Emergency Prevention System

for Transboundary Animal and Plant Pests and Diseases

EMPRES

(Desert Locust Component)

Central Region

Report of the Evaluation Mission

May 2004

Preface

This report represents the views of the independent Evaluation Mission[1] on the performance and achievements of the EMPRES (Desert Locust Component) Central Region Programme (EMPRES/CR). The programme began its first phase in 1997; the second phase began in January 2001 and was scheduled to end in December 2003. The present evaluation focuses on this phase of the programme. The Mission took place from 24 February to 10 March 2003; three EMPRES/CR countries were visited (Egypt, Eritrea, and Sudan[2]).

The evaluation was initiated with a view to providing donors, collaborating agencies and countries as well as FAO with an independent and objective assessment of the current status of implementation of the project, including a review of problems faced. A summary report based on the debriefing document prepared by the evaluation mission was presented to the EMPRES/CR Planning Workshop in May 2003; the present full version of the report contains extended discussions of issues and recommendations identified by the evaluation mission members[3].

Time limits and a reduced number of countries to be visited constrained the Mission's work: a shortcoming that could partly be offset by a study of the extensive documentation available. In addition, a questionnaire was sent out to participating countries and partner/donor institutions. The responses have further informed the Mission's conclusions and recommendations.

The Evaluation Mission was most appreciative of the efforts made by the staff of AGPP, the EMPRES/CR staff and collaborators in the countries visited, as well as a range of other individuals who provided information and discussed issues in a frank and constructive manner.

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May 2004

[1] Bernd Bultemeier (Team Leader - FAO Evaluation Service); Peter Gruys (Plant Protection Consultant); Graeme Hamilton (Locust Consultant)
[2] The mission faced several constraints: Yemen could not be visited due to security concerns, but Yemeni staff came to meet the Mission in Cairo. The visit to Eritrea was cut short due to flight delays. The newly-recruited international EMPRES staff member was absent during the Mission on compassionate leave, but it was possible to speak to him at length by telephone.
[3] The report thus reflects the situation up to May 2003.

Table of Contents

List of Acronyms

AELGA	Assistance for Emergency Locust and Grasshopper Abatement (USAID)
AGP	Plant Production and Protection Department (FAO)
AGPP	Plant Protection Service (FAO)
APO	Associate Professional Officer (FAO)
CFP	Country Focus Programme
CLCPANO	FAO Commission for Controlling the Desert Locust in North West Africa
CLCPRO	FAO Commission for Controlling the Desert Locust in the Western Region
CRC	FAO Commission for Controlling the Desert Locust in the Central Region
CRT	Cooperative Research Team
CTA	Chief Technical Adviser
DGIS	Directoraat Generaal voor Internationale Samenwerking (Directorate General for International Cooperation)
DGPS	Differential Global Positioning System
DL	Desert Locust
DLCC	Desert Locust Control Committee
DLCO-EA	Desert Locust Control Organization for Eastern Africa
DLIS	Desert Locust Information Service (FAO)
DLTG	Desert Locust Technical Group (of DLCC)
DLU	Desert Locust Control Unit (National)
ELO	EMPRES Liaison Officer
EMPRES	Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases
EMPRES/CR	EMPRES Central Region Programme
EMPRES/WR	EMPRES Western Region Programme
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
GIEWS	Global Information and Early Warning System
GIS	Geographical Information System
GOE	General Operating Expenses
GPS	Global Positioning System
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
HF	High Frequency (Radio transmission of information)
HQ	Headquarters
ICIPE	International Centre for Insect Physiology and Ecology, Nairobi
IGR	Insect Growth Regulators
LOCDAT	Desert Locust Database (developed by GTZ)
LOCUSTOX	Project on Environmental Impact of Locust Control, Dakar
LUBILOSA	Locust Biological Control Project (Benin)
MoA	Ministry of Agriculture
MoU	Memorandum of Understanding
MPG	Locusts and Other Migratory Pests Group (in FAO AGPP)
NDV	Normalized Differential Vegetation Index
NGO	Non-Governmental Organization
NPO	National Professional Officer
NRI	Natural Resources Institute (UK)
OiC	Officer-in-Charge
PBE	Office of Programme, Budget and Evaluation
PD	Programme Document
PID	Programme Implementation Document
PIM	Programme Implementation Matrix
PPD	Plant Protection Department/Division/Directorate
PPM	Project Planning Matrix
PWB	Programme of Work and Budget (FAO)
RAF	Regional Office for Africa

RAMSES	Reconnaissance and Management System of the Environment of Schistocerca (database developed by NRI in collaboration with FAO)
RNE	Regional Office for the Near East (FAO)
RP	Regular Programme (FAO)
SFO	Senior Field Officer
SPFS	Special Programme for Food Security (of FAO)
SWOT	Strengths, Weaknesses, Opportunities, Threats
TCDC	Technical Cooperation among Developing Countries
TCP	Technical Cooperation Programme (of FAO)
TF	Trust Fund
TOR	Terms of Reference
ULV	Ultra Low Volume
UNV	UN Volunteer
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
WAU	Wageningen Agricultural University (now Wageningen University)

Executive Summary

The FAO Council approved the EMPRES (Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases) Programme in mid-1994 as a Special Programme of the Director-General, to strengthen the emergency prevention capacity in countries affected by transboundary pests and diseases. EMPRES/CR, the EMPRES component for the Desert Locust (*Schistocerca gregaria*) in the Central Region (the Red Sea area[4]), completed its first phase at the end of 2000[5] and is now in Phase II, which will end in December 2003. Phase II has been financially supported by FAO Regular Programme funds together with Trust Fund projects financed by the Netherlands (GCP/INT/670/NET), Switzerland (GCP/INT/817/SWI), the United States of America (GCP/INT/720+757/USA), the Commission for Controlling the Desert Locust in the Central Region (MTF/INT/007/MUL), the Desert Locust Control Committee (DLCC - MTF/INT/008/MUL) and Sweden (in the form of an Associate Professional Officer). The overall amount available for Phase II is an estimated US$ 4.4 million. In addition, the programme has benefited from bilateral support from Germany, Netherlands, Sweden and the United Kingdom.

EMPRES/CR's primary goal is "to minimize the risk of Desert Locust plagues emanating from the Central Region of the Desert Locust distribution area through well-directed surveys and timely, environmentally sound interventions in order to mitigate food security concerns in the Central Region and beyond". This goal was translated (in a participatory process involving the EMPRES/CR locust-affected countries, donor representatives, and FAO staff) into eight results areas to guide the implementation of Phase II: (1) Operational mandate of different regional organizations in Desert Locust management harmonized; (2) National and regional communication networking enhanced; (3) Desert Locust early warning and information systems improved; (4) Desert Locust survey procedures of the member countries improved; (5) Desert Locust technicians and officers qualified; (6) Contingency plans available and implemented; (7) Efficient and environmentally safer control methods introduced; and (8) Systematic methods of campaign evaluation developed.

The EMPRES/CR programme has been evaluated twice since its inception: in 1999 and 2001. The current evaluation confirms some of the conclusions brought forward then, in particular the finding that the governments of the EMPRES/CR countries continue to regard the preventive control of the Desert Locust as a high national priority. Financial resources allocated by governments to their locust programmes have in all likelihood risen since the last evaluation, albeit not uniformly in all countries. Likewise, regional collaboration in the form of joint surveys has increased among countries, communication channels have improved as well as planning and management of DL survey and control campaigns.

Other important results achieved during Phase II include:

- regular and close collaboration between EMPRES/CR and the FAO Commission for Controlling the Desert Locust in the Central Region (CRC[6]);
- CRC membership now comprising almost all EMPRES/CR countries;
- exemplary work planning and reporting routines by EMPRES/CR programme management, which have increased transparency and accountability for member countries and donors alike;
- Improved technical/administrative support from AGPP[7];

[4] Participating countries are Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan and Yemen.
[5] Excluding bilateral contributions, funding for EMPRES/CR for Phase I amounted to approximately $US 5.5 million through FAO Trust Fund projects, Regular Programme and FAO Central Region Locust Commission (CRC) funding for the period 1997 to 2000.
[6] CRC, as a permanent institution, would be expected to coordinate DL activities in the post-EMPRES/CR phase.

- RAMSES (Desert Locust Data Management System) fully functional in Eritrea, Ethiopia, Sudan and Yemen and its installation under way in Oman and Saudi Arabia; in addition, apart from provision of other needed equipment, EMPRES/CR has facilitated the installation of eLocust for wireless field data transmission;
- promotion and gradual introduction of environment-friendly control agents such as Metarhizium and PAN, research towards improved DL control strategies, and experiments with superior equipment (Differential GPS) which will significantly improve control efficiency and thus reduce environmental damage;
- preparation of a training manual and standard training materials package, and the initiation and implementation of comprehensive as well as differentiated training programmes; and
- creation of a cadre of national (master) trainers that can pass on their know-how to a larger number of DL staff.

These developments are seen as significant steps towards the development of a sustainable preventive control effort. However, the results achieved by countries vary - some are wholly committed to the EMPRES approach, while others have embraced only parts of the EMPRES approach. Thus, not all components of a preventive desert locust management system in the Region will be in place at the end of Phase II.

Progress has been limited particularly in three areas:

- the regional research component of EMPRES has fallen short of expectations, partly due to staffing issues within the Programme, partly due to the limited number of research proposals of acceptable quality;
- the approach taken to studying the socio-economic impact of DL and its control has been disappointing: several contributions made under the umbrella of EMPRES/CR have been written from a perspective which discounts preventive DL control, and thus tends to undermine EMPRES/CR's core mandate; and
- management systems to support and verify best practices for survey and control in the field are not yet sufficiently established.

Other constraints faced by EMPRES/CR include the fact that, in the absence of significant DL populations during the current recession phase, several EMPRES/CR countries find it difficult to justify maintaining dedicated resources for locust control when faced with other pest and disease problems, and against a background of limited budgets. There is the prospect that if the current recession was prolonged, national governments would move resources elsewhere to tackle more immediate problems. Furthermore, the successful conclusion of the EMPRES programme depends on the availability of future donor funding. Going by the (mostly unenthusiastic) indications received from current EMPRES/CR donors, it appears that some components of the international donor community no longer view preventive control of Desert Locust as a high priority. Some potential new donors, on the other hand, have indicated their possible support for future EMPRES/CR activities.

Overall, the mission is of the opinion that sufficient progress has been made to warrant an extension of the programme to a third phase (for a duration of three years), which would address unfinished Phase II components within the overall objective of establishing a sustainable locust management system for the Central Region.

The preparation for Phase III, and in particular for the Planning Workshop in May 2003, should be of highest priority for EMPRES/CR. EMPRES/CR member countries as well as EMPRES/CR, CRC and FAO-AGPP should review their current and future needs, and

[7] (operationally, designating the positions of Programme Support Officer and Operations Clerk; technically, strengthened inputs made to improving survey in the CR)

develop proposals (for country as well as regional-level activities) to be discussed at the Planning Workshop. In view of the uncertain funding situation, the proposals should state which elements of preventive DL control can be undertaken by the countries themselves, and in which areas further external support would be required. In addition, the proposals should differentiate between a minimum and a desirable funding scenario (funding necessary to ensure basic functioning, and funding needed to build up needed capacity and/or develop more efficient approaches). Furthermore, proposals should be developed following a modular approach, which would allow potential donors to associate themselves with a specific part of the programme.

The Mission is of the opinion that the EMPRES/CR countries should be encouraged to consider the potential value of extending the EMPRES approach to the management of other plant pests and diseases of national importance: national contingency plans developed with EMPRES/CR support could thus cover several potential pest and disease emergencies and allow resources to be optimally allocated among them. Nevertheless it was recognized that an extension has to be handled with great care, as any encroachment for other pests on a minimal Desert Locust survey capacity could allow an outbreak to go unnoticed, as has happened in the past. At the same time, EMPRES/CR needs to assert its raison d'être: the negative tenor of the socio-economic studies undertaken so far needs to be put in perspective by EMPRES/CR embracing a more holistic view (i.e. going beyond individual farmers and localized perspectives) when analysing the costs and benefits of preventive locust control as against the much higher costs of emergency control operations. The results of an appraisal of existing studies, and new studies if necessary, should eventually lead to a better recognition of EMPRES/CR's contribution to Food Security, and re-align the EMPRES/CR approach with other initiatives in the fields of disaster mitigation and rehabilitation.

Conclusions and Recommendations

General

The development goal of EMPRES/CR, revised in 2000, remains relevant and appropriate. Phase II of EMPRES/CR has performed well in most areas with progress made toward achievement of the programme goal and the purpose of the phase. Variable progress has been made in the eight result areas, and in the nine countries, such that not all components of a preventive desert locust management system will be in place at the end of Phase II (December 2003). However, sufficient progress has been made to warrant extension of the programme to a third phase where unfinished Phase II elements would be implemented concurrently with Phase III. Broadly stated, the purpose of Phase III should be to establish a sustainable locust management system for the Central Region.

Recommendation: EMPRES/CR should continue to a third phase commencing January 2004 for a duration of three years. At the end of the second year, another evaluation mission should be carried out to assess if Phase III is going to achieve its final objectives by the end of the third year.

Project sphere

Project design

The programme planning and implementation documents for EMPRES/CR are comprehensive and of high quality, although in some instances more quantitative performance indicators and actual outputs could have been incorporated into the overall programme work plan. (But as the work plans are the outcome of participatory workshops, some formal imperfections have to be expected.) The institutional arrangements adopted for Phase II also clarified the position of EMPRES/CR's planning and oversight bodies: the composition as well as mandate of the EMPRES Liaison Officers Meeting is now distinct from that of the Consultative Committee Meeting. At the global level, however, arrangements seem to have remained vague regarding the internal EMPRES Steering Committee in FAO HQ and its mandate.

Technical and operational backstopping

The complex nature of EMPRES/CR has placed a significant workload burden on AGPP in recent years. Currently one senior AGPP technical officer, among many other duties, acts as the focal point for EMPRES/CR and is budget holder for the TF projects supporting the programme: a substantial workload in itself. To continue the momentum created by EMPRES/CR after the end of the next phase, it may be necessary to strengthen the technical and conceptual capacity of AGPP (Locusts and Other Migratory Pests Group) to provide continued backstopping, and visibility vis-à-vis donors.

Feedback on, and appraisal of, individual EMPRES/CR staff members could have been better: the Mission learned that Performance Appraisals Reports (as per FAO regulations) have not been consistently applied. This could be one reason why the research component of EMPRES/CR has remained inactive for a relatively long period.

Continuing input from AGPP will be needed to achieve effective, long-term locust management in the Central Region, but particularly during Phase III. Coordination of EMPRES-DL activities overall, after the end of Phase III of the Central Region Programme, would be more effectively handled by an AGPP officer, stationed in Rome, acting as a support for the Secretaries of the Regional Commissions.

Recommendation One: FAO should follow its standard practice of regular performance appraisals for programme personnel.

Recommendation Two: By the end of Phase III AGPP should establish, within the Locusts and Other Migratory Pests Group, a part-time role for one officer of EMPRES Regional Programmes Coordinator to assist the Commission Secretaries with coordination and provide the main link to AGPP services such as technical backstopping and concept development

Recommendation Three: Future international support to the EMPRES approach after the actual programme has ended should be given through the DLCC, with its secretariat (i.e. FAO's Locusts and Other Migratory Pests Group) as the proactive focus of technical and conceptual innovation. FAO should assess the needs of future international technical and conceptual support to post-programme EMPRES developments, in relation to the workload of the Locusts and Other Migratory Pests Group, also considering possible greater use of external inputs, for instance through the DLTG, as an alternative to HQ staff increase.

Project management

Management and administration of the EMPRES/CR programme has been of a high standard. Work planning and reporting routines are exemplary, and generally programme management attempts to involve ELOs in planning and decision-making.

Results sphere

Desert Locust survey procedures of the member countries improved

EMPRES/CR technical assistance has helped countries to improve their capacities. Survey procedures are assessed to be essentially in place and functioning in Sudan and improving in Eritrea, but Saudi Arabia and Yemen are still considered to be below satisfactory levels. Most of the remaining countries are considered to be functioning at a basic level of monitoring (sometimes depending on outside funds).

Recommendation: Good surveys are at the heart of any preventive locust programme. EMPRES/CR must continue to support the introduction and improvement of regular and rational survey routines, and lobby for sufficient resources to be dedicated to the task.

Desert Locust early warning and information systems improved

Satellite imagery depicting vegetation condition has shown promise for a number of years but has not been used in desert locust operations. Spot-VT imagery has been groundtruthed in Sudan and Yemen and local staff reported favourably on their experiences suggesting that an experienced officer could ignore false positives. However, higher resolution data may be necessary to identify specific habitats.

The rapid capture and communication of accurate information is essential if LCUs, the CRC and AGPP are to respond appropriately to locust outbreaks. The mission views RAMSES as a potentially valuable tool for decision support in LCUs.

It is possible to imagine RAMSES developing into a useful decision-support tool by allowing LCU staff to consider timely information on locust abundance, rainfall and vegetation condition. Several planned enhancements would help it achieve its potential including: viewing SPOT-VT data, historical data, and development of a locust breeding habitat coverage. However, care must be taken to ensure LCU staff are fully trained and confident in the technology.

There are some concerns in the way the new technology is being supported. Modifications to RAMSES rely on an ex-NRI staff member who may not always be available in the future. AGPP should ensure RAMSES is well documented and all programming is written in a consistent way to ensure that another competent ArcView programmer could carry on the work. Also there could be delays in technical support reaching a country largely as it relies on a visit from AGPP staff.

The eLocust system could significantly improve the accuracy, timeliness and efficiency of data transfer. The manual recording system shown to the Team in Sudan is laborious, error prone and could be ineffective if many field teams were operating simultaneously. Unfortunately eLocust has not operated in Sudan since it was installed in November due to technical (configuration) problems. This does highlight the need for comprehensive training and technical support of unfamiliar technology.

Recommendation One: AGPP must ensure technical support is available to enable regional countries to use new technology with confidence.

Recommendation Two: While it is desirable to install RAMSES in all EMPRES/CR countries by the end of Phase III it would be preferable for a smaller number of critical countries to be making full use of the technology as a first step. Further enhancements to the technology should be made.

Recommendation Three: Further plans to groundtruth SPOT-VT data and view them under RAMSES are fully supported; the use of high resolution data should be assessed vis-à-vis the technical and budgetary requirements.

Resources

Several of the EMPRES/CR countries find it difficult to justify maintaining dedicated resources for locust control when they are faced with other pest and disease problems during a locust recession, and against a background of small department budgets. There is a significant risk that if the current recession was prolonged, national governments would move resources elsewhere to tackle more immediate problems. However, in reality it is possible to maintain an acceptable level of preparedness with only a small number of well trained staff. Another threat occurs with the seemingly high turnover of senior management who may need persuading of the need to maintain a capability for locust operations.

Recommendation One: By the end of Phase III all EMPRES/CR countries, as part of their Country Focus Programme, should have identified in their National Contingency Plan, the minimum resources they need in order to maintain an adequate level of preparedness, and the procedures for rapidly mobilizing additional resources during and outbreak.

Recommendation Two: The possibility of transferring the post of Professional Officer for survey from EMPRES to the CRC secretariat in Cairo at an appropriate moment before the end of the EMPRES programme and its funding should be considered by the CRC and FAO. In the future, regional support needed by national locust units could and should be provided through inter-country collaboration, with an organizing role by the CRC.

Desert Locust technicians and officers qualified

The project has followed a systematic training approach in Phase II. The training of Master Trainers has made an important contribution of the regional skills base. There appear to be enough Master Trainers for the time being, though there will be a need for future training to refresh and improve their knowledge and skills. During Phase III the impact of this approach

to training should be assessed with the Master Trainers given every encouragement to train local staff and for them to give feedback to EMPRES.

Recommendation One: The Master Trainers should become the main vehicle for the delivery of training to LCU staff with EMPRES/CR staff and the CRC playing a support role.

Recommendation Two: Master Trainers and ELOs should share their knowledge and experiences through email and the Internet; CRC and/or AGPP should facilitate the use of their websites to upload relevant documents and correspondence.

DL Diploma Course

It is difficult to assess the value returned from the University of Khartoum Diploma in desert locust control. This would not be a problem were it not for the relatively high cost to the EMPRES budget. The course curriculum appears to be suitable and the field component relevant to the education level and training needs of the students. The course requirements should be changed to allow use of Arabic in formal assessments. Also, some concerns were raised with the team over: the length of the course, the quality of the reports, and the perceived lack of recognition by member countries.

Recommendation One: The University of Khartoum and the EMPRES/CR Coordinator should review the Diploma course with a view to ensuring the course structure and content are aligned with regional training needs. Assistance from an external professional trainer experienced in similar training could be of help.

Recommendation Two: A visit to DFPV (Département de Formation en Protection des Végétaux) of AGRHYMET in Niamey, Niger and/or a mission for this purpose by the director of DFPV to Khartoum would help to further optimize the course. DFPV was created in the early 1980s to train technical level staff of PPDs of the nine Sahel (CILSS) countries through a two year course, in French, in all aspects of plant protection (including locust control) and has done so very successfully.

Contingency plans available and implemented

It is unrealistic to expect that countries acting independently can control their own outbreaks and prevent them expanding into upsurges, especially if an outbreak is spread over a large area. They do not have the resources to respond rapidly or effectively enough to achieve this. On a regional level the aim should be to prevent upsurges which threaten several countries at the same time. It is anticipated that AGPP will continue to have the main role in ensuring that financial and technical resources are available to contain outbreaks and upsurges that pose a regional threat.

A cohesive regional contingency plan should be developed for outbreaks that are too large or appear too rapidly to be contained by national LCUs. The regional plan would define roles and responsibilities of all players: AGPP, CRC, and member countries, and the procedures to be followed, to enable an effective international response, including the access to donor funding. The team notes some initial progress has been made toward developing this regional plan, but the subject requires much more attention before a satisfactory level of preparedness is achieved.

Recommendation: Once implementation of a CFP is complete, the level of preparedness of a country needs to be assessed through an annual review involving EMPRES/CRC staff.

Recommendation: A draft regional contingency plan should be developed to enable all parties to identify the elements needed for an effective international response to upsurges.

Efficient and environmentally safer control methods introduced

In drafting improved control strategies, use should be made of experience existing elsewhere, through appropriate consultancies. If campaigns are mounted, parallel to control operations, independent appraisals of control effectiveness would be essential. This would be opportunity to bring in an experienced locust specialist, who could also work with the project on improved control strategies. Obviously, locust outbreaks would be needed for the operational tests, but indispensable preparatory work could well be done during recessions.

Recommendation: It is recommended that the work on developing improved control operations be continued, but under a different, strongly field-oriented and operational approach. This should include external consultancies, and if the situation warrants it, there will be a need for a professional locust officer to verify the effectiveness of control operations.

Regional research

For several reasons the regional research component of EMPRES has fallen short of expectations. Admittedly there have been staffing issues, and the locust recession has not provided many research opportunities. However, it is a concern that the coordination of research activities was allowed to remain weak for an extended period. It is also a concern that recently few proposals for research grants were of acceptable quality.

Funding for research may be limited in Phase III and so only the most critically important research projects should be guaranteed EMPRES/CR support. Some of the research needs already identified and progressed are discussed below.

It seems valuable to take stock of the current state of our knowledge on the desert locust and its control and how this knowledge has been progressed by the research component of EMPRES/CR in the first two Phases. From this assessment research priorities should be re-defined and the research effort during Phase III aligned with the priorities.

Recommendation One: The DLCC Technical Group should meet as scheduled in June 2003 to assess research undertaken during Phases I and II, and to identify critical research needs to Phase III.

Socio-economic impact studies

The approach taken to studying the socio-economic impact of the desert locust and its control has been disappointing. The view that the justification for locust control is self evident does not appear to be universally held. Unfortunately the studies undertaken so far have been either too academically oriented, too limited in scope or too subjective, to satisfactorily address the issue. However, that is not to say their conclusions are wrong, rather they are potentially misleading.

The longer the question of justifying locust control remains unresolved the more damage could be done to the perceptions of the donor community, and within FAO, to the value of EMPRES-DL. AGPP does not seem to have done enough to engage donors in a dialogue that seeks to align the objectives of EMPRES-DL with donor priorities.

Recommendation One: EMPRES and AGPP should develop a discussion paper that will take a more holistic approach to the question of the costs and benefits of locust control. These should be considered across the spectrum of economic, environmental, social and political issues. The paper should use existing information and canvas a wide range of opinions and present these in a balanced and unbiased way.

Recommendation Two: AGPP should use this discussion paper to provide the basis for a reasoned approach to the engagement of the donor community on the question of the alignment between the need to improve desert locust management and the donors' development aid priorities.

Increasing control efficiency, avoiding environmental damage

EMPRES-DL was kick-started by concerns over the financial and environmental costs of controlling the 1980s plague. A number of new control agents and application technologies have the potential to dramatically reduce these costs.

Recommendation One: EMPRES-funded research should continue into control agents, both chemical and non-chemical, not currently in operational use, and into improved application techniques. Research should also continue into the environmental impacts of the new technologies and approaches.

Recommendation Two: It is recommended that the work on developing improved control strategies be continued, but under a different, strongly field-oriented and operational approach. Consultancies of APLC staff to the third phase of EMPRES are recommended to support the proposed work on improved survey and control efficiency. Likewise, EMPRES in its third phase will need a professional locust officer to run the proposed project on improved survey and control efficiency.

Guiding research

AGPP cannot hope to maintain adequate technical skills in-house considering the range of activities where backstopping is needed. Backstopping needs will extend beyond the end of Phase III, and AGPP should look to use other sources and to make full use of the DLCC Technical Group both in and out of session.

Recommendation: The Locusts and Other Migratory Pests Group should reconsider its approach to providing technical support for the Commissions and their member countries. It should endeavour to use existing sources such as the DLCC Technical Group to greater effect, as a way of harnessing external technical expertise.

Campaign evaluation

Crucial to EMPRES is the objective of improving the effectiveness and efficiency of locust control. Such improvements must be measured through monitoring and evaluation but how this should be done on the level of a control campaign has proven difficult to define. Part of the problem is the rather intangible questions of: "what is the infestation size"?" and "what would have happened without control?

Recommendation: A range of mechanisms, preferably centred around RAMSES, must be developed in Phase III. These mechanisms should be able to quantify the effectiveness and efficiency of campaigns, and so demonstrate the impact of improvements triggered by EMPRES-DL.

Collaboration with relevant bilateral projects

Bilateral contributions of donors through their own projects were useful and appreciated. In particular the contribution by the bilateral GTZ project (housed in FAO's Regional Office) has been crucial in supplying necessary equipment, and supplementing the expertise available. However, the GTZ expert in Cairo will leave much sooner than planned, in April 2003 instead

of at the end of 2003. For other bilateral activities under the EMPRES/CR umbrella the mission had the impression that national staff in some cases were only vaguely informed of the results of research being conducted in their country or neighbouring countries and their possible applications.

Recommendation One: The design of bilateral contributions to EMPRES should be fully integrated in the EMPRES planning process, and reports on their results, with comments on possible practical applications, should be provided timely to other EMPRES parties.

Recommendation Two: EMPRES/CR staff and collaborators should be kept informed through the FAO Representatives on the possibilities for funding of certain national EMPRES needs through donor embassies.

Recommendation Three: EMPRES/CR should engage in talks with GTZ to ensure that the budget earmarked for support to EMPRES/CR in 2003 stays with the programme.

Extending the EMPRES approach

EMPRES is an approach (or concept) to the prevention of pest and disease emergencies through the improvement of preparedness and early action. The desert locust is the first, but by no means the only, such problem in the region for which this approach could be adopted. For example, pests such as armyworm, Quelea birds, and grasshoppers move between countries, and across boundaries within them. For these pests, the EMPRES approach may assist improve the effectiveness and efficiency of resource use.

Many of the skills and resources needed to manage locusts could be more generally useful in pest management. One way to maintain the improvements in national capacity for locust control achieved through EMPRES/CR, such as improved information systems, would be to encourage countries to adapt the EMPRES approach to pests and diseases of national importance. In this way national contingency plans would cover several potential pest and disease emergencies and allow resources to be optimally allocated among them.

Recommendation: CRC countries should be encouraged to adopt the EMPRES approach to improve their preparedness and response to a range of pest and disease problems.

The way forward

Sustainability and follow-up

The objectives of Phase II of EMPRES/CR have partly been achieved and overall progress has been satisfactory. Setbacks have been experienced due to adverse policy decisions (e.g. decentralization of all national plant protection activities, non-availability of allocated budgets) and other factors (e.g. staff constraints). The emphasis of the current phase has rightly been on consolidating the DL preventive control systems within national LCUs.

The main challenge of Phase III will be to maintain the momentum of the programme in those countries where good progress has been made, and to prepare for the transition from a programme mode to a more permanent approach, by giving increased responsibility to the CRC (as a permanent institution serving its member countries) and the EMPRES/CR for the organization of a regionally coordinated preventive DL control system. This will require considerable effort from EMPRES/CR and AGPP management.

At the end of Phase III, the CRC, with the consent of its member countries, should have the primary role for ensuring the sustainability of the Central Region desert locust management system. That is, the CRC would be given the responsibility for supporting member countries

to build and maintain their locust preparedness and emergency response capability. With its current level of resources the CRC could not fulfil this role. It will take time to develop the capabilities of existing staff, and to identify and recruit other support staff, to provide some of the technical support currently provided by EMPRES staff. CRC should take over as much of the EMPRES/CR role, as early in Phase III as practicable to enable problems to be identified and solved well before Phase III ends.

This course of action is predicated on the member countries assuming ownership of, and responsibility for, the CRC. They must demonstrate this by fulfilling their financial commitments to the CRC, engaging fully in decision making, and implementing components of EMPRES at the national level. Additionally the one EMPRES/CR country still not a CRC member, Eritrea, and Somalia when its political system stabilizes, should be members of the CRC. Once the CRC secretariat will have taken over responsibility for following up on EMPRES, reviewing and steering of the CRC's activities in this respect will be a task of the FAO Commission for Controlling the Desert Locust in the Central Region. No donors from outside the Region are represented in that Commission.

The successful launch of Phase III, and indeed the longer-term future of the EMPRES approach, will depend on two factors:

- Demonstrated commitment by countries to the concept of EMPRES; and
- Future donor funding to assist with the control of large outbreaks and to prevent upsurges spreading out into neighbouring countries.

The Planning Workshop scheduled for May 2003 will be a crucial event in this regard, and requires careful preparation by EMPRES/CR, CRC, FAO-AGPP as well as the member countries themselves.

Recommendation One: The EMPRES/CR Consultative Committee and CRC should agree that the CRC be given the primary role for ensuring the sustainability of the regional desert locust management system, and that the transfer of responsibilities and activities should be a primary goal of Phase III. Also the member countries should be encouraged to show their full commitment to the CRC.

Recommendation Two: Since donor involvement in locust outbreaks/upsurges in the future is conceivable, FAO and the CRC should investigate how continuing donor involvement in Desert Locust preventive control could be arranged after the end of the EMPRES programme, for example by routinely inviting donors to CRC sessions and through regular information updates.

Recommendation Three: The implementation approach of Phase III should focus on: (i) strengthening organizational structures (national locust units as well as the CRC; regarding the latter, the CRC should progressively take over now performed by the EMPRES/CR management), (ii) follow up on technical aspects of locust management (such as support for the introduction of improved survey methods and early warning systems, increased use of RAMSES and eLocust, better control strategies and techniques, regular training schedules, introduction of satellite images, as well as strengthening the technical and conceptual role of the Locusts and Other Migratory Pests Group in FAO HQ), and (iii) support to operational research programmes/projects (such as research on Metarhizium and PAN, application technology, and on systematic methods of campaign evaluation). Country Focus Programmes (near completion only in Sudan) should continue to be used to bring organizational, technical and research elements together in a country context. The present predominance of administrative burdens connected with arranging and preparing various EMPRES meetings, and producing reports after them should be reduced in favour of enhanced field activities.

A. INTRODUCTION AND BACKGROUND

The FAO Council approved the establishment of the EMPRES (Emergency Prevention Systems) Programme in mid-1994 to strengthen the emergency prevention capacity of countries affected by transboundary pests and diseases.

In the late 1980s and early 1990s, the international community had been clearly reminded of the capacity of the Desert Locust (Schistocerca gregaria) to exploit a sequence of favourable environmental conditions and develop rapidly as a major transboundary pest. The resurgence of Desert Locust activity the late 1980s and early 1990s resulted in large-scale emergency control operations which required substantial human and financial resources from both locust affected countries and the international donor community.

This dramatic resurgence of the Desert Locust to plague proportions also highlighted the general decline in the early warning, survey and control capacities and capabilities of many national and regional plant protection organizations in the recession area. This decline had occurred during the prolonged recession period between the late 1950s and the 1980s. The Desert Locust outbreaks and plagues of the 1980s and 1990s, together with other agricultural emergencies such as the outbreak of Screw Worm in Africa in the late 1980s, in many ways acted as a catalyst to the establishment of the FAO EMPRES Programme

Historically the Central Region, comprising those countries along both sides of the Red Sea coast, has been a frequent source of major outbreaks of the Desert Locust. It was in recognition of the pivotal role the Central Region has often played in the initial stages of the development of major locust upsurges and plagues that FAO decided to initiate an EMPRES Programme for Desert Locust in this region.

In 1994 an FAO Project Formulation Mission produced a project proposal for the establishment of an initial Desert Locust programme in the Central Region (EMPRES/CR). The formulation mission envisaged a 2 to 3-phase programme with each phase of possibly 5 years duration[8]. Phase I of the Programme commenced in the Central Region in 1997 based on an FAO Programme document which was largely based on the report of the formulation mission.

Phase II of the EMPRES/CR commenced in January 2001, taking into account the results of the Phase I evaluation undertaken in mid-1999. Evaluation recommendations were incorporated into the FAO Programme Document for Phase II, which was finalized in February 2000 following a participatory stakeholder workshop.

In 2001 FAO decided to undertake a second evaluation of the EMPRES Desert Locust Programme, to review Phase I in the Western Region and Phase II in the Central Region. Regarding the Central Region, the evaluation mission, among others, concluded that:

- in some countries the development and adoption of systems to implement effective early warning and control of Desert Locust had progressed satisfactorily;
- cooperation between EMPRES/CR and the FAO Regional Commission for the Near East (CRC) had intensified;
- CRC membership was increasing; and
- EMPRES/CR had substantially improved its programme management during the last two years (which was a critical issue identified by the preceding evaluation mission in 1999), in particular through rigorous work planning and enhanced internal monitoring and evaluation procedures.

[8] The Programme Document of October 1995 then anticipated three four-year phases.

B. PROGRAMME DOCUMENTS

B.1 Objectives and Outputs

The original (1995) Programme Document for EMPRES/CR was revised by FAO in February 2000. This document took into account "the experience gained in the first three years of the programme as well as the evaluation of the EMPRES (Central Region) Programme in July/August 1999".

The revised Programme Document (PD) redefined the programme goal as:

"To strengthen the capabilities and capacities of national, regional and international components of the Desert Locust management system to implement effective and efficient preventive control strategies based on early warning and timely, environmentally sound early control interventions."

Four programme components (or outputs) were identified namely:

- To increase the level of coordination of Desert Locust monitoring, survey and control activities in the Central Region by facilitating networking between national, regional and international organizations and by strengthening information exchange systems.

- To establish an improved Desert Locust early warning system based on meteorological, remote sensing and field information capture and analysis.

- To strengthen and improve national preventive control capacities through (a) improved planning, training, provision of equipment and operational resources; (b) the field testing of new control technologies.

- To formulate improvements in the Desert Locust emergency prevention strategy through evaluating the effectiveness, efficiency, economic and environmental soundness of current approaches and new technologies.

In addition, the PD also listed the expected achievements in Phase II (2000-2003) as:

- Survey operations are significantly improved in terms of quality and efficiency;
- The preventive control capacities, especially those in countries needing most urgent strengthening, have been significantly increased through training, equipment and other support;
- Substantial operational improvements have been formulated through analyses, evaluations and research. Some of these operational improvements have been adopted on a trial basis; and
- A concept has been developed for a long-term institutional framework promoting effective preventive control in the region.

Further detail on associated activities, associated milestones or indicators and assumptions by component were provided in the document and in an attached Programme Planning Matrix. As recommended by the 1999 evaluation mission, a participatory planning workshop was held in early 2000 (El Tur, Egypt) to develop programme priorities, the implementation approach and a work plan for Phase II.

The output of the planning workshop was a Programme Implementation Document (PID), which re-stated the purpose of Phase II of EMPRES/CR as:

"Components of preventive Desert Locust control management developed and adopted".

The workshop also elaborated eight result areas which would contribute to the achievement of the purpose. The eight result areas were:

- Operational mandate of different regional organizations in Desert Locust management harmonized;
- National and regional communication networking enhanced;
- Desert Locust early warning and information systems improved;
- Desert Locust survey procedures of the member countries improved;
- Desert Locust technicians and officers qualified;
- Contingency plans available and implemented;
- Efficient and environmentally safer control methods introduced; and
- Systematic methods of campaign evaluation developed.

B.2 Variations between initial and revised Programme Documents

In the revision of the original 1995 PD the overall development goal and the programme goal of EMPRES/CR were reformulated to provide greater clarity and to better reflect the overall direction of the programme. These changes did not significantly change or compromise the nature or scope of the programme.

The original six programme outputs were consolidated into four outputs by the 2000 revision. In general terms this amounted to a re-ordering of activities between the various outputs and did not involve any significant reduction in the actual activities undertaken. For example, Output 3 in the original document (Regional information system) was subsumed into Output 1 (Improved Coordination) in the revised document. Similarly, Output 6 of the original PD identified two activities: (i) the development of national contingency plans for major control; and (ii) the establishment of strategic stocks of pesticide and control equipment. The latter activity was subsequently assessed as not feasible by FAO. In view of this the other activity was subsumed into Output 3 (Improvement of national preventive control capacities).

There were a number of other variations which, by and large, were concerned with according increased or decreased emphasis to some activities. These variations generally reflected experience in the early implementation stages of Phase I and did not result in any substantive changes to the nature or scope of the original design.

Whilst the PID for Phase II of EMPRES/CR is a comprehensive and well articulated document which identifies the key outputs (results) to be achieved it is virtually impossible to relate the logical framework of the document back to the logical framework of the 1995 PD or the revised 2000 PD. However, as Phase I and the earlier part of Phase II have already been evaluated, the current report is mainly concerned with the eight result areas to the outputs defined in the revised PD (2000).

B.3 Indicators, Work plans and Assumption

The revised PD (2000) contained a Programme Planning Matrix which summarized the objectives and provided milestones/indicators by programme component (objective) and by more detailed activities together with assumptions for the whole programme period (1997 to 2009). In addition, the later PID also provided a Programme Planning Matrix for the period of

Phase II (2000-2003) with specific activities and associated milestones/indicators and assumptions related to the eight "results" (outputs).

B.4. Implementation Approach and Sustainability

The revised EMPRES/CR Programme emphasized the inter-regional importance of preventive Desert Locust control. EMPRES/CR's role was defined as strengthening preventive action, through an improved early warning and forecasting system, and through the strengthened capabilities and capacities of the locust control services in the region for monitoring, survey and control. EMPRES/CR thus was to be a provider of training, as well as of some essential equipment to upgrade the capacity of DLUs.

The revised EMPRES/CR Programme Document referred to the many gaps in knowledge regarding Desert Locust ecology and management, as well as to new technologies which could render survey and control strategies more powerful. Finally, EMPRES/CR offered its services for the coordination of bilateral projects, which were complementary to the Programme.

The sustainability of EMPRES/CR's results was to be ensured through regional cooperation, in terms of reinforcement of the regional communication network and improved and regular coordination among EMPRES/CR member countries. The revised PD also explicitly addressed the establishment of a post-EMPRES institutional mechanism for ensuring continuation of a coordinated emergency prevention programme in the Central Region, which was to be ensured through the FAO Desert Locust Control Commission for the Central Region (CRC).

B.5 Institutional Arrangements

EMPRES/CR was designed as an FAO field programme. The Programme is also highly dependent on collaboration between all partners: donors, EMPRES countries and FAO. To a large degree this is also reflected in what might be termed the "cost-sharing" arrangements activities between all the partners involved. The Programme Coordinator, based in the region, has responsibility for general management under the overall supervision of the Senior Officer, Migratory Pests (AGPP) located in Rome. Two other structures are also involved in programme implementation, review and management:

- The Consultative Committee comprising senior representatives from the participating countries, other organizations including DLCO-EA and CRC, donors, AGPP senior staff and the EMPRES Coordinator. The Consultative Committee normally meets annually to review progress, issues and the work plan for the following year; and

- EMPRES liaison officers (ELOs) appointed by participating governments and DLCO-EA who meet normally twice per year with EMPRES and AGPP staff. The role of ELOs is to assist in the planning, implementation and coordination of activities. In addition, ELOs are involved in reviewing priorities and progress and participating in the development of the work plan for the following year.

Previous concerns over the composition of the Coordinating Committee in Phase I appear to have been largely resolved with national representatives generally comprising higher level PPD officials. The institutional arrangements adopted for Phase II clarified the position of EMPRES/CR's planning and oversight bodies: the composition as well as mandate of the EMPRES Liaison Officers Meeting is now distinct from that of the Consultative Committee Meeting. At the global level, however, arrangements seem to have remained vague regarding the internal EMPRES Steering Committee in FAO HQ and its mandate. (The

Committee appears to have met only infrequently and with no particular inputs to EMPRES/CR oversight and management.)

B.6 Staffing

In Phase I EMPRES staffing comprised three international staff (Coordinator, a Senior Field Officer and an Expert on Research), one Associate Professional Officer (APO), two National Professional Officers (NPOs) and one United Nations Volunteer (UNV). Since the 1999 evaluation there have been a number of significant changes in the staffing of EMPRES/CR and developments in relation to the CRC.

The original EMPRES/CR Programme Coordinator resigned in late 1999. Since then, the position of Programme Coordinator was filled by the Senior Field Officer (SFO) based in Addis Ababa on an acting basis. This situation continued until recently when the acting coordinator was confirmed as the programme coordinator. A decision was taken FAO to locate the programme coordinator in Cairo: it is not envisaged that the (vacant) post of SFO will be filled mainly due to funding considerations. The UNV position, located in Somalia, also ended at the end of June 2001. Various options are being examined to enable EMPRES to retain an operational presence in that country.

In 2000 FAO re-established the post of secretary of the CRC on a full time basis to be co-located with the EMPRES Coordinator in Cairo. The Secretary position had been abolished as a full-time post in the early 1990s. The duties of CRC Secretary were subsequently subsumed into the position of the FAO Regional Plant Protection Officer. The EMPRES NPO (Control) based in Sudan was appointed by FAO as the Secretary of the CRC in mid 2001. As a result the NPO (Control) position is currently vacant.

As of early 2003, professional staff consisted of one Programme Coordinator (Cairo, Egypt) from August 2001, under FAO Regular Programme funds, one International Migratory Pest Expert (Khartoum, Sudan) appointed in December 2002, and one National Professional Officer for Survey (Sana'a, Yemen) on project funds.

The contract of the International Research & Development Expert (Sana'a, Yemen) ended in July 2002; the position of National Professional Officer Control based in Sudan has remained vacant since August 2001, and the contract of the Associate Professional Officer (Khartoum, Sudan) ended in January 2003.

The staff changes do not appear to have adversely impacted on the EMPRES programme in a substantive manner since the positions of Programme Coordinator and CRC Secretary have been filled by personnel who have been intimately involved with EMPRES Phase I. However, the net effect in respect of EMPRES will be the "loss" of the SFO position due largely to funding constraints. The only reported difficulties associated with the changes appear to have been the long delay (and associated uncertainty) in confirming the acting coordinator and the fact that for nearly 18 months the programme was coordinated from Addis Ababa which was not fully equipped to deal with the situation. Part of the reason for the delay in appointing the Coordinator was apparently the difficulty in establishing that there was sufficient funding to proceed to Phase II.

Whilst not EMPRES staff as such, the ELOs play an integral and important role in the EMPRES/CR structure. There have been a number of changes in ELOs during the implementation of EMPRES/CR. Whilst this does impact on the efficiency of programme implementation to a limited degree, due to a lack of continuity, such changes are considered disruptive but to some degree inevitable.

C. IMPLEMENTATION

The EMPRES/CR Programme commenced in 1997 although a number of preparatory activities had been undertaken by FAO in advance. Phase I ended in 2000 with Phase II commencing immediately in 2001. Currently, the EMPRES/CR Phase II Programme is funded by a number of donor projects and by contributions from FAO Regular Programme funds supplemented by funding provided by CRC and DLCC.

C.1 Programme budget, expenditure and utilization

The number of donors directly supporting the Central Region component of EMPRES (Desert Locust) (EMPRES/CR) during 2002 is six, namely the Netherlands, Switzerland, USA, the Central Region Locust Commission, the Desert Locust Control Committee (DLCC) and FAO's Regular Programme. The estimated expenditure incurred by EMPRES/CR in 2002 is shown in Table 1, distributed according to the major item lines and divided by donor. A seventh donor, Sweden, is not shown because the support was provided, not for core activities, but for funding an Associate Professional Officer (APO) post in Khartoum, which ended on 18/1/2003. The APO studied the side-effects of locust spraying, especially in relation to Ecologically Sensitive Areas (ESA).

The figures given in Table 1 require some additional explanation. The FAO contribution derives from its Regular Programme allocations to the Locust Group. It should be noted that a major part of the contribution covers the cost of the EMPRES/CR Coordinator's post at the P-5 level. Only US$ 62,108 were contributed to the running costs of EMPRES activities. The considerable time inputs made by the Senior Officer of the Locust Group, by the other Senior Officer who acts as focal point for EMPRES/CR and as Budget Holder for the donor Trust Funds, by the Information and Forecasting Officer who has made an important contribution to improving locust surveys in the Region, and by the AGPP Programme Support Officer, are not included in the FAO expenditure figures. The funds provided by the Central Region Commission (CRC) come from its Trust Fund which is supported by the 14 Member States in the Near East Region, all of them locust-affected countries during a plague, and six of them directly participating in EMPRES/CR. The CRC has spent more in 2002 in support of EMPRES/CR than it did in the previous year mainly because of the close collaboration that has developed between the CRC and EMPRES as one of the key elements of Phase II, and the joint work plans that resulted. The DLCC Trust Fund, which is supported by locust-affected countries from all three EMPRES Regions, made a small contribution to the Programme, mainly related to training.

The Netherlands, through its Trust Fund project, continues, in money terms, to be the largest donor to EMPRES/CR, including funding two posts, one at international level and one at the National Professional Officer level. Although the Netherlands project emphasizes improvements in locust surveys as part of the Early Warning component of EMPRES, it also provides important support to many other EMPRES activities. In addition the Netherlands has continued to fund an EMPRES collaborative research programme at Wageningen University which has investigated locust population dynamics in the outbreak areas in the Sudan. The Officer i/c the research programme has participated in several EMPRES/CR meetings and made valuable contributions to them. The overall Netherlands contribution is therefore even larger than shown in Table 1. The Swiss contribution has funded several key activities in the Programme, particularly the costs of participation by member countries in EMPRES work planning (the EMPRES Liaison Officers), the evaluation of locust sprayers and various training events. The Swiss project was also expected to contribute to collaboration between the International Centre for Insect Physiology and Ecology (ICIPE) and EMPRES in testing the usefulness of a pheromone Phenyl-Aceto-Nitrile (PAN) for control. Working with ICIPE has proved difficult, but the collaboration is expected to improve, and expenditure to increase on this component, during 2003. The last donor shown in Table 1, the USA, has two

grants/Trust Funds, one supporting EMPRES directly, and the other strengthening capacity in specific member countries. Most of the expenditure has been directed towards support of Djibouti, Eritrea, Ethiopia and Somalia, and, in these countries, the USA inputs have made a substantial impact on improving preventive locust control.

Table 1: Final Expenditures for EMPRES/CR during 2002.

Category	FAO	CRC	NET	DLCC	SWI	USA
Salaries Professional	161,436		105,614	-		-
Salaries General Service		-	18,361	-	6,663	-
Consultants	11,520	3,583	24,917	27,734	2,037	-
Contracts	-	10,239	19,686	-	19,894	-
Locally contracted labour	5,149	-	830	-	11	-
Travel	33,913	26,842	50,560	1,707	50,047	20,017
Training	-	52,515	29,178	14,215	12,472	9,660
Expendable Equipment	357	-	1,468	-	1,017	3,332
Non Expendable Equip.	-	24,583	46,550	-	-	17,197
Hospitality			129	-	-	-
Gen. Operating Expenses	11,169	9,000	63,710	515	20,127	15,314
General Overhead Exp.		-	235	-	-	-
Chargeback		-	-	-	-	-
Chargeout – report production		-	-	-	4,680	-
subtotal	***223,544***	***126,762***	***361,238***	***44,171***	***116,948***	***65,520***
FAO Support costs	n.a.	14,512	46,962	5,742	15,202	8,518
Total	**223,544**	**141,274**	**408,200**	**49,913**	**132,150**	**74,038**

Total EMPRES Central Region:	
US $	**1,029,119**

* The table does not include actual and potential bilateral donor funding for EMPRES Phase II – for example Germany finances a DL expert (located in FAO's Regional Office for the Near East) who dedicates 50% of his time to EMPRES.

ESTIMATED TOTAL COST OF PHASE II

Annual expenditure during Phase II has, for Year 1 and Year 2, been almost the same. In Year 3, the current year 2003, it is expected to rise substantially (see column 1 in Table 2 below). The total cost of Phase II, excluding the substantial expenditure incurred by member countries in their own efforts to strengthen capacity for preventive locust management, is expected to reach about US$ 3.5 million.

Expenditures 2001:	US$ 1,054,202
Expenditures 2002:	US$ 1,029,119
Estimated expenditures 2003:	US$ 1,365,600
TOTAL	**US$ 3,448,921**

The PID estimated the funding requirement for Phase II (2000-2003) at approximately $US 5 million including $US 400,000 for contingencies. Estimated available funding from a variety of sources was estimated at approximately $US4.1 million: a potential shortfall of $US 800,000 or $US 400,000 if the amount planned for contingencies is excluded.

C.2 Status of activities implemented and outputs achieved[9]

Phase II of the EMPRES/CR Programme (2001 – 2003) started in January 2001, taking into account the recommendations of the Evaluation Mission and following the Implementation Document developed by EMPRES stakeholders at the El-Tur Workshop. Progress is listed according to the results areas identified at the workshop.

Result 1: Operational mandate of different regional organizations in Desert Locust management harmonized

Indicator 1.1: At least 1 EMPRES country joins CRC as a new member by 2002
Indicator 1.2: A draft MoU between CRC/DLCO (supported by EMPRES) on implementation of sustainable DL management concepts in the CR formulated by 2003

EMPRES organized the 4th Consultative Committee Meeting in Cairo, Egypt from 15-17 January 2002, and the EMPRES/CR Coordinator participated in 23rd Session of the CRC in Damascus from 9 -14 March 2002. Delegates from the non-CRC EMPRES countries Eritrea and Ethiopia participated in this meeting and Djibouti was welcomed as the 14th member of the Commission. The 10th EMPRES/CR Liaison Officers (ELO) Meeting was hosted for the first time by Saudi Arabia, in Jeddah from 27 – 31 October 2002. Also for the first time since the beginning of the EMPRES/CR programme in 1997 a representative from Somalia attended the ELO Meeting. The standard procedure was followed of evaluating EMPRES/CR progress in a participatory manner and of jointly developing the activities for the work plan for 2003. Representatives from the EMPRES/WR programme also participated in the meeting (for the third time) to improve collaboration between the two EMPRES Regions.

Two meetings of the “Joint CRC/EMPRES/DLCO-EA/FAO Technical Forum for the Central Region” (TFCR) were held: in Addis Ababa in December 2001, and in Cairo in November 2002. Main items discussed were the potential development of standard training curricula and methodologies, the development of a common approach towards improved preventive control strategies between CRC, EMPRES, DLCO-EA and FAO, avoiding the duplication of efforts and strengthening regional cooperation.

Following the first meeting, EMPRES/CR equipped one DLCO-EA aircraft with a Differential Global Positioning System (DGPS) in July 2002 for better navigation during aerial control operations, more targeted pesticide applications and improved management of control operations. In addition, Standard Operating Procedures (SOP) for control operations were developed in agreement with DLCO-EA and recommended for distribution within the DLCO-EA and CRC member countries as quick reference. A proposed joint survey between Eritrea and Sudan under the umbrella of DLCO-EA did not materialize due to increasing security concerns.

Following the second meeting, DLCO-EA agreed to harmonize its locust information system with the Desert Locust Information System (DLIS) at FAO HQ and with CRC, by using the locust situations and forecasts in FAO’s Desert Locust Bulletin for its own bulletin. Despite some good results the harmonization process between the two regional Organizations is slow because of usually delayed feedback from DLCO-EA when it comes to initiating joint activities. This is partly due to outdated communication facilities and equipment at the DLCO-

[9] Based on progress reports and mission observations; the text covers implementation until early 2003 (time of mission visits).

EA HQ. For that reason EMPRES/CR agreed to support DLCO-EA HQ with new computer and radio equipment.

Cooperation between EMPRES/CR and the CRC improved significantly since the transfer of the EMPRES/CR coordination office to Cairo in September 2001. The CRC Secretary and the EMPRES/CR Coordinator are consulting each other on all technical and organizational aspects on a routine basis and are jointly supporting a number of key activities such as training and research. Joint work planning and monitoring of the developments in the member countries has become an integral procedure.

Collaboration between EMPRES/CR and WR has been mainly through exchange of technical expertise such as the introduction of improved survey and information systems (in particular the data transmission system, “eLocust”) and the use of DGPS. EMPRES/WR staff assisted the Information Officers in setting up the eLocust system in Yemen and Sudan, and contributed to the Sprayer Testing workshop organized by CRC and EMPRES/CR during September 2002. In order to harmonize the training approaches in the two Regions one national staff from Libya attended the international ToT Training course organized by EMPRES/CR in October 2002.

The same applies to the adoption of the research approach. Since EMPRES/CR, with the help of international locust experts, has already developed an outline for operational research projects, it has been agreed to adopt the same approach in the WR.

Result 2: National and regional communication networking enhanced

Indicator 2.1: Timeliness of sending DL reports to DLIS improved by 20% by 2001, 50% by 2002, 80% by 2003

Indicator 2.2: Fixed radio schedules defined and made standard communication procedures at 5 DL units by 2003

The timeliness and quality of locust survey reports submitted to the DLIS at FAO HQ is considered to be a useful benchmark for improved information exchange. However, as technology advances and some equipment requires replacement, the network needs to be upgraded, maintained and advanced technology introduced. The overall performance in terms of quality and timeliness of DL reports to DLIS during 2002 was the highest in Sudan (98%) of all EMPRES/CR countries. The lowest performance was observed in Eritrea (58%). In terms of quantity, the total number of reports received by DLIS from the member countries increased from 67 in 1997, 77 in 2000, and 106 in 2002. The report quality was best in Sudan and Ethiopia. Reports received from six countries were above average, while reports received from Eritrea still need to be improved in most aspects.

National locust information systems are operational in Sudan, Ethiopia, Saudi Arabia and Oman (and also in northern Somalia, despite a comparatively weak infrastructure). Detailed information on the radio network is available from Yemen, Sudan and Ethiopia. The LCUs in Saudi Arabia and Oman are in the process of replacing their conventional HF radio transceivers by using mobile phones to transmit field information to HQ. In Djibouti no national locust information network is established so far. The same applies to Somalia where private radio operators are used for transmitting information relevant to locusts. Since early 2002 a unified communications network has been established in Eritrea by the MoA connecting the agricultural offices with the Ministry by using data-fax technology. The modalities and mechanisms on how to make use of the unified information network for the transfer of locust data still need to be clarified. No precise information on the set-up and functioning of the locust communication network has been received from Egypt but this gap is expected to be filled soon. Fixed radio schedules have been established at the LCUs in Sudan and Ethiopia and are in the process of being introduced in Yemen. Standard

Operating Procedures (SOP) for regular radio communication on locust matters are in the process of being drafted and will be finished by early 2003.

Result 3: Desert Locust early warning and information systems improved

Indicator 3.1: RAMSES installed and being used in at least 5 countries by 2003
Indicator 3.2: Remote sensing images incorporated into surveying decisions in at least two countries by 2003

The Desert Locust Data Management System, RAMSES, is installed in four member countries, Eritrea, Ethiopia, Sudan and Yemen. It is fully functional in Sudan and Ethiopia and regularly being used for registering historical and new locust and ecological data. RAMSES has not been operational in Eritrea for some time despite on-the-job training provided to the Eritrean Information Officer in July-August 2002. Also in Yemen special training and advice has been delivered to the Information Officer of the LCU in August 2002 and a new RAMSES computer provided by the GTZ Locust Project. Progress has been made with the LCU in Saudi Arabia, whereby the government purchased all the necessary hard- and software to allow a country-specific RAMSES version to be installed in October 2002.

The Information Officers form the PPD Sudan and the LCU in Ethiopia benefited from additional in-depth training on RAMSES applications and trouble shooting at the Natural Resources Institute/UK (NRI) in January 2002 with the objective to raise the regional capacity in this matter. However, no monthly reports on the DL situation for internal use based on RAMSES are being produced. In addition, it was planned to produce RAMSES-based case studies for Ethiopia and Yemen. So far only the LCU in Ethiopia has created a complete set of historical data. The Information Officers in Yemen and Sudan are still in the process of screening old files and entering data.

DLIS undertook efforts over the past years to make satellite imageries available to the locust affect countries as one of the decision making tools for more targeted surveys. The process of adapting the remote sensing technology has much been affected by the uncertainty of the staffing situation at DLIS. In early 2002 AGPP managed to recruit a remote sensing expert on a temporary basis to continue work on this matter. In order to test the application and handling of satellite images by the Information Officers, Yemen and Sudan were provided by DLIS with the necessary computer software and received SPOT-satellite images electronically. Compared to the former NOAA imagery, SPOT satellite images have better resolution and the electronic file transfer avoids delays.

The LCUs in Sudan and Yemen received two complete electronic data transmission sets, and in June 2002 the Information Officers in Sudan and Yemen received basic training on the application of eLocust (with the help of EMPRES/WR staff). The data transmission system was finally set up in November 2002, but during the following practical testing both teams failed to transmit field data via modem to the information offices at the HQs due to configuration problems between the palm top computer and the modem. The matter was still unresolved at the time of the evaluation mission's visit.

Result 4: Desert Locust survey procedures of the member countries improved

Indicator 4.1: Survey plans developed and made integral procedure of the PPD in at least 4 member countries by 2003
Indicator 4.2: Key breeding areas of at least 2 member countries identified and described by 2003
Indicator 4.3: Up to 2 joint border surveys conducted on two borders in the CR by 2003 (Other than the Egyptian – Sudanese borders)

Provisional survey programmes have been prepared for the different seasons in Sudan, Somalia, Eritrea and Yemen. (The relevance of the survey programmes in Eritrea and Yemen still needs to be assessed during 2003 in the light of the institutional difficulties observed in these countries during the past years.) No survey programme has been prepared by the LCU in Egypt, but it is proposed that regular surveys will be organized by the Egyptian LCU during the winter and summer seasons.

Given the positive feedback on the Standard Operating Procedure (SOP) for ground control operations, the participants of the 10th ELO Meeting suggested to come up with a similar SOP for surveys. The originally planned workshop on improved survey procedures was not conducted mainly because the key partner in this exercise (Wageningen University) was not yet ready to present its research findings to a broader audience.

A draft inventory of DL breeding areas, its occurrence and geographical distribution in the Central Region prepared by July 2002 covering the period form 1994 – 2001 did not produce the expected relative advantage as compared to previous references such as the DL Atlas prepared by Popov, 1997. It has therefore been recommended to redefine this activity in the light of the increasing use of the RAMSES system and in the connection with SWARMS GIS at FAO HQ. Studies carried out along the Red Sea coastal plans by the Universities of Wageningen and Khartoum as well as by ICIPE revealed that the spatial distribution of solitary populations of Desert Locust is positively correlated to certain plant communities. Since 1998 Wageningen is supporting a PhD student to investigate the dynamics of Desert Locust populations during the winter breeding season. It is expected from this study to identify locust habitats on which surveys should be focused by describing the habitat based on plant composition, soil and land use.

One cross-border survey was conducted by joint Saudi and Yemeni survey teams in December 2002 after a bilateral agreement was signed between the two governments in July 2002. The planned joint surveys between Djibouti/Somalia and Sudan/Eritrea did not materialize because of not entirely unexpected security concerns in the case of the latter.

During 2001 regular monitoring of the locust situation in the key breeding areas of northern Somalia almost came to a halt after the end of assignment of the EMPRES/CR United Nations Volunteer (UNV) and the sudden death of the DLCO-EA Caretaker in Hargeisa at almost the same time. Efforts were undertaken to encourage the Minister of Agriculture to nominate an officer responsible for locust surveys and as EMPRES/CR Link Person (ELP) at the same time. In the meantime a locust office at the local MoA has been established and equipped with communication facilities, Internet access and furniture. EMPRES/CR undertook efforts in December 2001 to train the MoA staff on locust monitoring and all aspects of locust survey and reporting. With the nomination of an ELP in December 2001 locust survey operations started to gain momentum again.

One additional desk top computer has been provided to the LCU in Yemen in September 2002. The GTZ Locust Project made USD 20,000 available to Sudan for repair and maintenance of survey vehicles. The GTZ Locust Project supported the locust survey and information capacity in Sudan with 16 field beds incl. mosquito nets, 5 GPS hand sets, 1 desktop computer plus accessories, 1 copy machine, and 1 camera in October 2002.

Result 5: Desert Locust technicians and officers qualified

Indicator 5.1: At least 50% of DL technicians trained in each CR country by 2003
Indicator 5.2: At least 2 trainers trained according to agreed standards for each country by 2002

A consultant from NRI was engaged by EMPRES/CR in April 2002 with the preparation of a Training Manual (TM) for national trainers. The first draft was developed in collaboration with

the Locust Forecasting Officer by September 2002 and tested during the international ToT training course in Oman in October 2002. It is now being planned to assemble Training Kits which will contain besides the TM also other useful material such as maps, compasses, field cards, a CD ROM etc. All LCUs of the member countries as well other national training institutions will be provided with such kits to perform and sustain training courses on technical locust management aspects under their own responsibility.

The process of identifying the training needs in the member countries turned out to be more difficult than expected. Some tentative information has been received from Ethiopia and Sudan but most of the other LCUs were slow in assessing the performance of their staff involved in locust operations or in passing relevant information to EMPRES/CR.

The University of Khartoum, with support from the CRC/EMPRES, has developed a special Diploma course on Desert Locust management. The use of the Diploma course in locust management at the University of Khartoum is promoted through DLCC, EMPRES and CRC fellowships. The first term started in 2001 with six students from Sudan, Eritrea and Ethiopia who graduated by end of August 2002. Eight students have been enrolled at the University for the academic year 2002/2003, two of them from outside the CR, (India, Libya), funded by various fellowship resources. However, the overall success of the course and its results were difficult to assess: for the first batch of students, the University had neither formally reported on the course performance to the sponsors nor made available copies of the students' dissertations. Also, countries did not inform EMPRES/CR or the CRC of the positions taken up by the former students.

As of 2003, four international ToT training courses have been organized under the EMPRES Desert Locust Programme. In addition, four national and local training course supported by EMPRES/CR and the CRC, were conducted in 2002 (Egypt, Djibouti, and two courses in Ethiopia). EMPRES/WR organized a workshop on new technologies for locust S&C in Mauritania in December 2002. Two locust staff from the CR (Sudan and Saudi Arabia) attended the workshop. The implementation of the planned regional campaign management and evaluation seminar has been pending since 2001.

Result 6: Contingency plans available and implemented

Indicator 6.1: National contingency plans for recession monitoring and control for outbreaks, upsurges and plagues adopted in up to 6 countries by 2002

With the help of a consultant and in collaboration with AGPP and the CRC a regional Contingency Planning workshop was organized in Egypt in February 2002. Fourteen participants from eight member countries, AGPP, the CRC and EMPRES/CR attended the workshop. Draft guidelines have been prepared to conduct similar contingency planning workshops at national levels, but follow-up efforts on contingency planning were only made in Sudan (June 2002) and Oman (March 2002) with mixed results. The contingency plans developed were on the one hand too detailed and ambitious and on the other hand lacking important information. Only in Sudan has the initiative been taken to create a national Contingency Planning Committee.

Result 7: Efficient and environmentally safer control methods introduced

Indicator 7.1: At least 1 new additional control technology introduced in at least 3 countries by 2003

During the past years, the International Centre of Insect Physiology and Ecology (ICIPE) undertook research on Desert Locust pheromones that influence the ability to change from solitary into the gregarious phase. EMPRES/CR started collaboration with ICIPE in this field in October 2001 in order to make PAN available to the affected countries as a low-cost, environmentally safer and effective alternative to conventional locust control. Under this

collaboration mass-rearing facilities have been built up at the ICIPE station in Port Sudan in order to overcome the obstacles posed by the prevailing recession period and to perform at least semi-field trials with PAN. Considerable difficulties at the beginning delayed the process in building up sizeable colonies because of high mortality, low fecundity and cannibalism. These problems were largely resolved by mid of 2002. About 20,000 healthy first instars are now being produced per day from 25 indoor oviposition cages.

EMPRES/CR sponsored Diploma students from University of Khartoum spent three months at the ICIPE field station at Port Sudan, and three MSc students undertook research for their thesis at ICIPE Port Sudan Field Station on aspects of PAN, nymphal pheromone blend, and solitary locust-host plants relationship, respectively.

Because of delays encountered at the beginning of the project with regard to locust rearing, the workshop originally planned for December 2002 on the effects of PAN and the metarhizium product, “Green Muscle” (GM), was postponed to January 2003. An FAO sprayer testing workshop was organized by EMPRES/ CR and the CRC in Egypt in September 2002. Ideas from the workshop will form the basis for development of FAO Guidelines on minimum requirements and standards for ULV locust and grasshopper sprayers, and related procedures to test them. With financial support form USAID, EMPRES/CR assisted in setting up DGPS equipment (Trimflight 3) on a DLCO-EA “Beaver” aircraft during July 2002.

The EMPRES/CR APO has studied ecologically sensitive zones located in winter and summer breeding areas of Sudan in 2001-2, and carried out a comprehensive literature review on side effects of pesticides on no-target organisms.

Two collaborative research projects with the Universities of Khartoum and Aden are expected to finish in 2003. The University of Khartoum has been investigating the ecological effects on Desert Locust population dynamics since July 2000 with the aim of understanding the key factors influencing the population dynamics of the Desert Locust, in particular factors leading to gregarization. Also since July 2000 the University of Aden has carried out studies on the impact of alternative pesticides used in Desert Locust control operations on honeybees and other non-target organisms. The preliminary results show no effect of metarhizium on honey bees. One research project on the relationship between Desert Locust infestations, environmental factors and the impact of control measures in Saudi Arabia started in November 2002 in collaboration with the King Faisal University in Saudi Arabia. Two additional research projects have been recommended for support and submitted to AGPP for approval and are expected to commence in early 2003:

- University of Khartoum: Distribution of the Desert Locust, in relation to herbage quality.
- University of Addis Ababa: Effects of metarhizium on grasshoppers.

Unfortunately most of the research proposals submitted to EMPRES/CR and the CRC in the past were often of poor quality or not related to the aims of the collaborative research initiative. Experiences showed that the guidelines provided were not followed properly with the consequence that many researchers and scientists faced difficulties in formulating their research proposals. Accordingly the research project guidelines were reviewed again and distributed to the ELOs with the request to approach potential institutions or students. I

The GTZ Locust Project during 2002 supported the registration of biopesticides in particular in Sudan and Yemen. A temporary import permit has been obtained in October 2002 from the Sudanese authority (National Pesticide Council) for locust and grasshopper control with metarhizium. For Ethiopia an import permit has been obtained in December 2002 for trial purposes. The discussions with the Yemeni authorities are ongoing as of early 2003. A consultant has been contracted by the GTZ Locust Project to compile the experiences made

on barrier treatments and to develop guidelines in collaboration with PRIFAS. Based on the FAO Desert Locust Guidelines, Standard Operating Procedures (SOP) for ground pesticide applications have been developed as a quick reference for the national control teams. The pocket-size SOP for ground control are being prepared in English and Arabic. Similar SOP are being developed in collaboration with DLCO-EA for aerial pesticide application.

The CRC provided all member countries with 5 hand-held ULV each by August 2002. In addition, Egypt, Djibouti and Sudan benefited from 2 vehicle- mounted ULV sprayers each. Through USAID funds EMPRES/CR equipped the LCU in Eritrea with additional 5 vehicle-mounted ULV sprayers by June 2002. The GTZ Locust Project supported PPD Sudan with 25 hand-held ULV sprayers and 10 backpack sprayers (incl. tool kits and spare parts) by September 2002.

An Arabic translation of the revised FAO Desert Locust Guidelines is in progress and will be published in 2003. Translation of the two Desert Locust reference booklets from French into Arabic has been completed and distributed to all LCUs of CRC and EMPRES/ CR countries and other concerned institutes. The Arabic translation of the Desert Locust Bulletin is being prepared and distributed regularly to all CRC and EMPRES/CR member countries. The CRC prepared and distributed two copies of a Desert Locust video tape for each of the CRC and EMPRES/CR member countries. A first version of a Desert Locust literature database has been prepared in collaboration with the International Society for Pest Information (ISPI) and distributed to the member countries by January 2002. A second edition is in process in collaboration with PRIFAS, ISPI, and the GTZ Locust Project. The final version, containing approximately 15,000 reports and articles, is expected by mid 2003.

Result 8: Systematic methods of campaign evaluation developed
Indicator 8.1: Two case studies conducted by 2002
Indicator 8.2: Models to identify efficient control strategies via scenarios completed by 2003

In order to better follow the activities carried out by the LCUs and also with the aim of monitoring the implementation of the EMPRES/CR recommendations, a standard progress reporting format has been prepared and distributed to the ELOs (except Somalia) in August 2002. Various baseline information and data on the current status of locust management in the CR countries have been compiled over the past years and documented, but the information is still considered incomplete. The evaluation of the economic impact of Desert Locust control has been further pursued. As a bilateral contribution to the EMPRES/CR Programme supported by SIDA the University of Gothenburg carried out field studies on environmental economics in Morocco, Sudan and Eritrea, the most recent of which had been conducted in Eritrea from 1993 to 1999. The findings were presented during the 10th ELO Meeting. Also as contribution to EMPRES, the British Department for International Development (DFID) sponsored one study carried out in Mauritania and Eritrea during spring 2002. One study on the socio-economic impact of Desert Locust on smallholder farmers was conducted in Sudan in 2001 and finalized in September 2002. A similar study was carried out in Egypt from July to August 2002. The final report was not yet available to the evaluation mission. In the interpretation by EMPRES/CR, all studies came to the same conclusion that, in the countries surveyed, the economic returns of DL control at national level were marginal if not negative both in respect of crop production and of crop prices, but also that it would appear unacceptable for governments and rural populations to substitute DL control by food aid programmes.

On insurance schemes, the Gothenburg study concluded that many farmers would be prepared to pay insurance contributions against damage caused by Desert Locust. The 10th ELO Meeting questioned this conclusion on the grounds that there is a likely wide difference between how farmers might respond to a theoretical question and what they might be actually prepared to pay. Regarding the ELS computer model EMPRES/CR was not in the

position to update it as planned as the consultant who prepared the previous version in the context of the economic study was no longer available.

The computer based model, symLocust, has been developed in collaboration with the Wageningen University and GTZ 1996 and updated in 2001. The model was introduced during the contingency planning seminar in February 2002 and much appreciated by the participants as a useful tool to assess to national survey and control capacities and their likely impact. Unfortunately, some of the applications failed to operate from CD ROM. In order to make the computer model available to the member countries a software specialist will be contacted to resolve the problem.

C.3 Technical and operational backstopping

Technical and operational backstopping has generally been satisfactory but there have been some disputes and complications/delays over approval and dispatch of funds. However, in a programme that is working to both central and regional administrative systems this may be an unavoidable complication. Also, there have been delays in replacement of the NPO-Control, and some delays in funding approved research remained unexplained.

The complex nature of EMPRES/CR has placed a significant workload burden on AGPP in recent years. Currently one senior AGPP technical officer, among many other duties, acts as the focal point for EMPRES/CR and is budget holder for the TF projects supporting the programme: a substantial workload in itself. To continue the momentum created by EMPRES/CR after the end of the next phase, it may be necessary to strengthen the technical and conceptual capacity of AGPP (Locusts and Other Migratory Pests Group) to provide continued backstopping, and visibility vis-à-vis donors.

Feedback on, and appraisal of, individual EMPRES/CR staff members could have been better: the Mission learned that Performance Appraisals Reports (as per FAO regulations) have not been consistently applied. This could be one reason why the research component of EMPRES/CR has remained inactive for a relatively long period. Continuing input from AGPP will be needed to achieve effective, long-term locust management in the Central Region, but particularly during Phase III. Coordination of EMPRES-DL activities overall, after the end of Phase III of the Central Region Programme, would be more effectively handled by an AGPP officer, stationed in Rome, acting as a support for the Secretaries of the Regional Commissions.

C.4 Programme management

Management and administration of the EMPRES/CR programme has been of a high standard. The mission was impressed by high quality and consistency of programme management throughout Phase II, and strongly approves of cascading of work plans from programme to individual level. The use of ELO meetings to formulate priorities and EMPRES/CRC meeting to develop joint work plan has proven successful, and there has been excellent collaboration between EMPRES/CR and CRC in work planning and joint funding.

D. Results

The development goal of EMPRES/CR, revised in 2000, remains relevant and appropriate. Phase II of EMPRES/CR has performed well with significant progress made toward the achievement of the programme goal and purpose of the phase. Variable progress has been made in the eight results areas, and in the nine countries, such that not all components of a

preventive desert locust management system will be in place at the end of Phase II (Dec 2003)[10].

D.1 Operational mandate of regional organizations harmonized

The cooperative working relationship between EMPRES/CR and CRC staff, noted in the 2001 Evaluation, has been maintained and improved. The decision to co-locate the EMPRES/CR Coordinator and CRC Secretary has been successful; the mission is confident that the collaboration will be further enhanced by the continuing interaction of the officers concerned. The approach to joint work planning and reporting has removed any potential duplication and has contributed to the progress achieved so far.

Despite several attempts by the Programme Coordinator, operational mandates have not been harmonized with DLCO. The EMPRES/CR & CRC joint work plan for 2003 still reflects an expectation that a Memorandum of Understanding will be signed with DLCO but this may be overly optimistic.

There has been a positive interaction between staff of the Central Region and Western Region with shared visits, technical backstopping, joint training and a planned joint survey in 2003. During the Mission's visit to Sudan the Senior Locust Officer Mauritania, attended the Sudan LCU's self-reflection workshop. The CRC Secretary translates the locust bulletin into Arabic and circulates this to the WR.

A demonstration of increased harmonization would involve EMPRES/CR countries joining the CRC. The Mission notes that Djibouti joined in 2002, Ethiopia has applied in 2003, and with a promotion visit planned to Eritrea in 2003.

The Country Focus Programmes are critical to the implementation of the overall programme. The 2001 Mission was concerned by the low profile given to the CFPs in the Programme Implementation Document for Phase II. Fortunately implementing the CFPs has remained a high priority. Sudan's CFP is the most progressed and is largely considered to be implemented. However, this does not mean the job is done as much is still left to be done. The gains made could easily be lost if the current executive management of the PPD are replaced by officers who do not understand the need to maintain a state of preparedness.

For several other countries such as: Yemen, Eritrea and Ethiopia, the work plan suggests the CFP will be implemented in 2003. This is an ambitious goal, particularly under the uncertainty of staffing, but at least major progress could be expected. Yemen has shown very encouraging improvement since the 2001 Evaluation. Since that time the PPD has decided to maintain locust under the control of a central LCU and to fund this unit. Work has begun to implement the CFP including a training needs analysis and the incorporation of CFP elements on the work plan of the newly appointed LCU Director.

Somalia now has in place an EMPRES link person and some elements of the CFP could be implemented. However, instability there is bound to limit progress.

D.2 National and regional communication networking enhanced

Rapid and accurate communication of information is critical in mounting an effective response to a locust outbreak. Survey data or reports of locust sightings must reach the LCU headquarters rapidly from where they must be assessed, acted upon and then further communicated to major stakeholders. There are weaknesses in the communication systems

[10] The following detailed discussion is organized according to the results areas identified in the Phase II planning document.

of all member countries, and for some these significantly weaken the ability of the LCU to respond.

The communication system relies on telephone and HF radio contact. Codan radios have been installed in a number of countries and in 2003 this will continue in Djibouti, Somalia, Yemen and the DLCO. In the absence of a telephone system Eritrea has a network of Codan HF radio/modems at the sub-zonal level but these are not controlled by the PPD and so access for CPPS cannot guaranteed. The plan to test the eLocust system using satellite phones in Saudi Arabia may, in the end, also provide the solution for Eritrea.

There have been some improvements in networking and communication within the Central Region countries, and joint training and meetings help staff to build productive relationships. Communication by email with Eritrea should markedly improve in the near future with connection of the CPPS to a LAN that provides greater bandwidth and therefore more rapid Internet connection. Networking within the region is still in its infancy as most contact between countries still seems to go through a central hub with EMPRES and the CRC acting as information broker. Collaborative efforts between countries are needed if they are to implement effective preventive control. This will only be achieved if they are in regular contact with each other. The CRC should seek to foster communication in a number of ways, but electronic communication via email and the Internet would seem to be particularly useful. A CRC web site would enable LCU staff to readily access training documents and other reports.

D.3 Desert locust early warning and information systems improved

Transfer of locust survey data to the DLIS has improved noticeably but there is room for improvement. This improvement has taken considerable effort on the part of the Locust Information Officer and EMPRES staff. In part, this may be an inevitable consequence of low locust numbers. RAMSES, the locust information system, is in place in several countries: Sudan, Ethiopia, Saudi Arabia and Yemen, and plans for 2003 include Egypt, Djibouti, and Oman. An updated version will be installed in several countries in 2003.

Access to historical locust data through RAMSES could drive improvements in surveys by allowing efforts to target favourable breeding areas where locusts have occurred in the past. So far considerable historical data has been entered in Ethiopia but this task has only begun elsewhere. Locust Information Officers will grapple with the difficulty of managing unreliable data, but this is unfortunately in the nature of locust data. An experienced officer will know how best to manage the level of uncertainty in such data, and on balance it is better to have those data available for consideration than not to have them at all. All countries with RAMSES should endeavour to make their historical data available to decision makers through RAMSES.

The Mission is concerned that the further development of RAMSES is vulnerable to changes in the availability of ex-NRI staff. Should this occur, a suitably experienced ArcView and Virtual Basic programmer would be needed to continue enhancements and technical support for RAMSES. If not already done, RAMSES should be fully documented and its code written in a consistent and standardized form where possible.

The eLocust system seeks to improve the speed and accuracy of survey data transfer from the field to headquarters and thereby give LCU decision makers access to the data they need in a timely way. ELocust is not yet operational in the Central Region and was not working in Sudan despite having been installed in November 2002. The LCU staff did not know why it was not operational and were awaiting external technical support. The aim to roll-out eLocust to the field is supported because the existing manual transfer system is laborious, potentially error prone, and could be almost unworkable with many field units

operating. However, eLocust is not yet robust enough to implement in an unsupported way, and care should be given in future to ensure new technology is introduced only once it is highly reliable.

Locust breeding relies on green vegetation, and in turn effective locust survey relies finding the locusts in those green areas. This task can be very difficult in the vast and remote areas that could be infested. Remotely-sensed data such as SPOT-VT, suitably analysed and enhanced, have been viewed as promising for some time but have failed to be used operationally. The potential value of this technology is so great that it is worth pursuing, but it must deliver some tangible benefit during a third phase or else be abandoned. A remote sensing officer was engaged within the Locusts and Other Migratory Pests Group in 2002. His work plan was viewed and seems appropriate as the field validation of SPOT-VT imagery is a high priority. There have been previous efforts to groundtruth the imagery in Yemen and Sudan and LCU staff in both countries reported favourably on their experiences. They felt that an experienced locust officer would be able to interpret the imagery in such a way as to allow consistently "false" green areas to be ignored.

Groundtruthing SPOT-VT should continue with a view to making a decision on its value in operations as soon as practicable. It appears that SPOT-VT does not respond well in some areas because of the confused terrain and the 1 km pixel size. The suggestion that this may be solved by obtaining higher resolution data may be correct but should be proceeded with cautiously. Higher resolution data can be more expensive to obtain, process, transfer and store. In the end the use of technology should progress according to operational needs. The Mission would prefer to see efforts going into demonstrating the operational value of SPOT-VT 1 km before any other data sources are investigated.

D.4 Desert locust survey procedures of the member countries improved

In a multi-faceted programme like EMPRES-DL progress in a range of areas proceeds in parallel. The use of satellite imagery and eLocust are designed to optimise survey, while in some cases routine survey has not even begun.

There has been a general improvement in planning and executing survey with provisional seasonal plans in place in several countries and executed in Sudan, Somalia. It is disappointing to note that in Yemen no survey was undertaken during the winter period of 2002-03, in spite of a commitment from the Government. In Somalia an EMPRES link person has now been engaged to survey part so of that country. It is planned that all countries will execute their surveys according to plan by the end of Phase II.

As a bare minimum by the end of Phase III all front line countries should be routinely surveying the winter breeding areas on the Red Sea coastal plain. These surveys must follow an agreed set of standard operating procedures. Achieving this must be a key result of Phase III as the rest of the programme depends on survey data being collected and communicated in an accurate and in timely manner.

The targeting of survey to key breeding areas with good vegetation conditions would be an important advance. Underlying this is a requirement for a geographical coverage (i.e. GIS map) of key locust breeding areas. Some effort has been made to develop a draft inventory of locust breeding but that work does not appear to feature prominently in the work plan for 2003, although discussions in Eritrea implied that this work would make progress there. It is important that work continues and be supported by a combination of sound scientific data, empirical locust distribution data and the opinions of experienced locust officers.

A recent MSc study by an Iranian student at Imperial College considered ways to optimise locust survey. Results of this study have been received by AGPP and will be made more widely available soon.

D.5 Desert locust technicians and officers qualified

During Phases I and II three joint EMPRES/NRI Training of Trainers courses have been delivered and almost 50 staff from the region have been trained. For the time being there appear to be enough Master Trainers in the region. Several national training courses have been given by Master Trainers but the Mission received no feedback on the evaluation or impact of those courses.

In-country training will be helped by the recent arrival of training kits developed by NRI which are about to be distributed to Master Trainers. An interesting challenge arises in Eritrea and potentially also in parts of Sudan where farmers and nomads are a major source of locust information. CPPS in Eritrea gives an allowance to several nomads and they in return report on any locusts seen by them or reported to them. Materials in the training kits will need to be modified for this particular target audience.

Training needs assessment is an important step in the implementation of the CFP. This is no easy task in some countries due to the absence of clear job descriptions, rapid staff turnover and decentralized administration. Nevertheless, it is a task worth attempting and is manageable if only a small number of staff are targeted. A good attempt has been made in Yemen, with some progress in Ethiopia and Sudan. Training needs assessment is planned for Djibouti, Oman and Saudi Arabia in 2003.

The University of Khartoum Diploma in Desert Locust Control is currently into its second year by the end of which there will have been 14 students trained. Most of these are from the Central Region. Discussions were held at the University with the course coordinator and senior University officials. Unfortunately the current students were on a field trip on the Red Sea coast and could not be contacted.

The course curriculum seems appropriate for the subject area. Some students have difficulty fulfilling written reports and verbal presentations as these currently are in English. It is suggested there be the flexibility to allow students to be assessed in Arabic if they are more comfortable. It is also suggested some elements of training delivery and assessment be built into the course to allow students to gain some knowledge and skills in training others.

The prolonged locust recession has not helped the University deliver a high quality course as the opportunities for relevant field survey and control have been very limited. However, the course coordinator has made good use of other available training opportunities through the ICIPE work on Metarhizium and PAN based at Pt Sudan, and the APO environmental impact research.

Funding the Diploma course is relatively expensive at US$ 20,000 per student. It is therefore important that the programme derives maximum benefit from this investment. Concerns were raised with the Mission over the appropriateness of the curriculum, the length of the course and the value of the written assignments. Some of the students are reported to be unhappy that completion of the course has not led to immediate professional advancement, but this seems to be an unreasonable complaint as it is too early to expect any impact to be apparent. However, no course evaluations were made available to the Mission.

The mission was encouraged by the University's pledge to match equally any financial contribution attracted to the course from external sources.

There may not be a cause for concern but current arrangements should be reviewed. The University of Khartoum with the EMPRES/CR Coordinator should review the Diploma course to ensure its content is relevant to the needs of the region and the expectations of EMPRES/CR and the member countries.

D.6 Contingency plans available and implemented

National contingency plans are an important part of preparedness for managing locust outbreaks as and the national level they demonstrate commitment by the PPD to maintaining a capability for locust control. They also demonstrate that thought has been given to the resource needs of the LCU. National contingency plans are in place in Sudan and Oman but in neither case are these finalized. Sudan has proposed the establishment of a Contingency Plan Steering Committee but it is planned to have these in place in three other countries in 2003: Eritrea, Saudi Arabia and Yemen

It would be unrealistic to expect that prevention of all outbreaks can be achieved by Central Region countries acting independently. They do not have the resources to respond rapidly or effectively enough to achieve this. On a regional level the aim should be to prevent upsurges, true emergencies, which threaten agricultural production in several countries at the same time. It is anticipated that AGPP will continue to have the main role in ensuring that financial and technical resources are available to contain outbreaks that pose a regional threat.

A cohesive regional contingency plan should be developed for outbreaks that are too large or appear too rapidly to be contained by national LCUs. The regional plan would define roles and responsibilities of all players: AGPP, CRC, and member countries, and the procedures to be followed, to enable a rapid and effective international response including access to donor funds, to contain the potential upsurge. The team notes that the Locusts and Other Migratory Pests Group and EMPRES/CR Coordinator aim to develop this plan.

The CRC maintains and manages critical contingency funds to allow a rapid response by LCUs to potential regional emergencies. These funds would mainly allow the purchase of insecticide and aircraft hours. The CRC would have strict criteria for deciding on how and when to release the contingency funds. The CRC would have standing arrangements with suppliers of insecticides and aircraft to ensure a rapid response capability. The CRC would help coordinate collaborative efforts between countries to optimize access to and use of insecticide and equipment. This role would extend, after the campaign, to facilitating the use within the region of surplus insecticides to prevent them becoming "obsolete."

A training course was run on campaign contingency planning in Egypt in 2002 and was generally well received. Students remarked on being surprised at how early in a campaign it may be necessary to request a spray aircraft. This is concerning because it suggests LCU staff could under-estimate the difficulty of containing an outbreak with ground control alone and may respond too slowly to a potential emergency. Staff reported difficulty with the symLocust software again reinforcing the need to ensure new technologies are fully tested and are robust before they are implemented.

D.7 Efficient and environmentally safer control methods introduced

Some progress has been made in research and development activities aimed at improving the efficiency and safety of locust control, but progress has been hampered by the continuing recession.

The use of DGPS for track guidance of aircraft and vehicle spraying will result in a marked improvement in the efficiency of insecticide use. In future target the exact location of potential targets will be relayed to pilots so that there is a reduced risk that uninfested areas will be

treated. The track guidance system will also ensure the control agent is applied in the correct pattern and at the correct dose. The Norwegian-funded project in Mauritania has been instrumental in demonstrating the benefit of this technology, and has resulted in good collaboration between EMPRES CR and WR.

EMPRES/CR funded the Trimflight DGPS system installed in the DLCO Beaver in July 2002 and for which a field trial is scheduled in Ethiopia in 2003. This technology will be essential to optimise the use of control agents applied a barrier treatments. The Visiting GTZ Scientist is in the process of compiling a report on current knowledge of the use of barrier treatments. It is important that this report be made available.

Most insecticides currently in use in the region are unsuitable for use as barrier treatments as they are too short-lived. It is unfortunate that there have been no opportunities in recent years to test these agents against the desert locusts. Every opportunity to do so should be taken.

Testing of natural alternatives to chemical insecticides has also suffered because of the recession but some testing has been possible through the efforts of the ICIPE rearing facility at Port Sudan. Some research and trial work has gone ahead with the fungus Metarhizium anisopliae var. acridum. Demonstration trials in Sudan in January 2003 against desert locust and in March 2003 against other grasshoppers will be used to provide field efficacy data for registration.

Some research on Metarhizium has been progressed in spite of the recession. The effect of Metarhizium on honey bees is an important consideration in Yemen where beekeeping is a major agricultural industry and beekeepers are valuable sources on locust information. Second-hand reports suggest not no impact have been detected so far. This study should continue to completion. A study is also underway at the University of Addis to determine the efficacy of Metarhizium on grasshoppers. If successful, this study should also assist with registration.

The naturally-occurring semiochemical phenylacetonitrile or PAN appears to disrupt the gregarization of locust bands and swarms. Results of limited-area trials in late 2002 suggest that PAN, when used in combination with other control agents, somehow enhances the effects of those control agents with a resultant reduction in dose and cost.

A ground sprayer workshop was held in 2002 and it was found to be valuable by the attendees in setting the specifications for suitable equipment for the region. In addition EMPRES/CR has developed a set of standard operating procedures for ground application which should help to improve the efficiency and safety of insecticide use.

An attempt to trial blood test kits to confirm worker exposure to organphosphorous insecticides under field conditions was planned but has not proceeded in Sudan due to an embargo. For reasons not clear to the Mission the scheduled test in Eritrea has also not gone ahead.

An APO in Sudan attached to EMPRES/CR has now completed her investigations into the identification of environmentally sensitive sites in the winter breeding and the likely impact of locust spraying on non-target species. The final report has not yet been produced. While potentially interesting and of some value to locust management in the region this study was initiated with only limited consultation with EMPRES/CR and was something of a drain on EMPRES resources. EMPRES must have a more prominent role in any such collaborative studies in the future.

D.8 Systematic methods of campaign evaluation developed

The evaluation of desert locust control campaign effectiveness and efficiency remains highly elusive. Efforts to develop some sort of practical and systematic approach have been hampered by the locust recession. Several studies on the economic impact of Desert locust control have been conducted recently. Joffe (1997) tried to assess its economic impact at the international level. Belhaj (2000) studied the socio-economic impact at the level of small farmers in Eritrea and Sudan and considered insurance as an alternative to traditional Desert Locust control. Emana (2002) conducted a micro level socio-economic case study of Desert Locust control in Sudan. DFID commissioned a brief assessment of the socio-economic impact of Desert Locusts and their control, conducted in Mauritania and Eritrea, as a basis for their policy in funding of locust control projects (Thomson and Miers, 2002). Hardeweg (2001) developed a conceptual framework for the economic evaluation of Desert Locust management interventions. Being aware of the significance of an assessment of the socio-economic impact of Desert Locust upsurges and its possible political consequences (such as displacement of rural populations), the mission felt that it had neither the time nor, more importantly, the professional background to review these studies in a meaningful manner. It considers internal FAO-AGPP notes prepared on some of these reports, valid as they may be, insufficient to settle the question concerning the merits of these studies and their consequences for Desert Locust control. A more comprehensive, generally accessible analysis is needed, in order to have a chance of arriving at a consensus regarding Desert Locust management policy.

AGPP staff mentioned the idea of commissioning a study, under EMPRES, comparing the costs of preventive and emergency locust control as a way to convince the international community of the need for preventive control. The mission thinks this is not urgent either now or in the third phase. Funds should rather be spent on efforts to improve the efficiency of Desert Locust surveys and preventive control measures which, if successful, will be much more convincing than just another desk study on the subject.

Several technologies and approaches introduced in Phase II will improve effectiveness and efficiency at the level of the individual target and it must be acknowledged these will also cause improvements at the campaign level. These innovations include: use of GPS when defining targets and DGPS when spraying them; control target recording forms; standard operating procedures for ground and (in future) aerial control.

The success of a campaign is, however, more than the sum of its component targets, as at the campaign level, questions about the distribution of those targets relative to the locust distribution are all important. We are not yet close to an understanding of what constitutes success in desert locust control and even further from how success might be measured. Without these it will be difficult to demonstrate that EMPRES/CR has had any meaningful impact on locust management in the region. This will be a high priority for Phase III.

The approach taken to studying the socioeconomic impact of locusts and their control has been disappointing. Locust experts seem to assume the need to control locusts is self evident but this is not a universal view. Studies undertaken externally (Waibl, Belhaj, Oxford) under the EMPRES umbrella or commissioned by EMPRES/CR (Bezabeh 2002) are either too academically oriented or too limited in scope, or seem to rely on highly subjective data. This is not to say their conclusions are wrong, rather they are open to question in terms of technical quality or relevance. That EMPRES-commissioned research could miss the point so badly raises questions about the technical inputs to the work.

The longer these misleading conclusions and recommendations are left unchallenged the more damage will be done to perceptions of the donor community, and within FAO, to the

value of EMPRES. AGPP does not seem to have done enough to engage donors in a dialogue that seeks to align the objectives of EMPRES-DL with donor priorities.

E. Issues

E.1 Donor support to EMPRES

During its second phase, EMPRES has benefited from multilateral financial contributions by the Netherlands, Sweden, Switzerland, and the USA i.e. funds provided for the Programme in general, albeit in some cases with the restriction that they should be applied to specific Programme components. Other donor contributions were bilateral, i.e. consisted of independent projects designed to support EMPRES in certain fields, through research or otherwise, such as the development, improvement and introduction of RAMSES (Germany, the Netherlands, Sweden, and the United Kingdom).

The mission gauged donor appreciation for EMPRES through a questionnaire and by visits to some donor embassies. However, questionnaire replies, although mostly positive in nature, were also fairly non-committal regarding continued support.

Apart from regional donor contributions to EMPRES's core programme, donor support at the national level could be welcome to cover costs for specific items such as national research projects and student grants. The mission discussed this with donor embassies.

Given that EMPRES is a regional programme, the Dutch Embassy in Cairo felt that all matters concerning EMPRES should be handled by DGIS in The Hague. The Embassy has an IPM project in Egypt and contacts between the coordinator of that project and EMPRES through the Embassy and particularly regarding technical matters such as use of biopesticides and the planning of its third phase, would be appreciated.

USAID and the embassies of Germany and the Netherlands in Sudan stated that, for political reasons, all cooperation with the Government of Sudan was now restricted to emergency relief assistance. Development cooperation was expected to be resumed if the political situation improved sufficiently. Emphasis would then probably be on food security including agriculture with particular attention to strengthening of institutional capacities. The Government of the Netherlands is organizing an Assistance Planning Conference of the Government of Sudan, donor countries, and international organizations in the Netherlands in April 2003, which may give useful information. The embassies would appreciate receiving information on the planning of EMPRES's third phase.

The bilateral contributions of donors through their own projects were useful and appreciated, but the mission had the impression that national staff in some cases were only vaguely informed of the results of research being conducted in their country or neighbouring countries and their possible applications. This was the case, for instance, with staff of the Desert Locust Unit in Sudan in relation to the results of Desert Locust population ecology studies conducted by the Netherlands in a study area near Suakin, and with staff of the PPD in Eritrea in relation to the identification of environmentally sensitive areas carried out in Sudan. The PPD in Eritrea wanted to start this in their country and knowledge of the methods used in Sudan would obviously be helpful. The mission therefore recommends that, on the one hand, the design of bilateral contributions to EMPRES should be fully integrated in the EMPRES planning process, in order to ensure that they contribute optimally to the needs of the parties involved, as defined with and by those parties; and that, on the other hand, those responsible for bilateral contributions should make an effort to report their results timely and in an easily digestible manner to the other parties in EMPRES. In the case of research, in addition to scientific reports and papers, comments should be provided on how the results could be

applied practically. EMPRES and/or the CRC Secretariat could act as a clearing house and should play an active role in following up on bilateral projects.

Further remarks on research activities are made in the section on this subject later in this chapter, and GTZ's contribution to EMPRES is discussed in the section on EMPRES staff, below. However, the mission feels that the design of bilateral contributions to EMPRES should be fully integrated in the EMPRES planning process, and reports on their results, with comments on possible practical applications, should be provided timely to other EMPRES parties. EMPRES staff should keep informed on possibilities for funding of certain national EMPRES needs through donor embassies.

As suggested in the 2001 evaluation donor fatigue is apparent with the Dutch, German, and British governments reducing overall their interest in the programme; the general difficulty in attracting funds for EMPRES/WR is telling. However, this is unfortunate as the objectives EMPRES aims to achieve i.e. greater ownership and participation by donor recipients, preventive actions, avoidance/mitigation of impacts on the livelihoods of rural poor, safeguarding food security, and more efficient use of aid funds, are exactly the same things donors wish to achieve.

It is not clear that enough has been done by FAO to portray EMPRES as an approach to pest and disease management, and not only a programme on locusts; this approach could equally be used by national PPDs to manage other mobile pests such a grasshoppers, armyworm, and Quelea, but to some of the senior PPD officials met this seemed a novel idea. Furthermore, the various economic and socioeconomic studies made have been damaging to donor relations as they all question the value of locust control and therefore the need to improve it. AGPP has been ineffective at countering this stance to the detriment of donor interest.

AGPP needs to consider its line of advocacy with the donor community. EMPRES needs to be recast as an approach enabling national governments to prepare for and as far as practicable prevent emergencies caused by pest and disease incursions. EMPRES is an exercise in building national capacity. The major benefits of EMPRES-DL specifically are to improve the effectiveness of international efforts to manage the threat to food security and therefore livelihoods of the rural poor, while at the same time minimizing the financial and environmental cost.

E.2 Regional technical support to EMPRES: the EMPRES/CR-CRC relationship

EMPRES-CR is a regional programme planned for a finite period tentatively set, in the Programme Document, at three phases of four years each. Because of its aim of adapting new techniques, methods, and strategies for Desert Locust survey and control, and to some extent of developing such innovations, the approach initiated by EMPRES will continue after the actual EMPRES programme has come to an end. At that moment, the countries participating in the programme will have their Desert Locust units established and working; and monitoring, surveys, and control as and if needed will be their ongoing concern. It cannot be expected, however, that countries at the national level will be able to develop and assimilate further innovations needed to optimize Desert Locust control continually; to achieve this, support at the regional and international levels will be required. The question thus arises how this support can most efficiently be provided. Considering several options in this respect, the first EMPRES evaluation mission (1999) proposed that support at the regional level would be a task for the CRC, but found that cooperation between EMPRES and the CRC Secretariat at that time needed to be improved.

The present mission was pleased to find that relationships and cooperation between the CRC Secretariat and EMPRES have improved and seem to be good now. Management

decisions by FAO-AGPP at the end of the first phase have contributed to this improvement, viz. upgrading of the position of Secretary of the CRC to a full-time (from a half time) post on one hand and the transfer of the duty station of the EMPRES Coordinator from Asmara to Cairo on the other hand. The offices of these two officers are now adjacent and their contacts daily, intensive, and fruitful. One piece of proof is that the EMPRES method of work plan preparation and presentation has been assimilated by the CRC (see Report of the 23rd Session of the CRC).

Further integration of EMPRES and CRC can be achieved by ensuring that the EMPRES and CRC contact persons in the collaborating countries are identical. In the future, i.e. at the end of the EMPRES programme at the latest, the staff of the Secretariat of the CRC will have to be strengthened to enable it to play its regional support role effectively (see the section on the CRC in this chapter).

E.3 International technical support to EMPRES

According to the Officer in charge of FAO's Locusts and Other Migratory Pest Group, during the mission's briefing, the efforts to initiate an EMPRES programme for the Western Region are now beginning to come to fruition, with the Secretary of the newly established WRC already acting as the EMPRES-WR Coordinator. Full funding, however, is still uncertain. The question of how the different regional EMPRES programmes (including a possible future programme for the Eastern Region) should be coordinated, and how the total of EMPRES activities will be supported internationally, would seem to have an obvious answer: by the DLCC, with the DLCC's secretariat, embodied in FAO's Locusts and Other Migratory Pests Group, as the EMPRES international focus.

In the mission's view, the latter's role should not only, and not primarily, be administrative (e.g. by acting as TF budget holder) and organizational (e.g. by arranging meetings of EMPRES staff and stakeholders at the international level), but most of all technical and conceptual (e.g. by identifying possible innovations in Desert Locust control and playing a leading role in promoting efforts to achieve innovations and, to the extent possible, by participating in their development). In fact, the Locusts and Other Migratory Pests Group, through its Desert Locust Information Service, does already play an important part in technical (and, to some extent, conceptual) innovation; a fact implicitly recognized by the involvement of DLIS staff in the EMPRES Technical Forum for the Central Region (See section on TFCR in chapter E).The mission feels, however, that the task of the Locusts and Other Migratory Pests Group in this regard should be stated explicitly (e.g. in the Implementation Document for a third phase of EMPRES) and further enhanced, possibly through strengthening of its permanent or temporary staff and/or through a greater role of and stronger input by DLCC's Desert Locust Technical Group (DLTG). FAO-AGP should investigate the needs in this respect and the options and possibilities for their fulfilment

E.4 CRC secretariat

Staff of the CRC secretariat consists of the full-time Secretary and an administrative secretary. Apart from its traditional tasks, the CRC's main task in the future will be to support national Desert Locust Units in preventive DL control, along the approach developed by EMPRES. This job will be considerable, in particular because it is to be expected that the organization and the staffing of national locust units will remain in a state of flux for some time to come, with obvious consequences for support through training and otherwise. The mission therefore feels that the CRC Secretary, whose expertise is in Desert Locust control, should be assisted by a full-time professional officer for survey; a situation that could be achieved by transferring this position from EMPRES to the CRC, at the end of the last phase of EMPRES at the latest, but conceivably at an earlier date. The candidate for this post should have considerable locust experience enabling him, for instance, to translate the

Desert Locust Guidelines in Arabic. Whether at some time in the future a full or part-time administrator to the CRC Secretariat is needed should be considered in relation to the administrative support FAO's Regional Office in Cairo is able to provide.

The mission feels that in the future a considerable part of regional support needed by national locust units could and should be supplied through inter-country collaboration, but the onus of stimulating and organizing this will be on the CRC Secretariat. In the view of the mission, the member state contributions to the CRC could cover the costs for the proposed post of Professional Officer for surveys; but this would obviously be a matter for the CRC Commission to consider in relation to other uses of CRC funds. The mission understood that there are considerable arrears in the payment of CRC contributions by member states. It thinks that the CRC Commission and FAO should do whatever it takes to improve on this situation, particularly now that FAO has emphasized the importance it attaches to the future role of the CRC in preventive Desert Locust control by upgrading its Secretariat.

E.5 EMPRES/CR staff

At the time of writing, the programme-funded professional staff, consisted of the Programme Coordinator (Cairo); an International Migratory Pest Expert (Khartoum, appointed in December 2002), and a National Programme Officer for Survey (Sana'a). The contract of the International Expert for Research and Development (Sana'a) was terminated in July 2002, and the contract of the Associate Professional Officer (Khartoum) was ended in January 2003. It was intended to replace the position of NPO-control (Khartoum; open since the incumbent was appointed Secretary of the CRC) by an NPO-training in Addis-Ababa, but the mission understood that no suitable candidate was available for this position at the moment. The programme has an administrative secretary and two drivers, one in Cairo and one in Sana'a.

An EMPRES International Desert Locust Expert (Khartoum), replacing the International Expert Research and Development, has been appointed in January 2003. He was not available for an interview with the mission because of tragic personal circumstances, but two mission members had a telephone conversation with him. His TOR and summary work plan show that he will, among other tasks, assess national survey and information systems, develop vegetation cards to enable surveyors to include Desert Locust/vegetation relationships in their surveys, modify the RAMSES system to include vegetation data, analyse and improve procedures used by survey and control teams, contribute to survey aspects of contingency planning and provide training on these and related matters. He will give particular support to Eritrea's efforts to improve its electronic communication system, for which plans have been made during the visit of FAO's Locust Information Officer to that country in February 2003. The mission expects that this appointment will help EMPRES in achieving its second phase objectives.

A senior scientist (Cairo) is posted in the region by GTZ and acts at the same time as an FAO Visiting Scientist for fifty percent of his time. He helps EMPRES in matters related to the development of its regional research programme, such as informing national units on the programme and the required format of research proposals and making arrangements for evaluation of proposals (for details on the EMPRES research programme, see below), and on the development and introduction of efficient and environmentally safe control methods (Result 7 anticipated in the Programme implementation Document). The objectives of the GTZ project headed by this officer are: (1) the introduction of efficient and environmentally safer control methods, (2) enabling countries with breeding habitats in emergencies to implement early detection and control, and (3) improvement of knowledge about new Desert Locust control strategies with countries in the region. Since Desert Locust upsurges have not occurred so far during the project, the funds reserved for emergencies have been spent on survey and control equipment for countries in the region. The officer has prepared overviews

of important issues in Desert Locust control, such as barrier spraying, and supplied equipment for survey and control to countries in the region. He will be transferred from Cairo to Uzbekistan in April 2003 to develop support by GTZ of locust work in Central Asia. GTZ's Desert Locust project will be discontinued in 2003. His understanding was that GTZ, after contributing some DM 50 million over 15 years to Desert Locust problems, now wants to pursue other interests. This decision seems not to be based on doubts about the economic justification of Desert Locust control. There is no officer responsible for Desert Locust at GTZ-HQ anymore. GTZ might in the future be willing to consider contributing funds in case of Desert Locust emergencies.

AGPP staff at HQ told the mission that the performance of a senior EMPRES staff member who had worked with the Programme for four years was considered less than satisfactory. Although the performance of the officer was informally discussed with him at field level and a note was sent to him by AGPP on this matter, FAO-AGPP should address this kind of problems more decisively and at an early stage, by conducting performance appraisals for all Programme staff members annually as a routine; as, by the way, had been recommended to AGPP-HQ staff during the first EMPRES evaluation in 1999. Special donor funds had been made available for the subjects entrusted to the officer in question; part of these funds could and should have been spent better.

E.6 EMPRES Consultative Committee

The task of the EMPRES Desert Locust Consultative Committee for the Central Region (CCCR), as stated in the report of its first meeting in December 1998, is to review EMPRES progress and to advise FAO on how to make the programme better and more likely to achieve its objectives. Consisting of representatives of affected and donor countries and FAO, it has met in Cairo, 9-10 December 1998; Rome, 24-26 November 1999; Rome, 7-8 December 2000; and Cairo, 15-17 January 2002. The CCCR also participated in the planning workshop for phase 2 of EMPRES-CR in El-Tur, Egypt, March 2000. Initially, most of the affected countries were represented in the CCCR by their EMPRES Liaison Officers. The EMPRES evaluation mission in 1999 recommended that, given its review function, the CCCR should have a composition different from, and more senior to, the EMPRES Liaison Officers Meeting. This has since been done.

Judging from the CCCR's meeting reports, the mission feels that the Committee has played an indispensable role in critically reviewing EMPRES. It seems logical to assume that at the end of the EMPRES programme, when the CRC will have taken over the EMPRES approach, reviewing and steering of the CRC's activities in this respect will be a task of the FAO Commission for Controlling the Desert Locust in the Central Region. No donors, however, are represented in that Commission. Since donor involvement in locust emergencies, if any, in the future is conceivable and following of preventive locust control activities by donors would therefore be desirable, the mission recommends that FAO and the CRC investigate how this could be achieved, within the framework of the CRC.

E.7 Desert Locust Diploma Course

The University of Khartoum, in consultation with EMPRES and FAO's Locusts and Other Migratory Pests Group, has initiated a one year Diploma Course in Desert Locust management, intended for technical staff of PPDs in the region who have a secondary school background. The students receive a US$ 20 000 FAO grant under EMPRES towards the course's fees. The first class of six students has graduated in 2002 and a second class of eight students is now in training. The course consists of theoretical lessons in all aspects of Desert Locust biology, behaviour, and ecology; locust and grasshopper identification; and the various aspects of Desert Locust management such as information systems, meteorology, survey, and control. The course is in English. Lessons in scientific English and computer use

are part of the curriculum. The students are requested to prepare and deliver a seminar, do three months of practical field work during the Desert Locust breeding season on the Red Sea coast, and write a thesis. A report by the coordinator of the course, Professor S. El Bashir, and the curriculum are available.

Considering this a very important initiative with considerable potential benefits for the PPDs as well as for the students, the mission recommends that the course be evaluated at the end of the second year, at the level of the students as well as their supervisors, in order to identify improvements that could be made to target it best to the audience. As a follow up to the evaluation, a visit to and discussion with staff of DFPV (Département de Formation en Protection des Végétaux) of AGRHYMET in Niamey, Niger and/or a mission for this purpose by the director (who is anglophone) of DFPV to Khartoum would help to further optimise the course. DFPV was created in the early eighties to train technical level staff of PPDs of the nine Sahel (CILSS) countries through a two year course, in French, in all aspects of plant protection (including locust control) and has done so very successfully. It has excellent facilities and cooperates in certain respects with the University of Niamey. Several of the issues mentioned to the mission by the Desert Locust Diploma Course coordinator (such as language difficulties in the training, accommodation of students, possible salary rewards to graduates by their employers for their increased capabilities, the possibility of an MSc course) were also encountered by DFPV, and an exchange of experiences would be fruitful. The mission has discussed this suggestion with the Diploma Course and EMPRES coordinators.

E.8 Research

Bilateral research funded under EMPRES by the Netherlands and carried out by Wageningen University (WU) concerned improvement of Desert Locust control strategies and concentrated on two subprojects: “Scenario studies for improved Desert Locust survey operations and control strategies” and: “Habitat and spatial distribution of the Desert Locust in its solitary phase during winter breeding in the Red Sea coastal plain of Sudan”.

The scenario studies were further developments, in cooperation with staff of WU and financial support from GTZ, of those designed earlier by a former director of the Australian Plague Locust Commission (APLC).They are theoretical desk exercises, involving simulation modelling using computers in some cases, to analyse Desert Locust operations such as surveys, control of outbreaks and upsurges by different means, etc. The exercises were used successfully in the EMPRES Seminar on contingency planning in Borg-El-Arab, Egypt, 13-21 February 2002. WU intends to use these models in particular in its efforts to develop improved control strategies.

The habitat studies have shown that in the study area (Suakin, on the Red Sea coast of Sudan), during a recession period, over 80% of the locusts were restricted to one out of four vegetation types found in the area. The habitat containing the locusts covered only 4% of the study area. Obviously, this finding has the potential of dramatically improving the cost-effectiveness of surveys in recession periods, by restricting them to the habitats preferred by locusts. Several questions arise. Do similar distribution patterns also occur during outbreaks (which were not encountered during the study period)? Do similar distribution patterns also occur elsewhere in the region? Did knowledge of these habitat/locust distribution relationships exist at the indigenous level, i.e. with locust scouts and farmers/herders (in Eritrea, for instance, the latter help the PPD by keeping local staff informed of Desert Locust populations, which information is then transmitted to the PPD HQ)?

Recognizing the importance of these findings and recommending that work to improve Desert Locust control strategies should continue, including studies in other countries in the region and under other conditions of Desert Locust abundance, on habitat/locust distribution

relationships, the mission feels nevertheless that a different approach in the work on improved preventive control strategies will be necessary to achieve its goal any time soon. The order of the activities needs to be reversed. Instead of conducting academic research first and hoping that the results will find their application in the practice of locust survey and control as a second step, improved strategies for locust control need to be drafted first, based on common sense and existing experience of field staff, local farmers/pastoralists, and scientific research and then operationally tested in the field and in the office by simulation studies; if necessary, as a second step, this can be underpinned by academic research projects on essential specific questions.

In drafting improved control strategies, use must be made of experience existing elsewhere, particularly with the APLC, through consultancies of APLC staff with EMPRES/national DLUs during the third phase of EMPRES. Elements to be included in these strategies should include instructions on where to look for locusts (habitats), how to decide on continuing survey or, alternatively, starting control (i.e. the notion of control thresholds, not expressed in terms of spot locust densities but in terms of size of infested areas), the delimitation of areas to be controlled, the control equipment to be used (with emphasis on vehicles and aircraft for outbreak suppression, and hand-held sprayers largely confined to crop protection), and the control method to be used (e.g. barrier spraying vs. full coverage). Parallel to control operations, independent appraisals of control effectiveness would be essential. This would require an experienced professional locust officer, who could also act as the coordinator of the project on improved survey and control efficiency. Obviously, locust outbreaks would be needed for the operational tests, but indispensable preparatory work and efforts to make surveys more efficient could well be done during recessions.

E.9 EMPRES regional research programme

One of EMPRES objectives from the beginning has been to stimulate research institutions to participate in a joint Desert Locust research programme through grants of maximum $15000 for approved research projects. This programme has had a slow start, a situation that did not improve significantly during the second phase. Proposals received during the present phase and earlier were often of insufficient quality or poorly formulated, or not related to the joint aim of the programme. Research institutions in the region in some cases found the financial support from EMPRES insufficient. Staff of the University of Khartoum mentioned the slowness of the project proposal vetting process as a drawback; it made planning of research by students very difficult.

Ongoing under the programme are studies on Desert population ecology and on the effect of herbage quality on Desert Locust development at the University of Khartoum; on side effects of new non-chemical locust pesticides on honeybees and other non-target organisms at the University of Aden; on the impact of control measures on Desert Locust populations in relation to environmental factors at King Faisal University in Saudi Arabia; and on the effects of Metarhizium on grasshoppers at the University of Addis Ababa.

The mission thinks that the regional Desert Locust research programme has an important role in stimulating the interest of national research institutes in the subject and should be continued. Present efforts made by the GTZ Coordinator/FAO Visiting Scientist to ensure that the subjects studied reflect the important issues of Desert Locust preventive control, and that procedures for submitting research grant requests are understood by EMPRES Liaison Officers and by national research institutions, and that these procedures are as efficient as possible, should be continued after that officer's departure.

E.10 Desert Locust situation in the EMPRES countries

Information available to the mission shows that the organizational structure, staffing, and equipment of Desert Locust units are certainly not stable in all the countries concerned. However, eight of the nine EMPRES/CR countries now have a dedicated Desert Locust unit with in some cases considerable numbers of staff and equipment. The mission got first-hand information from Eritrea, Egypt, Sudan, and Yemen.

In Eritrea, due to very limited availability of staff in the civil service in general, the Crop Production and Protection Service (CPPS) has no separate Desert Locust unit. CPPS staff take care of locust problems in addition to other tasks. These include armyworm survey and control in the interior of the country in June –July, and Quelea and checker beetle control in September; the Desert Locust activities take place from September to January. The mission found the CPPS director in Eritrea, who also acts as EMPRES Liaison Officer, well informed and interested in the issues concerning preventive locust control. The reality being that staff is very limited, it thinks that the exceptional situation in Eritrea has to be accepted. External and internal communications in Eritrea are very difficult but promising action to improve these has recently been taken, during a visit of FAO Locust Information Officer.

The mission found the Desert Locust units in Egypt and Sudan well organized and staff capable. In both countries EMPRES was very much appreciated. Egypt has considerable capacities for Desert Locust and control. The unit is centrally organized but has 13 bases and 50 sub-bases in the country and 100 locust officers, and a budget of 3 million Egyptian pounds (about US$ 0.5 million). Staff do other pest control work if there are no locusts, and pesticide purchased annually for locust control is used for other purposes in those situations. What Egypt has particularly appreciated in EMPRES is the training (they have two master trainers now), the improved contacts with other locust counties in the region, the analyses involved of the drafting of a contingency plan, and the information on the presence of vegetation obtained from EMPRES and FAO-HQ. Egypt hopes to install RAMSES in 2003.

Sudan has an active, well managed, separate central locust unit in Khartoum and 26 substations in the country. The RAMSES system is operational but eLocust, installed in November 2002, is not yet operational. The unit's information officer has received long-term training at FAO's DLIS; his deputy (a female officer), can step in fully in his absence. Elements of EMPRES particularly appreciated are the help received in organizing surveys, particularly joint surveys in insecure border areas, training, and equipment. The improved exchange of information among countries is considered a very important achievement of EMPRES. Sudan's locust unit's staff feel it will need continued regional support in organizing (joint) locust surveys.

Yemen has created an independent Desert Locust Centre with its own staff (including an Information Officer) and equipment, transferred to the centre from the PPD. It is expected to have its own budget in the near future. It conducts regular surveys since September 2002. This development reverses a situation created in 1995, when a unit for national control campaigns (against Desert Locust as well as other migratory pests) was established and attention to Desert Locust surveys was diminished. The Centre has made an assessment of its personnel and equipment capacities and a plan of its operations that has been submitted to EMPRES as a basis for the Country Focus Programme in Yemen. They also have three master trainers. What they now expect from EMPRES is help in assessing the Desert Locust situation, in drafting a plan for a survey and control system, in further training, and in addressing environmental issues.

Somalia has a rudimentary Desert Locust unit, which is in contact with EMPRES.

The DLIS prepared the summary of the Desert Locust information received from the EMPRES-CR countries in recent years, added as Annex 3 to this report. It would seem that there is a discrepancy, in some countries, between the capacities available, in terms of staff

and equipment, for Desert Locust surveys and the output, in terms of survey results. The Locust Information Officer at FAO-HQ, the National Professional Officer for surveys in Sana'a, and the International Locust Expert in Khartoum (the latter interviewed by telephone) all expressed the view that efforts could and should be made to use the available capacities for locust surveys more efficiently, by careful planning of surveys to be conducted by a limited number of survey teams. This should perhaps be started in one or some of the four key EMPRES countries as a model. The mission would strongly endorse such endeavours. In fact, this seems at least partly similar to what it has recommended in the section on bilateral research above.

E.11 Campaign performance monitoring and evaluation

This remains the most elusive aspect of locust management, but is critically important to show that resources were expended effectively to reduce locust numbers and efficiently to minimize costs; it is seemingly simple to quantify requiring only answers to the questions: how many locusts were killed, what proportion of the overall threatening population did these represent, to what extent was potential damage prevented, and how many resources were expended? At the heart of the problem is incomplete knowledge of locust population size.

Approaches to ensure the right amount of control agent hits the desired target will help improve effectiveness at the level of the single target and will reduce financial and environmental cost,

E.12 The future of EMPRES/CR

Sufficient progress has been made to warrant extension of the programme to a third phase where unfinished Phase II elements would be adopted concurrently with Phase III. Broadly stated the purpose of Phase III should be to establish a sustainable locust management system for the Central Region.

The duration of Phase III cannot be exactly defined at this stage as it will depend on the amount of progress achieved in what remains of 2003, and the will of participating countries to adopt the EMPRES approach, but should be no more than three years, ending Dec 2006. At the end of Phase III, with the consent of the member countries of the Central Region Commission for the Control of Desert Locust (CRC), that organization should be given the primary role for ensuring the sustainability of the regional desert locust management system. That is, the CRC will be given responsibility for supporting member countries to build and maintain their locust preparedness and emergency response capability, and with AGPP, will ensure this is achieved regionally.

With its current level of resources the CRC could not fulfil this required role. It will take time to develop the capabilities of existing staff, and to identify and recruit other support staff. FAO should continue to fund the position of CRC Secretary. Additional staff resources would be needed to provide some of the technical support currently provided by EMPRES staff. Phase III would in part be a handover period where the CRC progressively takes over from EMPRES. Disaggregating CRC and EMPRES/CR work planning should begin early in Phase III to reflect the CRC has different objectives to EMPRES/CR, and to more rapidly achieve these.

This recommendation is predicated on the assumption that member countries feel they have ownership of, and responsibility for the CRC. They can do this by fulfilling their financial commitments to the CRC, engaging fully in CRC decision making, and implementing the components of EMPRES. Additionally, all EMPRES/CR countries should be members of the CRC.

The EMPRES/CR Steering Committee and CRC should agree that the CRC be given the primary role for ensuring the sustainability of the regional desert locust management system, and that the transfer of responsibility to the CRC be a key achievement of Phase III. The CRC member countries are urged to show their commitment by supporting the CRC both financially and conceptually.

Continuing input from AGPP will be needed to achieve effective locust management in the Central Regional in the long term. It is likely there will be a need for AGPP to maintain an overall coordination role during Phase III and beyond. Coordination of EMPRES activities in the three desert locust regions would be more efficiently handled by one AGPP officer acting as coordinator in Rome and continuing the current role of Secretary of the Eastern Region Commission unless, or until, a regionally-based Secretary is appointed.

It would be unrealistic to expect that prevention of all outbreaks can be achieved by Central Region countries acting independently. They do not have the resources to respond rapidly or effectively enough to achieve this. On a regional level the aim should be to prevent upsurges, true emergencies, which threaten agricultural production in several countries at the same time. It is anticipated that AGPP will continue to have the main role in ensuring that financial and technical resources are available to contain outbreaks that pose a regional threat.

A cohesive regional contingency plan should be developed for outbreaks that are too large or appear too rapidly to be contained by national LCUs. The regional plan would define roles and responsibilities of all players: AGPP, CRC, and member countries, and the procedures to be followed, to enable a rapid and effective international response including access to donor funds, to contain the potential upsurge. The team notes that the Locusts and Other Migratory Pests Group and EMPRES/CR Coordinator aim to develop this plan.

Annexes

Annex 1 Terms of Reference

Terms of Reference for EMPRES (Desert Locust Component)
Evaluation of Phase II
(February – March 2003)

Background

FAO established a Special Programme on EMPRES (Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases) in 1994. It aimed to address on the one hand the problems of epidemic diseases in livestock and on the other hand of the Desert Locust (DL), both of which threaten food security in many countries, can spread quickly from one country to another, and require international cooperation and coordination to achieve control. The plant pest component focused on the DL because it is the locust species that has the widest global range, potentially affecting up to 65 countries during a fully developed plague. The DL exists permanently in semi-arid and desert environments from Mauritania and Morocco in the West to the Pakistan/India border in the East. These habitats are divided for convenience into three Regions: the Western Region comprising West and North-West Africa, the Central Region (CR) comprising the countries around the Red Sea and the Gulf of Aden, and the Eastern Region comprising four countries in South-West Asia.

The EMPRES/CR Programme attempts to address transboundary pest and disease problems by emphasizing early warning, early reaction and research. Instead of creating new or replacing existing structures, the Programme intends to strengthen the national DL survey and control capacities in affected countries. The EMPRES-DL Programme began as a series of pilot projects. At an early stage it was decided to initiate the first field programme in the Central Region because many past plagues were thought to have begun in this region. After an extended formulation process involving extensive consultations with locust-affected countries and donors, a fully developed donor-supported field programme for the Central Region was launched early in 1997. It completed its Phase I at the end of 2000 and is now in its three-year Phase II, which ends in December 2003.

The EMPRES/CR Programme, covering Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan and Yemen, was established under the Programme Document “Desert Locust Management in the Central Region”, dated October 1995. It became fully operational with the appointment of a Central Region Coordinator in March 1997. An independent evaluation of Phase I was carried out in July/August 1999 and lead to some important changes in implementation arrangements. An extraordinary evaluation of the whole EMPRES Programme including its Central Region Desert Locust component was carried out on special request of the Director-General of FAO in August 2001.

The EMPRES/CR Programme strategy has two major axes, a strong preventive character and an important learning component. Prevention is to be achieved through an improved early warning and forecasting system, and by strengthening the capacities of national locust control services in the region for monitoring, survey and control. The learning component addresses research on the many gaps in the knowledge of DL ecology and management, and the potential introduction of new technologies and training of national plant protection staff in improved DL management subjects.

The Programme is designed as a collaborative effort between key locust-affected countries, regional bodies especially the FAO Commission for Controlling the Desert Locust in the

Central Region (CRC) and the Desert Locust Control Organization for Eastern Africa (DLCO-EA), together with donors and FAO.

The EMPRES/CR Programme Document gives the development goal as:

to reduce the risk of Desert Locust plagues emanating from the Central Region of the Desert Locust distribution area, in order to mitigate food security, economic, and environmental concerns in the Central Region and beyond,

while the programme goal is:

to strengthen the capabilities and capacities of national, regional, and international components of the Desert Locust management system to implement effective and efficient preventive control strategies based on early warning and timely, environmentally sound, early control interventions.

During the Phase II planning workshop the Purpose of Phase II was formulated as:

Components of preventive Desert Locust control management developed and adopted.

The Phase II of the EMPRES/CR Programme is understood as a consolidation phase and is anticipated to contribute with the following eight results to the achievement of the purpose of Phase II:

1: Operational mandate of different regional organizations in Desert Locust management harmonized.

2: National and regional communication networking enhanced.

3: Desert Locust early warning and information systems improved.

4: Desert Locust survey procedures of the member countries improved.

5: Desert Locust technicians and officers qualified.

6: Contingency plans available and implemented.

7: Efficient and environmentally safer control methods introduced.

8: Systematic methods of campaign evaluation developed.

The EMPRES/CR Programme has been financially supported in its Phase II by FAO Regular Programme funds, together with Trust Fund projects funded by the Netherlands (GCP/INT/670/NET), Switzerland (GCP/INT/817/SWI), the United States of America (GCP/INT/720+757/USA), the Commission for Controlling the Desert Locust in the Central Region (MTF/INT/007/MUL), the Desert Locust Control Committee (DLCC) (MTF/INT/008/MUL) and Sweden (in the form of an Associate Professional Officer). In addition, it benefited from bilateral support from the United Kingdom, Sweden and Germany.

Purpose of the Evaluation

The evaluation is intended to provide donors, participating countries and FAO with an independent and objective assessment of the current status of implementation and the relevance effectiveness and impact of the EMPRES/CR DL Programme, including progress and problems faced. In particular it will focus on the progress achieved by Phase II. It will

examine activities funded under the FAO Regular Programme, various donors, the CRC and the DLCC. On the basis of its assessment, the evaluation will make recommendations for the future of the EMPRES/CR DL Programme including any extension into a Phase III, and any requirement for reorientation or adjustment in:

- priorities;
- coverage and scope;
- implementation (management, coordination and operations).

Scope of the Evaluation

The emphasis of the evaluation will be on programme performance, especially on:

- efficiency in implementation, including programme management;
- effectiveness in achieving the expected results (outputs/services and their use for intended purposes);
- institutional coordination among countries and regional organizations to prevent and combat locust emergencies and organizational and operational improvements in DL management in the participating countries;
- contribution of training activities to the build-up of sustainable technical capacities;
- research on improved methods for forecasting and control;
- impact on the capacities of the locust-affected countries; and
- effectiveness in achieving sustainability.

In general, the Evaluation Mission will assess, and make recommendations where appropriate, on the:

a) Relevance of the programme to the development priorities and needs of the locust-affected countries;
b) Realism, clarity and flexibility of the programme design, including the objectives, structure and mechanisms for adjustment, supervision and programming;
c) Adequacy of institutional relationships, partnerships and links to related activities by FAO, donors, participating countries and regional organizations;
d) Efficiency of programme implementation, including the programme management at FAO Headquarters and in the field, coordination of activities in all member countries, as well as monitoring and reporting arrangements;
e) Effectiveness in achieving programme outputs and objectives (i.e. immediate results and prospects for longer-term outcomes). The evaluation will review the progress towards targets and indicators defined for the programme, especially regarding:

- collaboration among the countries and regional organizations to promote and encourage establishing sustainable regional Desert Locust management system(s);
- the contribution of training activities towards building up solid technical expertise and sustainable capacities in the participating countries in general and to the Diploma Course at the University of Khartoum in particular;
- the collaboration with the relevant bilateral projects in particular with the GTZ locust project;
- the development of improved early warning and control mechanisms;
- relevant operational research activities and the collaboration with ICIPE;
- reasons for implementation successes and failures.

The Evaluation Mission will take advantage of previous two evaluations that have been carried out, in 1999 and 2001 respectively, in making its assessment of the progress achieved.

Composition of the Evaluation Mission

The Evaluation Team will consist of:

- Team Leader (representing FAO) with experience in the evaluation of regional development programmes and projects, preferably familiar with plant protection matters;
- Desert Locust control specialist;
- Crop Protection expert representing the donor community with technical experience relevant fro Desert Locust management.

Countries visited by the team will be requested to nominate a liaison person to interact with the mission. In addition, participating countries not visited by the Evaluation Mission, will be requested to provide written comments on the programme in advance. Major collaborators/donors involved in the EMPRES Desert Locust Programme will also be contacted for comments on the EMPRES-DL Programme through questionnaires. The relevant units in FAO HQ will be interviewed, and available documentation reviewed.

The evaluation team members should be independent and thus have no previous direct involvement with the programme. They should preferably have experience with project evaluations.

Timetable and Itinerary of the Evaluation Country Visits

The following timetable is provisional at this stage – the sequence of country visits may change depending on availability of flights and persons to be met.

Location	Arrival	Departure
Rome	23 February 2003	24 February 2003
Cairo	24 February 2003	26 February 2003
Sana'a	26 February 2003	01 March 2003
Khartoum	01 March 2003	05 March 2003
Asmara	05 March 2003	07 March 2003
Cairo	07 March 2003	08 March 2003
Rome	08 March 2003	11 March 2003

In addition, the mission will meet with experts in the main technical backstopping unit in FAO HQ.

Consultations

The Evaluation Mission will interact closely with the FAO technical experts, FAO representatives, representatives of main collaborating agencies and the concerned national agencies, as well as with national and international project staff. Although the mission should feel free to discuss with the authorities concerned anything relevant to its assignment, it is not authorized to make any commitments on behalf of the Governments, the main collaborators, or FAO.

Reporting

The Evaluation Mission is fully responsible for its independent report which may not necessarily reflect the views of the Governments, the donors, or FAO. The report should include the following sections:

- Summary, including Conclusions and Recommendations;
- Programme Objectives, Design, Structure and Partners;

- Programme Resources and Implementation;
- Programme Results;
- Programme Sustainability;
- Conclusions and Recommendations.

The report should be completed in draft form to the extent possible during the final stage of the mission. The main findings and recommendations should be discussed with the concerned parties. The mission leader bears responsibility for finalizing the report. At the end of the mission, the report should be completed in a form which will allow distribution of an advanced copy to those donors which require the report urgently. Final editing should be completed not later than two weeks after the end of the mission.

Annex 2 Itinerary and persons met

Rome, 24 February, 10-11 March

Mr CCH Elliott, Senior Officer Migratory Pests, AGPP
Mr A Hafraoui, Senior Officer Other Migratory Pest & Emergency Operations Group, AGPP
Mr K Cressman, Locust Forecasting Officer, AGPP
Mr Pietro Ceccato, Remote Sensing Specialist, AGPP

Cairo, 24 - 28 February, 7-8 March

Mr Khalil Ghareeb El Malky, Under-Secretary, Ministry of Agriculture
Mr Mohamed Abd El Rahman, EMPRES/CR Liaison Officer, Director General, General Department for Locusts & Agro-Aviation Affairs
Mr Ali Zeen Eldeen Shaheen, Assistant Director General, General Department for Locusts & Agro-Aviation Affairs
Mr Peter M Flik, Head Development Cooperation, Dutch Embassy
Mr Fouad Bahakim, EMPRES NPO Survey (stationed in Sana'a)
Mr Abdu Farea Al-Romaih, EMPRES/CR Liaison Officer; Head Locust Control Unit, PPD Yemen
Mr Mohamed Albraithen, FAO Regional Representative
Mr Abdellatif Tabet, FAO Representative
Mr Mohamed A S Abdel Monem, Assistant FAO Representative
Mr Christian Pantenius, Coordinator, EMPRES Central Region
Mr Munir Butrous, Secretary of Desert Locust Central Region Commission (FAO)

Khartoum, 28 February - 5 March

Mr Elfatih Mohamed Saeed, State Minister, Ministry of Agriculture and Forestry
Mr Sharaf El Deen Hassan Dawoud, Director General, Plant Protection Department (PPD)
Mr Khidir Gebreil Musa, Head, Pest Control Department, PPD
Mr Rabie Abd El-Hameed Khalil, EMPRES/CR Liaison Officer, Head Locust Section, PPD
Mr Kamal Suliman Obeid, DL Information Officer, PPD
Mr Osman Mohamed Abdalla, Head Biological Control Section, PPD
Mr Abd El-Moneim El-Khidir Taha, Head Red Sea Campaign
Mrs Zeinab Hyder Mahdi, Assistant Information Officer, PPD
Mr Mohamed Abdallahi Ould Babah, Chief, Locust Centre Mauritania (attending workshop)
Mr Hans Veenbaas, Counsellor/Deputy Head of Mission, Dutch Embassy
Mr Abdel Rahman Hamid, Food & Agriculture Advisor, USAID
Mr Frank Neumann, Deputy Head of Mission, German Embassy
Mr Abdulla Tahir Bin Yehia, FAO Representative

Asmara, 6 - 7 March

Mr Bereke Ogbamichael, EMPRES/CR Liaison Officer, Head Plant Protection and Extension Division, Ministry of Agriculture
Mr Semere Gebrehiwot, Ministry of Agriculture (in charge of CFP)
Mr Heuston Dagg, FAO Representative

Annex 3 DL Information – Country Situation

DJIBOUTI
Reports of the DL situation are sent to DLIS on a regular basis every month, but actual ground surveys are not carried out.

EGYPT
Ground surveys appear to be carried out throughout the country including along the Mediterranean Coast and in the Sinai – some places that have not seen DL for 50 years – although it can be assumed that the DL Information Officer in Cairo may sometimes simply call the Locust Bases in the main cities and ask if they have seen or heard of any DL. There is obviously no need to carry out surveys throughout the country. The only important area is about 100 km of Red Sea coast in the southeastern corner near Sudan during the winter along and, to a lesser extent, along the shores of Lake Nasser and in the new agricultural schemes in Upper Egypt. In these areas, surveys are carried out on a regular basis. Reports are regularly sent to DLIS every month although some of the data has simply been copied/pasted from the previous month.

ERITREA
Reports are not received regularly (due to international communication difficulties) although the PPD has a survey plan that is implemented on the Red Sea coast during the winter where a 4-6 day survey is carried out once a month.

ETHIOPIA
Surveys are regularly carried out near the N Somalia border in Eastern Ethiopia (although there probably is little need to do this unless significant DL infestations are present in N Somalia or along the Red Sea coasts). Reports of the survey results are regularly sent to DLIS.

OMAN
Surveys appear to be carried out in the north and reports are regularly sent to DLIS. As the reports do not contain all the stops which ground teams made, it is difficult to determine if surveys are actually being carried out or if Agricultural Officers are being telephoned for information.

SAUDI ARABIA
Surveys are not regularly carried out, in fact none have been made in the past year or more, by the centralized Locust Unit in Jeddah despite have plenty of resources and qualified staff. Instead, they prefer a passive system of monitoring, relying on Agricultural Extension Agents for information. This is fine except that these persons are in the cultivations that can be quite far away from where DL are actually present and breeding. Despite FAO/EMPRES/CRC advise and encouragement to move towards an active system of monitoring, supplemented by information from the Ag Ext Officers, the system remains much as it was when EMPRES began. A highly summarized report is sent every month to DLIS.

SOMALIA
Regular monthly surveys are conducted according to a survey plan and the results are reported on time to DLIS.

SUDAN
Regular monthly surveys are conducted in the winter breeding areas according to a survey plan and the results are reported on time to DLIS. Surveys are carried out less often in the summer breeding areas but then this area could be considered outside of EMPRES as per the original concept of the programme.

YEMEN

Surveys have not been carried out in the winter breeding areas on the Red Sea coast so far this year due to difficulties in releasing approved funds from the MOA. In the past, surveys were not carried out because funds were not approved by the MOA. Regular surveys in the spring and summer areas are even more erratic. Despite this, reports are regularly sent to DLIS about rainfall.

Annex 4 Programme statistics

Staff situation

a. Professional staff
1 Programme Coordinator (Cairo, Egypt) FAO Regular Programme funds (August 2001 until December 2005)
1 International Migratory Pest Expert (Khartoum, Sudan) Project funded post (December 2002 until January 2004)
1 National Professional Officer (position vacant since August 2001)
1 National Professional Officer for Survey (Sana'a, Yemen) Project-funded post (contract until February 2004)
1 International Research & Development Expert (Sana'a, Yemen) Contract ended in July 2002

b. Support staff
1 Administrative Secretary (Cairo, Egypt) Project-funded (September 2002 until December 2004)
1 Driver (Sana'a, Yemen) Project-funded (contract until August 2004)
1 Driver (Cairo, Egypt) GTZ-Project-funded until April 2003.; since May 2003 project funded

Equipment ordered 2002/2003

Djibouti:
• 2 ULVA mast Micron sprayers
• 5 Hand-held Micro- ULVA sprayers
• 3 Codan Radio Transceivers
• 3 Air conditioners
• 1 Digital camera
• various office equipment

DLCO-EA
• 1 Codan Radio Transceiver (Djibouti base)
• 1 Desk-top computer incl. accessories

Egypt:
• 2 ULVA mast Micron sprayers
• 5 hand-held Micro- ULVA
• 25 Vibra-tak Tachometer
• 1 4-wheel drive Pick-up
• 1 Desk-top computer incl. accessories

Eritrea:
• 5 Micron ULVA mast sprayers
• 1 computer incl. accessories
• 1 Digital camera
• various survey equipment incl. 20 Garmin GPS

Ethiopia:
• 1 Desk-top computer incl. accessories
• various training equipment

Oman
• 5 Hand-held Micro- ULVA
• 5 Vibra-tak Tachometer

• 1 eLocust Palm-top computer

Somalia:
• 1 Codan Radio Transceiver
• 1 motorbike
• 1 GPS hand set
• 1 fax machine
• 1 small photocopier
• 6 camp beds
• 1 Digital camera

Saudi Arabia:
• 5 Hand-held Micro-ULVA
• 5 Vibra-tak Tachometer

Sudan:
• 1 Generator
• 8 Garmin GPS and other survey material (University of Khartoum)
• 2 ULVA mast Micron sprayers
• 15 Hand-held Micro-ULVA sprayers
• 5 Vibra-tak Tachometer
• 5 Garmin GPS
• 1 Desk-top computer, incl. accessories
• 1 Photocopy machine
• 16 field beds incl. mosquito nets
• 1 Toyota 4WD Land Cruiser Pick up

Yemen:
• 1 Desk-top computer, incl. accessories
• 1 Laptop computer, incl. accessories
• 1 Digital camera
• 5 Hand-held Micro-ULVA sprayers
• 5 Vibra-tak Tachometer
• 8 fax machines
• various survey equipment
• various training equipment

Training activities 2002/2003

• 1 International ToT training course (Oman, October 2002, total 15 trainees, 9 from the Central Region, 1 from EMPRES/WR and 5 from Southwest Asian Commission)
• 3 National S&C training courses (Egypt, August 2002; Djibouti, November 2002; Ethiopia, November 2002) total 45 trainees
• 1 Local scouts training course (Ethiopia, December 2002) 27 trainees
• 1 special training course on RAMSES operation at NRI, January 2002, 2 trainees
• 1 Radio operation and maintenance training course (Ethiopia, April 2002) 18 trainees
• 1 DL Diploma course, University of Khartoum, 8 students (academic year 2002/2003)
• 1 National Survey & Control course in Saudi Arabia from 8-19 March 2003, 17 trainees
• Various on-the-job training opportunities on RAMSES application, use of eLocust system, survey operation, locust information systems in Sudan, Yemen, Saudi Arabia, Egypt and Eritrea

Meetings, workshops, seminars attended by EMPRES/CR staff

• 4th Consultative Committee Meeting, Cairo, Egypt, 15-17/01/2002

• EMPRES/CR Staff Meeting, Cairo, Egypt, 21-22/01/2002
• Contingency Planning Seminar, Borg El Arab, Egypt, 13–21/02/2002
• CRC Meeting, Damascus, Syria, 09–14/03/2002
• Sprayer Testing Workshop, Cairo, Egypt, 09–16/09/2002
• 4th International ToT Training Course, Muscat, Oman, 07-17/10/2002
• 10th EMPRES/CR Liaison Officers Meeting, Jeddah, Saudi Arabia, 27–31/10/2002
• 2nd Joint Technical Forum Meeting, Cairo, Egypt, 27–28/10/2002
• EMPRES/WR DGPS workshop, Nouakchott, Mauritania, 15-19/12.2002, two participants from EMPRES/CR
• Interregional bio-control field workshop, Port Sudan, Sudan, 10-20/01/2003
• EMPRES/CR Staff Meeting, Khartoum, Sudan, 13-15/01/2003
• 1st EMPRES/WR ELO Meeting, Niamey, Niger, 30/01–03/02/2003

Publications

• Report of 4th EMPRES Consultative Committee Meeting, Cairo 15-17 January 2002 (FAO) February 2002
• Farmers' DL Training Guideline in Tigrinya (PPQU Eritrea) January 2002
• Report on Radio Operation and Maintenance Training in Ethiopia (CPPTRD) June 2002
• Report on Progress - Country Focus Programme Ethiopia (CPPTRD) March 2002
• Report on Progress - Country Focus Programme Ethiopia (CPPTRD) June 2002
• Report on Progress - Country Focus Programme Sudan (PPD) June 2002
• Report on Progress - Country Focus Programme Sudan (CPPTRD) October 2002
• 2nd Report on Progress "Ecological Field Studies on Desert Locust Population Dynamics" (University Khartoum) February 2002
• 2nd Report on Progress "Impact of Alternative Pesticides used in Desert Locust Operation on Honey Bees and other Non-Target Organisms" (University Aden) March 2002
• Report on 23rd Session of the FAO Commission for Controlling the Desert Locust in the Central Region, Damascus, 2-14 March 2002 (FAO) April 2002
• Report on Radio Operators Training in Ethiopia (CPPTRD), April 2002
• Assessment of the Socio-Economic Impact of Desert Locust and their Control (DFID) April 2002
• Review of CF Programmes in Eritrea and Yemen (EMPRES/CR) May 2002
• EMPRES/CR Report on Progress - Period January - June 2002 (EMPRES/CR) July 2002
• Risk Assessment on the Importation and Large Scale Use of Mycopesticides against Locusts (FAO) August 2002
• Report on RAMSES training in Yemen (EMPRES/CR) August 2002
• Report on RAMSES training in Eritrea (EMPRES/CR) August 2002
• Scenario studies for improved DL survey and control strategies, 8th progress report (Wageningen University) August 2002
• Report on National Training Course in Egypt (CRC) September 2002
• Minutes of Meeting, 10th ELO Meeting (EMPRES/CR) November 2002
• Socio-economics of Desert Locust Control in Sudan - A Micro Level Case Study (EMPRES/CR) November 2002
• Report on Installation of Trimble Trimflight3 on DLCO-EA aircraft (DLCO-EA) October 2002
• 2nd meeting of the Joint Technical Forum for the Central Region (EMPRES/CR–CRC) November 2002
• Report on National Training Course in Djibouti (MoA Djibouti) November 2002
• Consolidated Report on progress "Optimization, validation and transfer of pheromone technology to national Locust Control Organizations" (ICIPE) November 2002
• Draft Workshop Report on Sprayer Testing Used in Desert Locust Control (EMPRES/CR – CRC) December 2002
• Manual to Visualize and Analyze SPOT4-Vegetation Images (AGPP) December 2002
• Report on National Training Course in Ethiopia (CPPTRD) December 2002

• 3rd Report on Progress "Ecological Field Studies on Desert Locust Population Dynamics" (University Khartoum) December 2002
• Improved Survey Methods for Gregarious and Gregarizing Hopper Patches of Desert Locust (FAO), January 2003
• Report on Survey and Control Training Course in Saudi Arabia (CRC) March 2003.
• Report on 2nd Joint Survey of the DL Winter Breeding Areas on the Egyptian- Sudanese Border (EMPRES/CR) April 2003
• Report on 5th EMPRES Consultative Committee Meeting, Rome, 19-23 May 2003 (FAO), May 2003
• Final Report on Ecological Field Studies on Desert Locust Population Dynamics (University of Khartoum) May 2003