and purchase of essential equipment items for spraying operations.
- 4.2.5 The satellite navigation system for spraying operations will be tested in the region.
- 4.2.6 EMPRES will detail activities and formulate indicators of progress on control activities in consultation with the EMPRES Liaison Officers.

### **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.

### **4.4 Monitoring efficacy of control operations**

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

Spray forms to be distributed and reviewed by all EMPRES Liaison Officers and to be implemented by national control teams. Protocol for ensuring use of these forms will be established by EMPRES.

### **4.5 Adapting control procedures by learning**

Ongoing.

### **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 EMPRES Liaison Officers. The feasibility of upgrading a regional residue analysis laboratory or using other laboratories in the region will be studied.

## **5. Improved Methods and Strategies for Desert Locust Management**

### **5.1 Analysis of impact of control operations**

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

### **5.2 Collection of field data**

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

### **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.

### **5.4 Supporting field research in traditional locust breeding areas**

The EMPRES 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 Regional 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 honeybees, will be initiated by EMPRES and national staff.

### **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 EMPRES Liaison Officers.

### **5.6 Workshops reviewing survey and control operations**

Ongoing.

## **6. Rapid Deployment Plans and Contingency Arrangements**

### **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 EMPRES Liaison Officers and other national staff).

### **6.2 Establishment of strategic stocks of equipment and supplies**

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