

REPORT

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FAO Desert Locust Control Committee

Extraordinary Session



Report of the
FAO Desert Locust Control Committee
Extraordinary Session

Rome, 29 November – 2 December 2004

Food and Agriculture Organization of the United Nations
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LIST OF ACRONYMS

ADB	African Development Bank
AELGA	Assistance for Emergency Locust and Grasshoppers Abatement (USA)
AGP	Plant Production and Protection Division (FAO)
AGPP	Plant Protection Service (FAO)
CIRAD	Centre de coopération internationale en recherche agronomique pour le développement (Montpellier, France)
	CLAA Centre de lutte anti-acridienne (Nouakchott, Mauritania)
CLCPRO	Commission de Lutte Contre le Criquet Pèlerin dans la Région Occidental
DGPS	Differential Global Positioning System
DLCC	Desert Locust Control Committee
DLCO-EA	Desert Locust Control Organization for Eastern Africa
DLIS	Desert Locust Information Service (FAO)
DLCCTG	DLCC Technical Group
ECLO	Emergency Centre for Locust Operations
ELO	EMPRES Liaison Officer
eLocust	System of electronic data collection and transmission
EMPRES	Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases (FAO)
EMPRES/CR	EMPRES Central Region Programme
EMPRES/WR	EMPRES Western Region Programme
EU	European Union
FAO	Food and Agriculture Organization of the United Nations (Rome, Italy)
GPS	Global Positioning System
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
ICIPE	International Centre for Insect Physiology and Ecology (Nairobi, Kenya)
IGR	Insect Growth Regulator
LOCUSTOX	Project on Environmental Impact of Locust Control (Dakar, Senegal)
NPO	National Professional Officer
OCLALAV	Organisation commune de lutte anti-acridienne et de lutte anti-aviaire (Dakar, Sénégal)
PAN	Phenyl-aceto-nitrile
PPD	Plant Protection Department (National)
PRG	Pesticide Referee Group
PRIFAS	Unité d'acridologie opérationnelle du Programme protection des cultures, Cirad-amis (Montpellier, France)
RAMSES	Reconnaissance and Management System of the Environment of Schistocerca
RP	Regular Programme (FAO)
SOP	Standard Operating Procedures
SWAC	FAO Commission for Controlling the Desert Locust in South-West Asia
TCP	FAO Technical Cooperation Programme
TF	Trust Fund
USAID	United States Agency for International Development
WU	Wageningen University

LIST OF RECOMMENDATIONS

Recommendations

The Desert Locust Situation

1. All locust-affected countries should establish a dialogue with the Desert Locust Information Service (DLIS) at the Locust Group, FAO HQ, and with the Commission Secretariats, to verify whether sufficient detail was provided in the information being sent to FAO and, if not, where the gaps were. A great effort should be made to ensure that the gaps be filled quickly, so that the best quality of forecast would be issued by DLIS.

2. During locust emergencies, maximum use should be made of available technology including GPS, RAMSES, and eLocust, to make easier the task of dealing with large quantities of data. Where countries require it, training should be organized by DLIS.

Control measures undertaken by affected countries

3. Participants felt that the preventive strategy for locust control had been successful in the Central Region, but, in the absence of an EMPRES Programme in the Western Region, had not been implemented there. To cope better with the situation the EMPRES/WR should be launched as a full field programme with donor support as soon as possible.

4. Noting the considerable efforts to control locust infestations made by the North African countries using their own resources, participants urged the international donor community to add their support.

5. A roster of experts in the various locust-related activities should be established by FAO and should include experts from all the three Regions, for use in identifying expertise to be fielded during the emergency.

Crop damage assessment

6. Damage to pastureland, together with damage to crops and the environment, should be included in future assessments.

7. At least one dedicated team should be fielded in each affected country during future campaigns to collect data on damage to crops and pastures, and on the socio-economic impact on farmers.

FAO, the Locust Commissions, and donor assistance

8. Better publicity in the Press, with greater use of television, should accompany appeals made to the international donor community, in order to encourage a faster response. Care should be taken not to announce pledges until cash had been received.

9. FAO, in consultation with donors, should consider establishing a substantial emergency fund that could be drawn on at the beginning of an upsurge so that rapid reaction can follow early warning.

10. FAO should streamline its operations so that equipment, supplies, aircraft, consultants and operational funds can be provided more quickly to affected countries.

11. Given the numerous tasks allocated to the Secretariat of the FAO Commission for Controlling the Desert Locust in the Western Region (CLCPRO), including the coordination of the EMPRES Western Region Programme, participants recommended that the Commission be reinforced in respect of its human, material and financial resources.

12. Donors are encouraged to channel funding for locust control through FAO whenever appropriate. When donors choose to provide assistance bilaterally, they are advised to provide the FAO and other donors with full information well in advance of delivery, including an estimate of the monetary value of in-kind contributions. This will facilitate FAO's coordination role in tracking, timing and avoiding duplication in the provision of resources, and allow an estimate to be made of the total value of resources donated from all sources.

13. Affected countries should announce contributions, as pledged and received, on their website. The National Emergency Locust Steering Committees need to be timely and fully aware of both donor contributions and resources mobilized from national resources. FAO can provide models of how this can be done and provide some technical assistance if needed.

14. FAO should provide donors with up-to-date information about the spending of their funds. To facilitate the communication, the information could be put on a restricted website.

Survey

15. Early on in a locust upsurge, helicopters should be used to survey the infestations rapidly and to determine their extent/scale. Large infestations should be treated mainly by air in order to achieve the necessary coverage.

16. Investigations should be organized by FAO to determine how areas favourable for locusts in affected countries that were difficult to access could be surveyed.

17. The importance of border surveys was stressed by many participants of locust affected countries and should therefore be encouraged.

18. To strengthen national survey and control capabilities the use of such teams from other countries should be encouraged and facilitated.

Contingency planning

19. The elaboration of contingency plans at the national, regional and international level should be considered a priority in order to be able to respond accurately to different levels of locust threat. The countries should be assisted by FAO in preparing and improving contingency plans.

20. Workshops should be held in each country at the end of each campaign involving all partners to review all aspects of the actions undertaken and identify the lessons learned. The results will be needed to improve the contingency plans.

21. ECLO should remain operational and supported until the next remission of upsurges.

22. ECLO should strive towards greater coordination among the Commissions, the regional organizations and the affected countries of the invasion area.

23. The donors and ECLO should develop the means of necessary cooperation to achieve their common goal.

Research

24. The opportunity of having gregarious locust populations and large scale control campaigns at the moment should be used to carry out appropriate applied research, such as on: improved survey methods, evaluation of the effectiveness of control operations, appropriate application techniques, environmental monitoring and testing of environmental friendly products, such as IGRs, mycopesticides and other products.

Evaluation and monitoring

25. The lessons learned and to be learned of the campaign should be captured fully by evaluation, assessment and monitoring procedures. This also concerns the effect of the present and future campaign on food security.

INTRODUCTION

1. The Extraordinary Session of the DLCC was convened by FAO because of the emergency situation in West and Northwest Africa. A list of participants is given in Annex I.

2. The Extraordinary Session was opened by the Director-General, Mr. Jacques Diouf. He referred to the dramatic pictures in the press and the television over the past months.

3. The Director-General reminded the meeting of the roles of FAO and the DLCC and mentioned that the capacity to deal with the emergency situation had been boosted by re-establishing ECLO, the Emergency Centre for Locust Operations, supervised by the Directors of Plant Production and Protection (AGP) and Emergency Operations and Rehabilitation (TCE).

4. The Director-General informed the meeting of the efforts undertaken by FAO, after the first Alert was issued in October 2003, to request for international support to help the affected countries in West and Northwest Africa. By 17 September 2004 only US\$ 4 million had been received by FAO while FAO allocated US\$ 5 million from its own Technical Cooperation Programme. He drew attention also to the tremendous efforts that had been made in the Sahelian countries and by the Northwest African countries to help their neighbours in the Sahel.

5. As of today, the Director General said, US\$ 67 million has been pledged out of US\$ 100 million requested, and USD\$ 56 million has been received in cash. He thanked all those countries who had responded to FAO's appeals.

6. Although the donor response was slow at the beginning, the Director-General said that he is confident that the control operations conducted during the summer and the 2.1 million ha treated up to the end of October helped to limit the amount of crop and pasture damage that occurred in the Sahel.

7. The Director-General further referred to the efforts of FAO and its partners to minimize the negative effects of the control operations on the environment and the health of operations staff. He mentioned that FAO planned to carry out tests on more environmentally friendly products during 2005.

8. The Director-General indicated that the outlook for the future remained uncertain and that the development of the situation depended to a large extent on rainfall in locust breeding areas. He reminded the participants that FAO's approach to preventive Desert Locust management was embodied in its EMPRES Programme. Because previous locust plagues had originated from the Red Sea area, EMPRES was initiated in the Central Region. FAO had wanted to expand EMPRES to the Western Region for several years but donors did not respond until the African Development Bank came forward in 2003. The Director-General expressed his conviction that if EMPRES had been in place in the Western Region earlier, the affected countries would have been better prepared for the current problem.

9. Finally the Director General reminded the meeting of the role of DLCC to advise FAO on how to improve the implementation of its mandate. He considered the timing of the Extraordinary Session as appropriate, allowing a review of actions over the past 12 months, and leading to sound decisions and recommendations for the spring and summer seasons next year. He wished the participants every success in their deliberations over the next few days.

OFFICERS OF THE SESSION

10. The following Officers were elected:
Chairman: Mr. Mohamed Abdullahi Ould Babah (Mauritania),
Vice-Chairmen: Mr. Phillip Lamade (USA), Mr. Rachid Lakhdar (Morocco).
Drafting Committee: Mr. Bencheikh-Lehocine (Algeria), Mr. Lo (Senegal), Mr. van Huis (The Netherlands)

AGENDA

11. The Agenda, as adopted, is given as Annex II.

PRESENTATIONS, DISCUSSIONS AND RECOMMENDATIONS

The current Desert Locust Emergency

(a) The Desert Locust Situation: September 2003 to November 2004; and Forecast

12. The FAO Locust Forecasting Officer gave a detailed presentation of the Desert Locust situation from September 2003 to November 2004 and provided a forecast of the potential developments in the near future. The presentation also included also monthly updates of the areas treated and the cumulative total to date.

13. Good rain fell during the summer of 2003 in the Sahel of West Africa and Sudan, causing local outbreaks in Mauritania, Mali, Niger and Sudan in October. In November, swarms moved to Northwest Africa where breeding occurred in the spring of 2004 and an upsurge subsequently developed. Swarms that were not controlled invaded the Sahel at the beginning of the summer and laid eggs. A substantial number of new swarms formed in West Africa during September and October and reinvaded Northwest Africa. In November, a few swarms reached the eastern Mediterranean, Egypt and Israel, and a smaller infestation appeared in Saudi Arabia and Jordan. At present, the locust infestation in the Western Region is larger and more numerous than at any other time since the plague of 1987 – 89.

14. Initial control operations in Mauritania, Mali, Niger and Sudan in October and November were limited and mainly ground-based because outbreak infestations were small and localized. In January, aerial spraying started in Mauritania using Mauritanian and Moroccan aircraft. There was a significant increase in the areas treated from March onwards because of large-scale control operations involving aircraft were conducted in the spring breeding areas in Northwest Africa. This was followed by similar operations in the Sahel in West Africa during the summer. More recently, intensive operations have

started once again in Northwest Africa. All in all, about 10.5 million ha were treated from September 2003 to 20 November 2004.

15. In the Sahel further developments depended on the weather conditions. In the worst case, if sufficient rains fell and temperatures remained relatively warm, breeding would occur in northwest and northern Mauritania and in Western Sahara, causing numerous swarms to form from about February to June. In the best case, if rainfall was poor or did not occur, conditions would remain unfavourable for locust breeding and survival. So far this year, there had been little rain and most areas were dry so the majority of the swarms would continue north to Morocco. In any case, winter breeding appears to be less important during upsurges because swarms tend to over-fly the areas and reach the main spring breeding belt in Northwest Africa.

16. In Northwest Africa the situation could deteriorate further in the next few weeks as more swarms from the Sahel reach the south of Morocco and of Algeria. Thereafter, cool temperatures will prevent additional swarms from moving north from West Africa until about mid-February. Some swarms may move in early spring further east to Tunisia and Libya. In some places, swarms may begin to mature and lay eggs in about January, but generally, maturation does not occur until temperatures warm up. The scale of breeding during the spring will depend on the success of the survey and control operations that have been undertaken during winter and the timing and distribution of spring rainfall.

17. In the Central Region it is unlikely that additional swarms will arrive in the region from West or Northwest Africa between now and the end of next spring. In the next few weeks, a limited number of swarms may move between northeast Egypt, the Sinai, Israel and western Jordan, depending on winds and temperatures. In the worst case, these swarms could move southwards along both sides of the Red Sea to traditional winter breeding areas on the coast in Saudi Arabia north of Jeddah, on the southern coast in Egypt and on the coast in Sudan. If good rains fall in these areas from December to March, at least one generation of breeding could occur and low to moderate numbers of swarms could form and eventually move into the summer breeding areas in the interior of Sudan from June onwards. In the best case, no rainfall occurs along the Red Sea coastal plains and swarms remain in the north and eventually disperse and die. In his closing remark the FAO Forecasting Officer posed the question to the audience whether the current upsurge might develop into a plague, and suggested that the answer will depend on the critical sequence of the events during next few months. The complete paper is included in Annex III.

18. In the discussions that followed, the presentation was acknowledged by expressions of appreciation and emphasis was placed on how to improve the frequency and quality of reporting from the affected countries. Some of the difficulties the countries are facing to collect and transmit information were described and mentioned that FAO is investigating more advanced technologies for rapid field data transfer. In the event of control operations, often untrained personnel is being seconded which is not able to collect and transfer the information that is needed. It was also noted that the countries are responsible for information collection and for transmitting data to DLIS as soon as possible, allowing more precise forecasting. Some participants expressed the view that, in all preventive action planning, the worst case scenario should be used, in order prepare for all eventualities. The delegate from Cyprus referred to the recently received swarms and requested further information on how likely it may be that the island will be re-

invaded. The FAO Locust Forecasting Officer explained that depending on the winds new swarms could arrive at the end of the spring (June) and the end of summer (October/November). The delegate from Algeria was surprised by the observation that DLIS had not received the detailed information on the locust situation in his country that had been sent and promised to look for alternative channels in order to secure smooth transfer and regular reporting to DLIS in the future. The question was raised on how the Desert Locust upsurge could also affect the Eastern Region. Under the current circumstances the risk was considered as relatively low, even taking a worst case scenario into account.

(b) Overview of the control measures undertaken by the affected countries

19. Detailed reports were presented by delegates from the following countries of Western Region: Algeria, Chad, Libya, Mali, Mauritania, Morocco, Niger, Senegal, Tunisia, and by affected countries outside the Western Region, Burkina Faso and Cape Verde. Presentations were also given by the delegates from of Central Region namely Egypt, Saudi Arabia, Sudan and the Desert Locust Control Organization for Eastern Africa (DLCO-EA).

20. The country reports summarized the evolution of the locust infestations within their countries since September 2003 and described in detail the control operations conducted. In several instances, further details were provided on areas treated, aerial and ground operation, the involvement of the army, village brigades and other rural communities. In only few cases details were provided about areas surveyed. Some of the delegates informed DLCC of efforts to monitor the impact of control operations on the environment and human health.

21. All delegates from Sahelian countries acknowledged the bilateral assistance received during the summer campaign from the Northwest African countries. This included mainly assistance in kind by providing aircraft, pesticide, spray equipment, and control teams to join the teams in the neighbouring countries. Equally encouraging intra-regional collaboration was experienced in the Central Region in particular between Saudi Arabia and Sudan, and even at inter-regional collaboration in the case of Sudan supporting Chad with pesticides and sprayers, and Saudi Arabia providing funds to Morocco and Senegal. The delegates from the Maghreb provided additional information about the efforts in mobilizing own resources for the series of interventions. This included the massive control operations of Winter/Spring 2003/2004, assistance during the summer campaign 2004 to the Sahelian countries, and the current campaign against immature swarms.

22. All the delegates from the locust-affected countries expressed their appreciation of the support received from the international donor community and FAO.

23. The delegates referred to the importance of the high level meetings in Algiers, Dakar and Tunis to coordinate mutual planning and to elicit a more adequate donor response. Although the donor response was considered generally as too slow, all affected countries of West and Northwest Africa appreciated and acknowledged the assistance received from many donor countries of all parts of the world.

24. As a consequence of the locust threat, Chad and Mali established specific National Locust Control Units in their countries. Also, in most countries inter-ministerial

emergency coordinating committees were established to inform the national authorities and the local representatives of the donor community of the locust situation and the operations. In his presentation, the Moroccan delegate referred to the Desert Locust upsurge as being a direct result of the EMPRES Programme in Western Region not being operational and able to introduce strategies of preventive locust control. The delegate made an appeal to the donor representatives to support EMPRES/WR.

25. The delegate from Cape Verde explained the difficulty of carrying out control operations in a country made up of a series of islands, several of which were mountainous and inaccessible to ground treatment teams. She reported that, following rainfall at the beginning of November on all the islands, the presence of hoppers had been reported. The hoppers needed to be eliminated as quickly as possible to break the cycle of development. She showed a slide of purported fish killed by pesticide applications and cited bird kill as well. The delegate from Egypt reported the passage of a dense swarm over Cairo, an event that has not occurred for the last 50 years. The delegate from Sudan described the survey and control operations conducted in different regions of the country, and also mentioned the need to ensure that villagers do not eat locusts contaminated with pesticide.

26. In the following discussion several questions were raised of country reports: Israel asked for information on the size and fate of the swarms reported by Egypt in the Sinai Peninsula. The reply was that 5 swarms, all originating from movement along the Mediterranean Sea, had been successfully controlled with chlorpyrifos ULV. Egypt suggested that FAO could play a role in ensuring control operations in areas mined during the Second World War and Libya suggested better coordination along all border areas. The delegate from Senegal asked for clarification as to the origin of swarms in Cape Verde. DLIS replied that the initial swarms originated from the movement southward from the Maghreb in July 2004.

Norway noted that almost all control operations used organophosphate pesticides and asked whether adequate monitoring had been conducted on the impact on pesticide applicators and whether antidotes were routinely available. Delegates from Morocco, Algeria and Niger confirmed following this practice. FAO indicated that is all providing test kits for cholinesterase levels to all Sahelian countries. Cape Verde explained their system of post-campaign medical examination of all personnel involved in pesticide application. Countries such as Tunisia and Algeria also identified the need to conduct public awareness campaigns prior to aerial control operations.

27. The delegate from India suggested that the expansion of the roster of available technical assistance to include experienced personnel from countries such as India. The DLCO-EA thanked FAO, EMPRES/CR and USAID for assistance in equipping DLCO-EA aircraft with DGPS navigation devices. The need to repair an older spray plane located in Nairobi was also mentioned.

28. FAO drew attention to the dedication of the national staff and field personnel, many of whom had worked for months with little or no rest.

(c) Role played by the Western Region Commission

29. The Secretary of the Commission for Controlling the Desert Locust in the Western Region (CLCPRO) reviewed the activities carried out between July 2003 and November 2004. He pointed out that the second half of 2003 and the whole of 2004 was

characterized by an upsurge of the Desert Locust in the Western Region. This upsurge demonstrated that the Western Region could also be a source of major emergencies that could affect countries beyond this Region. He went on to outline the role of the Commission in the context of the current emergency situation as far as information gathering and transmission, action planning, project preparation, evaluation of the locust developments and the mobilization of resources for intervention were concerned. It was noted that, in addition to the Alerts issued by DLIS, the Commission Secretariat had issued 20 regional alerts to its member countries, warning of the risk of locust invasions into their territories. The Secretary provided details of the various national and international contributions to the campaigns in Northwest Africa and the Sahelian countries, drawing particular attention to the strong regional solidarity that had permitted the early reinforcement of the resources available to the Sahelian countries. He closed his presentation by thanking all partners who were helping the affected countries in this difficult period.

(d) Role played by the Central Region Commission

30. The Secretary of the Commission for Controlling the Desert Locust in the Central Region gave a review of the activities organized and support by the Commission and highlighted the close collaboration and consultation that took place between CRC, DLIS and EMPRES/CR during the past months. The various measures and methods used to assist the member countries in their efforts to control the outbreak and in raising their rapid intervention capacities for an invasion from West Africa contributed to the successful containment of the developing upsurge by March 2004.

31. He informed the meeting of the status of the short, mid and long-term training programme on Desert Locust management, the joint cross border survey activities supported by the Commission and EMPRES/CR, and the publications prepared in English and Arabic. Successful efforts have been made to encourage the non-CRC EMPRES/CR countries to join the Commission. Djibouti became member in 2002 and Ethiopia in 2004. Eritrea is expected to follow soon.

(e) Actions taken by FAO/ECLO and the donors to assist locust-affected countries

32. In order to improve more effective response to the major locust crisis in the Western Region, the Emergency Centre for Locust Operations (ELCO), which had been set up during the last invasion 15 years ago, was reinstated on 25 August 2004 by decision of the Director General of FAO. The Secretariat gave a comprehensive and detailed overview of the actions taken by FAO since October 2003. The first TCP project was approved as early as February 2004. To date, a total of 18 TCP projects have been approved for the affected countries in the Western Region and two TCP projects for countries in Central Region. The total contribution of FAO amounts to US\$ 6 million.

33. The response from the donor community was slow at the beginning, and FAO remained the major contributor to the emergency operations until August 2004. But by November 2004, the total contribution from the donors either received by FAO or pledged to or discussed with the Organization amounted to US\$ 72.6 million. It had been estimated that US\$ 100 million was required for the affected countries in the Sahel during the summer season.

34. The Secretariat referred to donor's restrictions, specifically earmarking activities or targeting beneficiary countries, which complicated the management of the funds and lead to delays in some cases. Other difficulties faced were related to the assessment of the actual needs with regard to changing scenarios and the different seasons. Most of the funds have been invested for pesticides, flying hours, control and survey equipment, operational costs and backstopping. In total 2 million litres of pesticides have been purchased under multilateral assistance, worth US\$ 14.7 million. In addition, US\$ 6.3 million have been spent on 2,160 flying hours.

35. Bilateral assistance to the countries was more difficult to follow and caused sometimes problems in coordination and in assessing the actual available resources and possible short falls of supplies. During the summer campaign in 2004 the Northwest African countries donated almost 415,000 litres of pesticides, the United States provided 450,000 litres and several other donors provided smaller contributions. The observer from the World Bank asked about the rate of FAO's expenditures to date. The Secretariat replied that expenditure had slightly exceeded 50% of the 61.7 million dollars received over the past few months.

36. The delegate from the European Commission asked for an update on the amount received by FAO from their grant and the amount spent. FAO explained that detailed accounts can be provided to all donors. For the EU funds, the total so far received was US\$ 24.9 million, of which US\$11.2 million had been spent.

(f) A preliminary assessment of lessons learned

37. The Extraordinary Session of the DLCC provided a first opportunity to review the actions taken since July 2003, what lessons had been learned and what recommendations / improvements could be made. The Secretariat summarized the roles of the locust affected countries, the international donor community and FAO that together shared the responsibility for Desert Locust emergency operations. He then summarized the some of the major activities carried out under the Locust Group with regard to Early Warning, Contingency Planning, Appeals for Donor Support, Funding, Implementation of Assistance to Affected Countries, Regional and International Coordination and International Publicity.

38. The Secretariat highlighted in detail the various mechanisms of operation and constraints faced during implementation. One of the major challenges of FAO in a possible emergency situation was to find the right balance between sounding the alarm and being over-cautious. In respect of the funds, one of the important constraints was that, up to about 15 September, FAO received only US\$ 2 million of the US\$ 19 million that had been pledged. The lack of cash delayed FAO's ability to provide the resources needed in time to effectively meet the upsurge. In some cases insufficient information on existing pesticide stocks lack of coordination among contributions by various donors lead to the accumulation of high pesticide remainders at the end of season. Initially the international community was informed of the locust situation through the standard Monthly Bulletins in English, French and Arabic with additional Updates every ten to 15 days, providing a forecast for the forthcoming six weeks. As ECLO developed, supplementary SITREPs were issued about once a week, in which more details were provided on donor contributions through FAO, bilateral assistance and other related events. Media interest in the emergency increased as result of the Minister of Agriculture meeting in July 2004 and remained high since then. The press played an important role in

creating visibility of the locust problem. But it also led to widespread frustration among the affected countries after donor support was announced in the press before funds had actually been received.

39. A number of considerations with regard to improving early warning, information exchange, survey operations and contingency planning of the national Locust Control Units were suggested. It was pointed out that several streamlined mechanisms need to be put in place by FAO and that the donors need to react more quickly on the needs of the affected countries. It also made recommendations regarding the national Emergency Locust Steering Committees which play an important role in sharing information among stakeholders. Finally it was noted that many of the recommendations are related to the long-term effort as envisaged by the EMPRES (Desert Locust) Programme.

40. The DLCC welcomed the preliminary assessment of lessons learned. Several delegates stressed the importance of border surveys such as those between Libya and Egypt, Egypt and Sudan, Morocco and Algeria, Saudi Arabia and Yemen, and Mali and Mauritania.

The delegate of Algeria strongly supported the creation of an emergency fund in order to be able to respond quickly to urgent needs. He was in favour of re-activating the Magrheb intervention teams as used during the 1986-1989 campaign. This may be accomplished through CLCPRO and the EMPRES/WR programme. This last programme should become operational as soon as possible.

41. The delegate of Canada asked whether farmers and herdsmen could be involved in control campaigns. The delegate of Mauritania suggested that village people and nomads could control hopper bands mechanically. International and national NGOs could be involved in such an approach.

42. The delegate of India indicated that his country had not experienced significant locust outbreaks since 1995. During about six months of the year, India would have survey and control teams available to assist in the Western or Central Regions if required. The delegate of Morocco indicated that an effective campaign to contain the current upsurge should remain a high priority. This could prevent the development of a plague, which will be very difficult to manage. What would be needed is an appreciation in real time of the locust situation in the region and in the neighbouring countries, effective and quick communication, appropriate survey means, and appropriate and timely control actions. He also endorsed the creation of an emergency fund to allow quick deployment of control equipment through the mediation of CLCPRO.

43. The problem of carrying out survey and control operations in certain areas that were difficult to access was acknowledged by the delegate of Mauritania. He suggested that a study be conducted on how to be able to access such areas more easily.

44. The delegate of the Netherlands expressed the views and concerns on the preliminary assessment of lessons learned, which were broadly shared by various countries of the EU (the UK and Malta, which could not be present at this meeting, had explicitly aligned themselves with these views):

- **Communication:** At times of crises, communication is increasingly important. During this campaign, it appeared difficult to respond to increasing requests for timely and specific information. This was the case both for the communication between FAO

and donors, between the various countries and amongst donors themselves. Information is often scattered. Affected countries are facing a similar problem: they do not always know what their neighbours are doing. Sharing information does not occur automatically; we need to develop mechanisms, that enhance the exchange of communication. At the start of the campaign, the coordinating role of the FAO could be more visible in the field.

- Information from our embassies indicates that the countries in the Sahel zone are primarily focusing on the actual national problem (of course in all their rights to do so). On the other hand it is clear that the locust problem requires a regional approach. FAO is playing a role in that, but is dependent on political regional co-operation as well.

- The link between food security, especially for the poorest, and the locust campaign is not always clear. This may be a matter of communication (we guess it partly is), but it is probably also a matter of perspective: “are the activities planned and implemented in the campaign the most urgent or the most strategic ones in terms of food security of the poorest?” A proper risk analysis of these questions is welcome.

- Contingency planning: As soon as the campaign is over, we tend to forget about the locusts. At the time of the next outbreak/upsurge, we restart thinking about the problem and what actions need to be taken. To be able to respond more accurately, there is a need for contingency planning and a standing minimum capacity. The question is for example “what are countries willing to do at various levels of threat and at what level of threat they want to engage FAO, donors, multilaterals?” Since few countries or organizations will be in the position to guarantee a high standing capacity, the point is to be able to deploy the needed capacity rapidly. Contingency planning is not only needed at country level, but also at regional level as well as at international level. Elements of a disaster preparedness plan for the FAO could include issues as: inventorises of donor priorities/interests; pesticide market; assessment of country needs; expectations and roles of different stakeholders; what are the strategic choices which have to be made (at national and regional levels); a communication plan at times of outbreaks, upsurges and plagues.

- We do not have a clear picture of how effective we are in the campaign and what are the negative impacts on the environment. What part of the locust population is treated and what was the effect. For long term commitment (both by affected countries and the international community) this finally may turn out to be essential. More research is needed as to define actions for long term results.

- It is clear that much needs to be done in order to strengthen our capability to deal with the locust outbreaks and upsurges in the future. Several parties involved have indicated the need for an evaluation that will look at the lessons learned, both technically and organisation wise.

(g) Crop damage assessment mission results

45. Mr. Jossierand (GIEWS) in his presentation of the preliminary results of a crop damage assessment mission conducted in October 2004 described the approaches and the methodology used. The first approach was based on the FAO Water Balance Model by assuming that the difference between the Crop Water Satisfaction Value and the actual crop production estimate, which could be attributed to other crop production reducing factors including the Desert Locust. The second approach used NDVI satellite maps of 5

km² resolution by comparing the vegetation indexes of years with similar rainfall pattern during the critical decades at the end of the rainy season in 2004. The differences in vegetation could again be attributed to “other factors” than rainfall.

46. The mission came to the conclusion that the overall agricultural production in the nine CILSS countries is expected to be close to the five-year average. However, a country-by-country assessment provided a mixed situation. Mauritania for example has been affected for several years by unfavourable rainfall producing low agricultural production and now has also suffered most from crop damage caused by the Desert Locust. The mission found that the majority of the damage by the Desert Locust in the Sahelian countries was caused in the northern range lands and marginal agricultural areas. Since these areas contribute little to the regional cereal balance, the overall effect remained limited, but the localized damage was often high.

47. A preliminary report of the mission had been made available on Nov 3rd, and that the final report will be available on the GIEWS website as soon as it is cleared by participating organizations, including CILSS.

48. Several issues were raised in the discussion. It was recognized that it would be helpful to create dedicated teams within each potentially affected country to collect data on crop loss due to Desert Locust. The reply was that it would certainly be warranted, and would add more detail on the distribution of locust damage.

49. The delegate from Libya said that he had been expecting more about crop loss assessment and less about early warning in the presentation. He suggested that accurate crop loss assessments could impact decisions about the carrying capacity of pastureland, and might be of use in preventing desertification. The speaker explained that it is difficult to separate the impact of Desert Locust from that of drought. The combination, however, had had a discernable impact on the prices of cereals and livestock in several countries, and that in some areas of marginal agricultural production the movement of nomad groups with their livestock had begun two months early than usual.

50. Concerning the rainfall in Mauritania last year, which had been frequently referred to as exceptionally good, the speaker explained that sometimes rainfall occurs within such a short timespan that it can actually be destructive due to flooding. The pattern is often more important than the total received.

51. The delegate from Ghana expressed concern over the movement of livestock from affected areas of CILSS countries into neighbouring countries of the Sudanian production zone in search of forage.

52. The delegate from the World Bank asked whether there was a mechanism to guide donors as to the geographic areas in which they should invest their resources for the best return on investment: dry, marginal areas subject to drought and routinely infested with Desert Locust, or more productive crop lands occasionally infested by this pest.

53. The delegate from the European Commission characterized the methodology as “cautious” and acknowledged the difficulty in distinguishing the impact of drought from that of locusts. He also asked about the potential use of expanding partnerships to obtain more information, especially in livestock production areas.

54. The Secretariat noted that one of the inherent difficulties with the use of this methodology to allocate resources, was that the behaviour and geospatial distribution of locusts varied with their phase

Short and mid-term management and planning

(a) EMPRES (Desert Locust), its current status and role in the emergency

In the Central Region

55. The Coordinator of the EMPRES Central Region Programme (EMPRES/CR) gave a brief review of the objective of the EMPRES concept to prevent emergencies caused by the Desert Locust and summarized some of the major components and achievements in these areas since 1997 when the Programme became operational. EMPRES/CR had benefited from the relatively calm period until 2003 to concentrate fully on the development and introduction of various standard procedures, technologies and approaches as part of the operational locust management system of the Locust Control Units. Efforts had been made to build up the national information and early warning systems, the human capacity to conduct more effective survey and control operations, and to introduce environmentally safer and more cost effective technologies. All approaches were designed to support and strengthen the national and regional early detection and early reaction capacities to prevent outbreaks from developing into an upsurge or even plague.

56. Major efforts were also attributed to the development and introduction of practical contingency planning mechanisms taking into account the difficulties to detect early signs of gregarization in a vast area and to plan for appropriate counteractions well ahead. The EMPRES/CR Coordinator described the major elements of the regional and national contingency planning mechanisms and how these were applied for the first time in the context of the current emergency situation. He referred to the simultaneous outbreaks in both Regions in October 2003, the immediately initiated survey and control activities by the directly affected countries in the Central Region, and the rapid mobilization of national, bilateral and limited international resources. The early reaction and the combined efforts succeeded to contain the developing upsurge by April/May 2004 with less than 200,000 ha sprayed.

57. Since then the risk remained in the Central Region to face both scenarios, a swarm invasion from the Western Region and a possible second outbreak during the winter season 2004/2005. The recent swarm invasion by mid of November to Northwest and North Egypt was not expected to happen as early and demonstrated again the difficult to predict nature of the pest and the need for more inter-regional collaboration in the efforts to develop and introduce preventive control strategies.

In the Western Region

58. The Coordinator of the EMPRES Western Region Programme (EMPRES/WR), who is at the same time the Secretary of the Commission in the Western Region (CLCPRO), informed the meeting of the relationship between EMPRES/WR and CLCPRO and of the difficulties in facing of finding sufficient support for the Programme. It was only in September 2003 when the African Development Bank (ADB)

approved a grant of US\$ 6 million that the breakthrough was made, but the ADB project was still not operational. Nevertheless, some activities had been carried out in all the EMPRES/WR countries as outlined in the action plan drawn up in Nouakchott in 2001. The current upsurge in the Western Region had made many donors aware of the medium and long-term advantages of preventive control and the need for such a strategy. The EMPRES/WR Coordinator welcomed the encouraging signals and indicated that all efforts should be made to coordinate donor inputs for preventive control and to avoid unnecessary duplication.

Donor support for EMPRES/WR

59. Mr. Nicolas Lambert of the French Cooperation Agency reported on a recent meeting in Paris of donors and affected countries to coordinate implementation of the EMPRES Programme in the Western Region. He compared the inputs and results expected from a preventive approach to Desert Locust management as opposed to a curative approach. He emphasized: the need to establish a steering committee; the need to determine if CLCPRO should be a decision-making body, or merely a technical, coordination entity; the possibility of changing the status of CLCPRO to make it a public entity that could receive national funds, generate revenue, and receive donor funding; and that donors should not be funding the operational costs of preventive activities. He noted that there may be additional funding source like taxation of agricultural products.

60. The observer from the African Development Bank provided details of their contribution towards the establishment of EMPRES/WR of approximately US\$ 6 million, or 60% of the estimated costs. FAO will be the executing organization. He clarified that certain conditions still needed to be met prior to formal startup, but that some EMPRES activities have already been initiated.

61. The delegate from Algeria repeated the need for FAO to have an adequate emergency fund. He indicated that CLCPRO needed support from FAO. He suggested a steering committee to coordinate all donor inputs to EMPRES/WR.

62. The Secretariat noted that CLCPRO was an intergovernmental body established under the Article 14 of the FAO Constitution for which FAO provided the Secretariat. Therefore CLCPRO was a forum for political and technical decision and coordination. The Secretariat executed the decisions of CLCPRO within existing financial resources. This may include also technical work. The decision as to whether it should be more independent of FAO was a question to be decided by the member states. The delegate from Senegal expressed concern that Senegal was not included within the ADB's assistance to EMPRES. Although it was not one of the countries in which outbreaks occurred, large areas were often infested.

63. The delegate from Morocco considered the establishment of CLCPRO as a vital step towards cooperation in the Region, but stressed the need to move forward with the implementation of the EMPRES Programme in the Western Region. He indicated that certain proposals, such as the establishment of new taxes, or a modification to the existing statute of CLCPRO could cause long and unnecessary delays to the launching of EMPRES/WR.

64. The delegate from Cape Verde explained that her country is often infested during upsurges and that it was considering applying to participate in CLCPRO, possibly as an

observer. She asked if Cape Verde could also benefit from EMPRES approaches and tools such as RAMSES.

65. The Secretariat informed the meeting that the EMPRES (Desert Locust) has been changed from a temporary project to a permanent FAO Programme under AGP. An independent evaluation of the accomplishments of EMPRES/CR over the last 9 years will be conducted in order to provide guidance in the implementation of EMPRES/WR.

World Bank's contribution to emergency and longer-term locust control

66. The World Bank representative presented a paper on the World Bank's contribution to the locust crisis. The World Bank had approved the August 27 request from the Malian government to reallocate US\$ 3.7 million of existing IDA credit of Mali. In addition, the World Bank decided on September 9, to start the preparation of the new operation, the African Emergency Locust Project. On September 22, a US\$ 12.4 project preparation advance was granted for locust control and preparation activities began in seven countries (Burkina Faso, Chad, Mali, Mauritania, Niger, Senegal, and The Gambia). The project was appraised and negotiated in November and represents a total investment of US\$ 73.4 million, of which US\$ 60 million is IDA credits (including the project preparation advance), and US\$ 13.4 million from government contributions. The project seeks to reduce the vulnerability of the concerned countries to future infestations by supporting improved strategies for prevention, early warning, reaction, and mitigation at both the national and regional levels. This will be achieved by (i) helping countries to control/manage locust infestations, (ii) mitigating the effects of locust infestations on people and the environment, and (iii) helping to ensure a more timely reaction to future infestations in the seven countries concerned. The African Emergency Locust Project is expected to be approved by the WB Board of Directors on 16 December 2004

(b) Report of the Pesticide Referee Group

67. Mr. Graham Matthews, Chairman of the FAO Pesticide Referee Group (PRG) summarizing the conclusions of the PRG meeting held in October 2004 of this year. Significant decisions included the following modifications to List 1: Dosage of chlorpyrifos adjusted to 240 g ai/L to reflect the commercially available ULV formulation; dosage of diflubenzuron set at 30 g ai/ha for hopper control; dosage for deltamethrin raised from 12.5 to 17.5 for late instar hoppers and adults (stays at 12.5 for early instar hoppers); and the use of fipronil was endorsed at a dosage of 4.2 g ai/ha, or 0.6 g per protected hectare when used as a barrier treatment in non-crop areas. The PRG recognizes barrier treatment as the preferred technique for hopper control. He explained his support for the wider use of metarhizium spp. products. He announced the availability of new FAO Guidelines on ground-based Desert Locust sprayers. He also encouraged more reporting on the efficacy of Desert Locust treatments, or problems encountered.

(c) Options for improved, safer, environmentally friendly control

68. The Secretariat summarized the different options for improved, and environmentally safer control of the Desert Locust and provided a brief overview of the FAO standards for pesticide procurement and good field practices. Since most environmental problems were related to the spraying of conventional pesticides on non-targets, or to over-spraying, or to under-dosing, there was a need for intensive training of the national control teams in order to reduce the risks of these products.

69. The advantages and disadvantages of various alternative products and techniques such as barrier treatment, biological pesticides and Insect Growth Regulators (IGRs) were described. Barrier spraying had the considerable advantage of reducing the amount of pesticides needed for the same effect as conventional pesticides. However, this technique was ineffective against adult locusts. Furthermore, pilots needed to be well trained in the use of GPS track-guidance systems and need to be able to spray at the correct height for depositing the barriers, depending on wind speed and vegetation. Fungal pathogens such as *Metarhizium anisopliae* var. *acridum* did not have the environmental disadvantages of organophosphates, pyrethroids and benzoylureas, but their effects on the Desert Locust during field trials did not yet produce conclusive results. Other disadvantages were the delayed mortality effect and the fact that meteorological parameters had a significant effect on the incubation period and hence on the speed of action. But within an improved control strategy, metarhizium products had an important place in ecological sensitive areas especially in areas where chemical contamination was unacceptable. The use of the pheromone phenylacetonitrile (PAN) was still in an early stage and would not be available until extensive operational trials had been completed. IGRs had the advantage of being environmentally relatively harmless and were a promising option in combination with barrier treatment due to their persistence in the field for several weeks. The relatively high price of IGRs could be compensated for by the reduced amount of pesticides used for barrier treatment.

70. The presenter pointed out that FAO was putting a lot of efforts in the testing of non-conventional products with the objective of eventually using conventional pesticides products of “last resort”. He suggested that pesticides had to be used wherever the required safety measures however burdensome, time consuming and expensive should be applied in addition to proper environmental monitoring, checking the blood cholinesterase level of the control operators. Quality assessment teams should check regularly control operators, environmental and health issues. A number of activities regarding the disposal of surplus of pesticide stocks and empty drum and training of staff on proper handling of remainders and empty packages had been initiated following the end of the summer campaign in the Sahel.

(d) Preparations for Spring and Summer campaigns in 2005

71. The Secretariat gave a detailed overview on the required actions by the affected countries, FAO and donors for the preparation of the spring and summer campaign 2005 in Northwest Africa and for the summer campaign 2005 in the Sahelian Countries. The presentation included vital strategic aspects with regard to readiness, early warning, contingency planning, follow up actions, training, use of pesticides, mobilization of aircraft and technical assistance.

72. The aim of the campaign in Northwest Africa was to locate and control incoming Desert Locust swarms before they can mature and breed. Based on the impressive survey and control capacities of the North African countries, the probability for achieving a significant impact on the immature locust population would increase if the cool weather conditions remained and unfavourable climatic conditions for breeding in Mauritania prevented the development of additional generation of swarms that could invade Northwest Africa in February-March 2005. Once breeding would occur in March to June 2005, control operations would be expanded to include hopper band control. In this situation the objective was to prevent damage to crops in Northwest Africa and to reduce

the potential number of swarms that formed in the spring breeding areas and that would eventually threaten the Sahel at the beginning of the next summer. In this phase, intensive aerial control operations by using also new products and application methods could be of immense value.

73. With regard to the summer campaign in the Sahel, the re-invasion in the summer 2005 would much depend upon the efficacy of the control operations in Mauritania and the Maghreb and the development of favourable ecological conditions for breeding in the immediate future and the spring. However, all efforts must be made as soon as possible to be prepared for a re-infestation. The campaign in the Sahelian countries needed to focus on early season control of incoming swarms and emerging hopper bands rather than late season aerial control of highly mobile immature swarms. Emphasis would therefore be placed upon the use of helicopters to expand the early season survey capacities and to conduct spot treatments. Hence it was planned to pre-position 7 helicopters in the northern parts of the Sahel by mid-July. A similar number of fixed wing aircraft, equipped with GPS track-guidance system, would be pre-positioned to treat incoming swarms and large hopper bands.

74. As the current Sahelian campaign came to a close, each country should now retrieve, clean, and repair field equipment, secure excess stocks of pesticides and prepare an inventory of the remaining stocks. For developing detailed contingency plans for a potential next campaign in summer 2005, quantitative need assessments based on the existing resources should be made including trigger mechanisms to bring forth additional resources as needed. It was also recommended that the national steering committees should organize a “lessons learned” workshop involving both the implementing agencies and key donors. These lessons should be incorporated into contingency and operational plans for 2005.

75. FAO was ready to assist in the development of contingency plans and to provide assistance in specific areas of data management, control, survey, logistics, environmental/human health monitoring, and testing of alternate products such as mycopesticides for many of the Sahelian countries. All specialists would share their expertise with others in the field and bilateral donors were encouraged to join in order to avoid duplication of efforts.

76. With regard to training, FAO was developing a train-the-trainer programme, similar to the Master Trainer Programme used in the Central Region. The aim was to prepare at least 2-3 national trainers for pre-season training of national HQ and field staff. Also training of specialized environmental/human health monitoring teams would be pursued and expanded during the off-season by contracts with Ceres Locustox. Training of village brigades to use pesticides approved for locust control, and therefore classified as “restricted use”, should be handled with great caution. Providing very toxic pesticides to farmers who could not handle them should be avoided. Any farmer training programme may benefit from FAO’s extensive experience on training farmers on the application of IPM.

(e) Planning for training

77. The Secretariat presented a short overview of an FAO proposal to implement a Master Trainer Programme in the Sahel. The programme developed by EMPRES/CR will serve as a model, but will need to be updated and modified for Sahelian conditions, including its translation into French. Three trainers would participate from each of the core Sahelian countries, and one from each of the countries which are vulnerable but not always infested.

Discussions

78. During the discussions on the technical presentations, the delegates from Morocco and Tunisia questioned the need to increase the dosage of deltamethrin. The Chairman of Pesticide Referee Group indicated that the need for a higher dosage may be more a perception of recovery after initial knockdown than reality. He mentioned that deltamethrin may act differently at different ambient temperatures. The delegate from Morocco questioned the inclusion of fipronil on the PRG approved list, in light of controversy about its environmental impact. The Secretariat clarified that although there is a temporary ban on its use in France, the use patterns that resulted in loss to beekeepers and the incident about feeding contaminated seeds to cows at one farm are different than its proposed use for locust control.

79. The delegate from Norway asked if the PRG had considered reducing application rates to 0.5 litre per hectare rather than 1.0 litre using track-guidance systems for more accurate placement of swaths. The PRG Chairman said that the Group encouraged that 0.5 L/ha could be used when aircraft were equipped with GPS track-guidance systems, but similar systems ground applications were not yet available.

80. The delegate from Mali requested clarification about procedures to follow when products approved by the PRG are not registered for use. The delegate from India requested to consider the use of generic pesticides that had same active ingredient and quality as registered.

81. The Secretariat indicated that efforts were undertaken to promote registration of as many products as possible, especially when the only difficulty is trade mark and not active ingredient. The Secretariat clarified that the countries have the authority to waver registration requirements in case of emergency if there is interest in using a specific product. FAO, however, cannot do so, nor can they purchase an unregistered pesticide unless a waiver is issued by the authorities concerned.

82. The observer from the ADB inquired about trials conducted with metarhizium. The Secretariat clarified that the organism was first isolated from Desert Locust from Niger and that although most trials have been conducted on the Senegalese grasshopper, several have been done on Desert Locust. Death often occurs within 6 to 10 days. The delegate from Libya asked if the pathogen would work also in arid conditions. The Secretariat replied that an oil based formulation had been developed for this reason. Aridity was not a problem but cold nights (< 10° C) and hot days (> 35° C) were the least optimal conditions for metarhizium application.

83. The delegate from Niger expressed concern over the purchase of pesticide in 200 litre drums. The speaker replied that smaller containers may be appropriate for ground

control teams, but that aircraft operations almost always use the larger drums and that transfer equipment is designed for that size.

84. The delegate from Chad asked if the dose rate was the same for ground application as for aerial application. The speaker confirmed the dosage rate was the same. Questions were raised about problems arising with the use and destruction of plastic drums. The PRG Chairman explained that this was also a problem in Europe where used plastic pesticide containers are considered toxic waste and require specific disposal procedures. The delegate from Morocco reminded that this was not a new problem. Many agricultural chemicals were presently marketed in smaller plastic containers and disposal procedures must have been developed for them. He noted that plastic containers were less subject to leakage than metal drums.

(f) Further donor assistance requirements for locust affected countries

85. The Secretariat reported on the results of the Tunis Meeting of the Maghreb countries on 6 November 2004 to review the current locust situation and identify likely needs until July 2005. A two-phase approach has been agreed by the Ministers of Agriculture, first for ongoing control operations in northern Mauritania and then for the next spring campaign in Northwest Africa. The total costs of the control operations in Mauritania had been estimated at US\$ 40 million under a worst case scenario, of which US\$ 7.8 million was already available through FAO. The estimates for the spring breeding season in the Maghrebian countries, also under a worst case scenario, were based on 9.6 million ha infested area to be treated with a total cost of US\$ 192 million. The participating countries would contribute with US\$ 101 million from their own resources. Given the US\$ 4.8 million available at FAO for supporting operations in Northwest Africa, a shortfall of US\$ 86.2 still remained. Thus the total requirements are estimated at US\$ 118.4 million.

86. It was reported that, for the summer campaign in the Sahel, donors had approved as of 1 December US\$ 77.4 million through FAO, out of which US\$ 61.7 million had been allocated and US\$ 54.2 million had been earmarked for operations in the Sahelian countries in support of training programmes, procurement of pesticides, flying hours, technical assistance, protective clothing and covering operational costs. In addition, the World Bank had negotiated loans for the Sahelian countries, details of which are given in paragraph 67 above.

87. The possible invasion of countries outside the Western Region during the summer 2005 and their requirements had been taken into consideration. Some affected countries such as Burkina Faso may benefit from World Bank support, but others with extremely weak plant protection services had not received any assistance until now. An appeal was made to support the survey and control capacities of these countries, namely Cape Verde, Guinea Bissau and Guinea with US\$ 1.4 million.

88. A question was raised by France as to why bilateral contributions were not tabulated by FAO. The Secretariat indicated that the information was not always received, was sometimes incomplete, not reliable or the contribution is given in kind which was difficult to value. Situation reports about funding were provided by FAO on their website.

89. Concerning the establishment of an emergency fund, the Secretariat responded that an emergency fund already existed, but it had been too small to be effective. During the 127th Session of the FAO Council, a proposal was tabled to set up a much larger 'Rapid Response Trust Fund' for all emergencies, which would include locusts.

90. Questions were raised about the increased prices for flying hours. The Secretariat informed the meeting that in the price all costs for logistics are included. The cost of hiring aircraft can be reduced whenever countries provide ground logistics and/or fuel. Also prices were given in American dollars of which the exchange rate with the euro has changed considerably. FAO always tendered and took in principle the cheapest bidder. However, it would be interested to be informed about cheaper options.

91. The Mauritanian delegate raised a question about relief aid. The Secretariat informed the meeting that the crop loss assessment team had reported that the total production in the Sahel, with the exception of Mauritania, had not diminished but that some communities in particular could have been severely affected. This would be brought up in the framework of the 2005 Regional UN Consolidated Appeal for West Africa, which will be put forward to the donor community in January 2005.

92. The World Bank delegate asked why the estimates for the needs for the locust Campaign in the Sahel could not be made earlier by FAO than March 2005. The Secretariat indicated that it was a matter of balance between caution and alarm and that until March 2005 no meaningful prediction could be given about the re-invasion of the Sahel or the level of it. It was expected that with increased donor awareness, requested for emergency aid put forward in March 2005 would be responded to quicker.

93. Delegates of the donor community presented a working document to the meeting in which several preliminary recommendations for improving Desert Locust control were included. The DLCC noted with appreciation the points made and expressed interest in receiving the final recommendations through the FAO Secretariat.

ANY OTHER BUSINESS

Presentation by the Minister of Agriculture and Hydraulics, Republic of Senegal

94. H.E the Minister stressed the importance of integration and solidarity at the sub-regional and regional levels in order successfully to combat the Desert Locust upsurge and prevent it from undermining the major efforts that the Sahelian countries were making to develop their agriculture.

95. The Minister also took the opportunity to invite all the delegates and donors to take part in the Scientific Conference on the Desert Locust which had been initiated by H.E. the President of Senegal Abdoulaye Wade in collaboration with FAO, and which would take place in Dakar on 11-13 January 2005. The global objective of the conference was to review the state of knowledge of the Desert Locust and to develop a long-term control strategy.

ADOPTION OF THE REPORT

96. The report of the Extraordinary Session, with the agreed amendments, was adopted unanimously.

CLOSURE OF THE SESSION

97. The Director, Plant Production and Protection Division, Mr. Mahmoud Solh, thanked all the participants of the Extraordinary Session of the Desert Locust Control Committee for their contributions and for creating a very positive atmosphere between the three partners who faced the Desert Locust threat, the locust-affected countries, the international donor community, and FAO. The list of recommendations drawn up by the Committee covered many important issues and would require substantial work by the partners to ensure that preparations were better made in future and control operations were carried out more efficiently.

98. The Director also took the opportunity to thank the interpreters, the messengers and the translators who had ensured that the working documents were available in three languages, for their good work. He wished all participants a safe journey home and declared the Extraordinary Session closed.

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Plant Production and Protection Division

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APPROVED AGENDA

1. Opening of the Extraordinary Session
2. Election of Chairman, Vice-Chairman and Drafting Committee
3. Adoption of the Agenda
4. The current Desert Locust emergency:
 - a) The Desert Locust Situation: September 2003 to November 2004; and Forecast
 - b) Brief overview of the control measures undertaken by the affected countries
 - c) Role played by the Western Region Commission
 - d) Role played by the Central Region Commission
 - c) Actions taken by FAO/ECLO and donors to assist locust-affected countries
 - d) A preliminary assessment of the lessons learned
 - e) Crop damage assessment mission results
5. Short- and medium-term management and planning:
 - a) EMPRES (Desert Locust), its current status and role in the emergency:
 - in the Central Region
 - in the Western Region
 - donor support for EMPRES/WR
 - b) Report of the Pesticide Referee Group
 - c) Options for improved, safer, environmentally friendly control
 - e) Preparations for the Spring and Summer campaigns in 2005
 - f) Further donor assistance requirements for locust-affected countries
6. Any Other Business
7. Adoption of Report/ Closure of the Session

THE DESERT LOCUST SITUATION: SEPTEMBER 2003 TO NOVEMBER 2004; AND FORECAST

Situation overview

Good rains fell during the summer of 2003 in the Sahel of West Africa and Sudan, causing local outbreaks in Mauritania, Mali, Niger and Sudan in October. In November, swarms moved to Northwest Africa where breeding occurred in the spring of 2004 and an upsurge subsequently developed. Swarms that were not controlled invaded the Sahel at the beginning of the summer and laid eggs. A substantial number of new swarms formed in West Africa during September and October and reinvaded Northwest Africa. In November, a few swarms reached the eastern Mediterranean, Egypt and Israel, and smaller infestations appeared in Saudi Arabia and Jordan. At present, locust infestations in the Western Region are larger and more numerous than at any other time since the last plague of 1987-89.

Western Region

Late summer (September – October 2003)

During September, small-scale breeding was underway in Mauritania and Mali where solitarious hoppers and adults increased in density to 2,000/ha. By the end of the month, rainfall had declined and vegetation was drying out in many of the summer breeding areas in the Sahel. In Niger, there was a considerable increase in locust numbers in Tamesna from breeding during August and early September. Solitarious hoppers, fledglings, immature and mature adults were present during September between Agadez and In Abangharit at densities of 10-500/ha with a few places reporting as high as 1,000/ha. Copulation was in progress. From the 18th onwards, many of the hoppers were becoming transiens and forming groups at densities of 20-100 hoppers/bush. This is typical behaviour during the early stages of the gregarization process. Solitarious mature adults, at densities of 1,000-1,500/ha, were forming groups at two places near In Abangharit on a total of 400 ha. By the end of the month, a local outbreak had developed between Agadez and In Abangharit where small late instar bands were seen at four places with densities of 5-150 hoppers/m². Scattered immature adults were seen near Tillaberi and Zinder. Locust numbers were probably also increasing in the western and central Air Mountains.

During the first half of October, there was a dramatic increase in locust numbers in southern Mauritania. Hatching commenced east of Nouakchott in the second week from mainly undetected laying in September and extended north to the Western Sahara border and east to Chinguitti. Within this area, adults formed small groups at densities up to 40

locusts/m² near Akjoujt. Hatchlings concentrated in small patches, initially at densities of 3 hoppers/bush that rapidly increased to 20-150/m² in a matter of weeks and an outbreak developed.

On the 21st and 22nd, unusually heavy rains fell over a large area from Senegal and western Mauritania to southwestern Morocco, western Algeria and the Atlas Mountains in Morocco including Dakar (26 mm); in Mauritania, Boutilimit (67 mm), Akjoujt (41 mm), Atar (22 mm), Nouadhibou (58 mm), Zouerate (35 mm), and Bir Moghrein (10 mm); in Morocco, Awssard (98 mm), Dakhla (14 mm), Laayoune (26 mm), Smara (13 mm), Tan-Tan (103 mm) and Ouarzazate (124 mm); and Tindouf, Algeria (70 mm). Flooding was reported in many areas. By the end of the month, groups of mature adults had moved into adjacent areas to the northeast (Zouerate) and east (Ouadane).

In northern Mali, solitary hoppers and adults at densities up to 1,000/ha were scattered in Tilemsi Valley, in the Adrar des Iforas to the Algerian border and on the plains of northern Tamesna during the first decade of October. From mid-month onwards, hoppers and adults started to change phase and form groups as vegetation dried out. Some of the groups contained up to 25 hoppers/m². Adults were seen copulating in a few places and hatching was in progress with up to 200 first instar hoppers/m². By the 26th, a few small late instar hopper bands had formed, at densities of up to 80 hoppers/m².

In Niger, the outbreak spread over a larger area of Tamesna and reached the Air Mountains during October. Adult densities increased to 50,000/ha and hoppers of all instars continued to gregarize and form small groups of up to 20 hoppers/m². By mid month, groups of late instar hoppers and immature adults were reported in west and northwest Tamesna as well as a few groups of laying adults and first instar hoppers. On the western side of the Air Mountains, small groups of immature adults and scattered late instar hoppers were seen in the Talak area near Arlit. At the end of the month, scattered solitary adults were maturing in the southern Air Mountains where they were copulating, becoming transiens and forming groups at densities of up to 70 adults/m².

Winter (November 2003 – February 2004)

Morocco. From early November onwards, mature adults, groups and a few swarms moved into a large area of northern Mauritania and Western Sahara. Some of the adult groups continued to northeastern Morocco, and western and central Algeria. Laying occurred in Western Sahara and small groups and bands formed with densities up to 1,000 hoppers/m² in December. Numerous immature swarms started to form in early February and subsequently moved northwards to the spring breeding areas south of the Atlas Mountains where they dispersed along a 600 km stretch of the Draa Valley in Morocco. Infested areas ranged from 5-3,700 ha in size with swarms of up to 80 adults/m². Most of these movements occurred on strong southerly winds on 18-19 February that were associated with a low-pressure system over the eastern Atlantic Ocean. Some of the winds carried adults to the northwestern coastal plains where small groups were scattered near Essaouira as well as to the Middle Atlas. Some adults may have reached the Canary Islands. Swarms also reached the spring breeding areas in Algeria near Bechar and as far north as 30N while groups were reported near Tindouf. By the last week of February, many of the adults in the Draa Valley were seen copulating. Further south in Western Sahara, other swarms from adjacent areas in Mauritania laid eggs during January and early February.

Algeria and Libya. Adult groups also moved north from Mali and Niger in November and laid eggs in southern and eastern Algeria and in western Libya. Hatching started in mid November and bands formed at densities up to 2,000 hoppers/bush in eastern Algeria and groups formed in southwest Libya at densities of 50 hoppers/m² during December and January. Breeding occurred on a smaller scale in southern Algeria near Tamanrasset where various stages of hoppers, up to 500/bush were present in January.

Mauritania. Hoppers and adults continued to form small groups in the outbreaks areas in northwest Mauritania where a few immature swarms developed during the second decade of November and hopper bands appeared by the end of the month. Adult groups continued to move northwards throughout the month. In early December, swarms began forming in the outbreak area east of Nouakchott and moved into the northwest and north during the remainder of the month. Three swarms flew over Nouakchott on 4-6 December. More hopper bands formed at densities of up to 1,500 hoppers/m² in the northwest as well as further north and east during December and January, giving rise to an increasing number of swarms at densities up to 300 adults/m² from late December onwards. During the second half of January, swarms were seen moving northwards, and hatching and band formation occurred between Zouerate and Bir Moghreïn from earlier laying in December.

Mali. In northern Mali, hoppers formed numerous small bands of 200-2,000 hoppers/m² on the eastern side of the Adrar des Iforas and in Tamesna during November and December, and new swarms appeared after the first week of December. Transiens hoppers and immature adults up to 10,000 locusts/ha formed groups in Timetrine while only scattered adults were maturing in the Adrar des Iforas. Laying and hatching continued in Niger during November and the first half of December where groups of adults at densities up to 10 adults/m² and hopper groups and bands up to 500 hoppers/m² were present in Tamesna and the Air Mountains. Infestations declined during January and only residual populations remained in southeastern Air and northwestern Tamesna.

Spring (March – June 2004)

Northwest Africa

More swarms arrived from the Sahel in the spring breeding areas in Morocco and Algeria and laid eggs along the southern side of the Atlas Mountains during March. Numerous mature swarms moved into southern Tunisia in late March and into western Libya in early April and laid eggs. Hatching started at the end of March in Morocco, in early April in Algeria, and by the end of the month in Tunisia and Libya. Hatching and hopper band formation occurred in all countries throughout May.

A substantial number of immature swarms started forming south of the Atlas Mountains in Morocco and Algeria during the second half of May and increased during June. Swarms also formed in Tunisia and Libya during June. Numerous swarms that escaped detection and control moved south towards the Sahel in West Africa from late May to late July. Large-scale aerial and ground control operations were carried out in Northwest Africa until the end of July.

Sahel

Laying and hatching continued in northern Mauritania from March to May, causing numerous hopper bands and swarms to form. Significant damage was reported on pasture, vegetable crops and date palms. Isolated immature adults were present in northern Mali at times from March to May. In Niger, small-scale breeding occurred in the

southeastern Air Mountains causing small hopper groups and bands to form in March and April. Adult groups started to form by mid-April and dispersed throughout the Air Mountains in May when several swarms were reported. By the end of the month, some adults were seen laying eggs.

During June, late instar hopper bands, immature swarms and mature adult groups were present in northern Mauritania. On 8-10 June, several high-density immature swarms were seen flying northeast of Nouakchott. Locusts started appearing in the summer breeding areas in the south, first as scattered adults, then as higher density groups and finally the first swarm was reported on the 16th in Brakna. Immature swarms from the north were first reported in northern Mali on 18 June and in northern and central Senegal on the 23rd and 25th respectively. Locust numbers also increased in southern Algeria and southwest Libya during the second half of June.

Summer (July – November 2004)

Sahel

An increasing number of swarms from Northwest Africa invaded the Sahel during July. Most of the swarms overflowed traditional breeding areas in central Mauritania, northern Mali and northern Niger where it was still dry and continued south to cropping areas in the Sahelian zone between 14N and 16N from western Mauritania and northern Senegal to western Chad. Several immature swarms invaded the Cape Verde islands on 5 July on strong northeasterly winds from Western Sahara. Several successive waves of large numbers of swarms arrived during the second half of the month in western Mali (from 16 July onwards), in southeast Mali where they crossed the Niger River (18 July), in Tamesna, Niger (20 July) and in western Chad (23 July). The swarms that arrived in Mauritania, Senegal and Mali were immature while those that arrived later in Niger and Chad were already mature. As breeding conditions were favourable, the immature swarms matured rapidly and laid eggs within a large part of the Sahel. Large-scale hatching and hopper band formation commenced along the Senegal River Valley and in southeast Mauritania at the end of July, and in Mali and Niger in early August. It was reported that some farmers were no longer planting seeds because of the locust threat.

During August, egg laying and hatching continued in the Sahel and hoppers formed numerous dense bands with up to 3,000 hoppers/m² while additional mature swarms arrived from Northwest Africa and laid eggs. Swarms also flew over Nouakchott and Dakar. The heaviest infestations were concentrated in northern Senegal and southern Mauritania. On the 4th, a few mature swarms were seen in eastern Chad. On the 5th, a second wave of swarms arrived in the Cape Verde islands, and mature swarms arrived in northern Burkina Faso on the 9th and laid eggs. In both countries, hatching occurred and hopper bands formed at the end of the month. Fledging started during the last week of August in southwest Mauritania and by the end of the month, a few new immature swarms had begun to form. Significant damage was reported to pasture, cereal and vegetable crops. Residents in some towns and villages had to leave their homes because of hopper bands.

During September, an increasing number of swarms formed south of 17N and hopper bands were reaching their final stage of development in Senegal, Mauritania, Mali and Niger. Smaller infestations were present in central and eastern Chad. The summer rains came to an early end in parts of the Sahel as the Inter-Tropical Convergence Zone retreated southwards in mid September, several weeks earlier than normal. As

temperatures remained high, vegetation dried out quickly in some areas, most notably in southeast Mauritania, western and central Mali and the Sahelian zone in Niger. Consequently, the swarms that formed in these places moved to western and northwest Mauritania, northern Mali and northern Niger. Immature swarms were first reported in the Adrar des Iforas in northern Mali on 11 September, in northwest Mauritania on the 19th and in the eastern Air Mountains in Niger on the 20th. The swarms varied in size from 1 to 30 km² but a few were even larger. During the last week of September, several immature swarms formed in northern Burkina Faso and Cape Verde. A second generation of breeding, much smaller than the first, occurred in a few places that remained green in southwest Mauritania where some swarms laid eggs in late September that hatched in mid-October, causing small hopper bands to form. Additional laying, hatching and band formation occurred in Cape Verde during October but on a localized scale.

More swarms continued to form throughout October and move north within the Sahel. At mid month, many large and dense swarms were seen flying towards the north in northwest Mauritania. As the month progressed, an increasing number of swarms left the Sahel for Northwest Africa. The swarms were immature except for a few mature swarms reported in northwest Mauritania in late October. Some locusts were blown out to sea. For example, groups of adults were seen about 40 km off the coast of southern Senegal on the 10th. Consequently, the situation improved in the Sahelian zones of southeast Mauritania, Mali, Niger and Chad. Although no locusts were reported in Burkina Faso after 15 October or in Senegal after 5 November, some late-forming swarms were probably still present and moving west in the Sahel. For example, several immature swarms reinvaded northern Burkina Faso from 8 November onwards. Several immature swarms, including a few large ones, appeared at mid-month in southern Mauritania and northeast Senegal near the Mali border. By late November, substantial swarm infestations remained in southwest Mauritania.

Northwest Africa

Only small residual populations remained in a few places along the southern side of the Atlas Mountains in Morocco and Algeria during August. Further south, swarms were still moving through the Western Sahara to the Sahel. Locust numbers increased in the extreme southern part of Algeria near the borders of Mali and Niger where small-scale breeding occurred, giving rise to small hopper bands in September.

Locust populations started to increase in the region during the last week of September when several immature swarms from the Sahel arrived in southern and southeastern Algeria and in adjacent areas of southwest Libya. Adult groups also arrived in the south of Western Sahara. During the first decade of October, there was a dramatic increase in locusts as many small immature swarms moved north in Western Sahara and reached the southern side of the Atlas Mountains in Morocco and Algeria. Swarms also moved north through southern and central Algeria to the Atlas Mountains while other swarms invaded southwest Libya. During the remainder of the month and in the first half of November, more swarms arrived in Morocco and Algeria, many of which concentrated in the Souss Valley and in northeast Morocco near Bouarfa. Other swarms had reached parts of the High and Middle Atlas. On 19 November, a few adults reached the Canary Islands.

Unusually strong and persistent southerly and southwesterly winds over eastern Algeria and Libya carried several swarms to the Mediterranean coast. Some of these swarms reached southern Tunisia at mid-month, while others crossed the Mediterranean to Crete,

Greece on 16 October. Several swarms also arrived on the northeastern Libyan coast at the end of the month.

Late summer (September – October 2003)

During September, small-scale breeding was in progress in parts of the summer breeding area west of the Nile in Sudan where adult densities increased to 5,000/ha.

In early October, a local outbreak developed in northeast Sudan along the Atbara River. On the 9th, scattered hoppers, fledglings, and immature and mature adults were present near Shendi. Three maturing swarms were reported on 10-12th in an area of 2,200 ha near Atbara. Late instar hoppers, fledglings and a few other small swarms were seen in the following days in nearby areas between Ed Damer and Berber, and mature adults at densities up to 10,000/ha were present northwest of Kassala. During the last decade of the month, hoppers of all instars were becoming gregarious and forming small groups and a few bands near Atbara. New infestations were found further east towards the Red Sea Hills near Haiya where groups of adults were copulating and several small high-density hopper bands and a few swarms had formed. Elsewhere in the summer breeding areas, scattered hoppers and adults were reported west and south of Khartoum, and low numbers of solitary hoppers and adults were present in Northern Darfur near El Fasher. Ground control operations started on 15 October near Atbara.

Locusts moved further north and northeast in Sudan at the end of October. There were unconfirmed reports of a swarm in Northern Kordofan and south of the Egyptian border near Dongola. Immature and mature adults at densities of 1-25/m² appeared along the western and eastern shores of Lake Nasser in Egypt. Lower densities of immature adults were reported in the Western Desert south of Kharga Oasis at Baris. Locusts also appeared along both sides of the Red Sea. In Sudan, solitary adults were seen at night near Suakin and there were unconfirmed reports of hoppers and adults on the coast at densities of 1,500/ha. In Saudi Arabia, locals reported seeing a small yellow swarm arriving near Yenbo and Bader, and individual adults north of Jeddah at Thual on the 24th.

Winter (November 2003 – February 2004)

Sudan. During November, groups of hoppers and immature adults were present in the summer breeding areas west of the Nile and persisted until mid December. Hatching continued along the Atbara River until the last week of November and groups of fledglings and immature adults at densities of 10 adults/m² were present until the end of December. An increasing number of adults moved out of the outbreak area and appeared in the Tokar Delta on the Red Sea coast during November and December. There, adults increased in number from 600/ha to 30,000/ha, formed groups and laid eggs. Hatching started in November and the resulting hoppers formed groups of 10-15 hoppers/m² from December to about mid-January. By the end of January, a band had formed, fledging occurred and immature adults were present at up to 2,700 adults/ha. Further south, several hopper bands were reported on the northern coast of Eritrea near the Sudanese border. On the northern Red Sea coastal plains, mature swarms arrived and laid eggs in early December, giving rise to hopper groups and bands in January that fledged and formed several groups of adults in February.

Saudi Arabia. Numerous mature swarms from northeastern Sudan crossed the Red Sea from mid-November to mid-December and laid eggs on the coastal plains between Jeddah and Umm Lajj where good rains had fallen previously. Hatching commenced in early December and numerous hopper bands formed at densities up to 250 hoppers/m². Fledging started during the first week of January and immature swarms began forming two weeks later. During February, a small second generation of hatching occurred early in the month near Jeddah, causing small dense bands to form by mid-month. Some mature adults and groups reached spring breeding areas in the interior and laid eggs that apparently never hatched.

Egypt. Some of the adults along the Lake Nasser shoreline that arrived from summer breeding areas in Sudan became transiens and laid eggs in November. During January, mature adults at densities of 1,000/ha were present on the southern coastal plains near Sudan. Hopper bands of all instars and fledglings at densities up to 30 locusts/m², and immature and mature transiens adults at densities up to 300 adults/tree were seen in the same area during February.

Spring (March – June 2004)

Locust populations dramatically declined on the Red Sea coast in Saudi Arabia during the first week of March due to control operations and easterly winds that carried swarms to northern Sudan and southern Egypt where they laid eggs. During April, hopper bands formed in northern Sudan near Dongola and Abu Ramad where they persisted until mid May, groups formed along Lake Nasser in Egypt and small bands and fledglings were present on the Red Sea coast near Jeddah. Small-scale breeding continued during May near Lake Nasser and occurred in a few oases in the Western Desert in Egypt. Thereafter, no significant infestations were reported in the region.

Summer (July – November 2004)

Scattered adults were present during the summer in the interior of Sudan and Yemen where small-scale breeding occurred. No swarms were reported in Darfur, Sudan. Good rains fell at the end of the summer along the northern Red Sea coast in Yemen and in adjacent areas in Saudi Arabia. Consequently, local breeding occurred and hoppers formed groups that required control in September and October.

Several immature swarms invaded the northwest coast in Egypt on 28 October from adjacent areas of Libya. The swarms moved across the northern coast and reached several farms in the Nile Delta between Cairo and Alexandria. Some of the swarms also reached Cyprus (30 October) and adults appeared on the coasts of Lebanon (31 October) and Israel (3 November). Damage was limited because the swarms were very mobile. On 17 November, a large swarm flew over Cairo and reached the Gulf of Suez coast later that day. Smaller infestations were reported on the same day on the coast of the northern Sinai Peninsula near El Arish. On the 19th, several highly mobile immature swarms invaded southern Israel and adjacent areas of Aqaba, Jordan from the northwest. Scattered gregarious adults also arrived on the northern Red Sea coastal plains near the Gulf of Aqaba in Saudi Arabia. A swarm was also reported in the Western Desert in Egypt near Farafra.

Eastern Region

No significant infestations were reported in the Region from September 2003 to the present. Only low numbers of adults were present at times in western Pakistan during the spring of this year and along the Indo-Pakistan border during the summer. Although good rains fell in the latter area, breeding was very limited and did not cause locust numbers to increase significantly.

Control operations

Initial control operations in Mauritania, Mali, Niger and Sudan in October and November were limited and mainly ground-based because outbreak infestations were small and localized. In January, aerial spraying started in Mauritania using Moroccan aircraft. There was a significant increase in the area treated from March onwards because large-scale control operations involving aircraft were conducted in the spring breeding areas in Northwest Africa. This was followed by similar operations in the Sahel in West Africa during the summer. More recently, intensive operations have started once again in Northwest Africa. As infestations grew in size, operations increasingly relied on aircraft. During the initial outbreak period, some 400,000 ha were treated from October 2003 to January 2004. Nearly 6 million ha were treated in spring breeding areas (February-August) and 2.1 million ha in the summer breeding areas in West Africa (June-October). So far, more than 2.2 million ha have been treated in Northwest Africa since swarms reinvaded the region in late September. In all, about 10.5 million ha were treated from September 2003 to 20 November 2004 (see Table).

Forecast until summer 2005

Western Region

Sahel. The situation will continue to improve as swarms continue to move north to Northwest Africa. Small infestations are likely to persist and survive during the winter and spring in northern Mali and northern Niger where regular surveys and some control will almost certainly be required. In Mauritania, most of the swarms should have moved out of the summer breeding areas in the south by the end of the year. Future developments depend on the weather in the northwest and north of the country and in adjacent areas in Western Sahara. In the worse case, if sufficient rains fall and temperatures remain relatively warm, breeding will occur in northwest and northern Mauritania and in Western Sahara, causing numerous swarms to form from about February to June. Some of the first swarms to form could move further north in February and March. In the best case, if rainfall is poor or does not occur, conditions will remain unfavourable for locust breeding and survival. So far this year, there has been very little rain and most areas are dry so the majority of the swarms are continuing north to Morocco. In any case, winter breeding appears to be less important during upsurges because swarms tend to over-fly the areas and reach the main spring breeding belt in Northwest Africa.

Northwest Africa. The situation could deteriorate further in the next few weeks as more swarms from the Sahel reach the Atlas Mountains in Morocco and Algeria. Thereafter, cool temperatures will prevent additional swarms from moving north from West Africa until about mid-February. Therefore, a substantial number of immature swarms may become trapped between the ranges of the Atlas and on the plateaus and in the valleys, such as the Souss. Some swarms could penetrate the mountains on to the northern coastal plains in early spring while others could move further east to Tunisia and northwest Libya. In some places, swarms may begin to mature and lay eggs in about January but

generally, maturation does not occur until temperatures warm up in about March. This will give control teams at least three months to treat as many swarms as possible before they are ready to lay eggs. The scale of breeding during the spring will depend on the success of survey and control operations that have been undertaken before then and the timing and distribution of spring rainfall. In the worse case, substantial laying could occur from March to May, giving rise to numerous swarms that would reinvade the Sahel from June onwards. In the best case, little spring breeding would occur and no swarms would form or invade the Sahel. The most likely scenario probably lies in between the two.

Central Region

It is unlikely that additional swarms will arrive in the region from West or Northwest Africa between now and the end of next spring. In the next few weeks, a limited number of swarms may move between northeast Egypt, the Sinai, Israel and western Jordan, depending on winds and temperatures. In the worse case, these swarms could move southwards along both sides of the Red Sea to traditional winter breeding areas along the coast in Saudi Arabia north of Jeddah, on the southern coast in Egypt and on the coast in Sudan. If good rains fall in these areas from December to March, at least one generation of breeding could occur and low to moderate numbers of swarms could form and eventually move into the summer breeding areas in the interior of Sudan from June onwards. In the best case, no rainfall occurs along the Red Sea coastal plains and the swarms remain in the north and eventually disperse and die.

Eastern Region

No significant developments are likely.

Note: Information received by FAO/DLIS up to 22 November 2004 is included

Desert Locust control operations (October 2003 – November 2004)

These figures are those that have been reported by affected countries to FAO/DLIS up to 21 November 2004. Reporting delays and discrepancies may affect the accuracy of some figures. In consultation with the countries, figures have been corrected and adjusted whenever possible.

	Oct-03	Nov-03	Dec-03	Jan-04	Feb-04	Mar-04	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Oct-04	Nov-04	total
Burkina Faso	0	0	0	0	0	0	0	0	0	0	200	12,247	3,839	0	16,286
Cape Verde	0	0	0	0	0	0	0	0	0	16	0	500	497	436	1,449
Chad	0	0	0	0	0	0	0	0	0	0	0	8,801	0	0	8,801
Mali	80	12,573	17,437	0	0	0	0	0	0	6,285	16,403	218,081	106,582	200	377,641
Mauritania	1,607	12,689	50,209	134,201	81,459	26,476	13,918	2,049	1,292	5,071	34,636	200,996	446,541	272,174	1,283,318
Niger	192	90	3,792	1	1,088	2,930	1,600	0	200	1,075	4,397	98,025	96,383	1,000	210,773
Senegal	0	650	0	0	0	0	0	0	30	3,673	56,948	211,397	378,536	36,047	687,281
Algeria	528	2,932	1,663	59	6,023	95,741	349,913	443,715	924,209	844,249	7,019	2,800	131,745	480,711	3,291,307
Libya	0	900	0	800	0	0	28,961	72,670	59,147	3,095	0	1,060	4,925	32,416	203,974
Morocco	0	8,873	13,796	26,622	97,354	446,936	346,202	452,593	736,750	724,913	5,433	505	459,033	741,386	4,060,396
Tunisia	0	0	0	0	0	0	0	79,943	NR	NR	0	0	0	22,089	102,032
Egypt	203	613	13	0	895	2,704	43	1,433	1,672	1,793	0	6	60	NR	9,435
Eritrea	0	0	0	0	1,920	0	0	0	0	0	0	0	0	0	1,920
Israel	0	0	0	0	0	0	0	0	0	0	0	0	0	NR	0
Jordan	0	0	0	0	0	0	0	0	0	0	0	0	0	NR	0
Saudi Arabia	0	3,000	26,336	89,727	24,572	2,375	1,040	0	0	0	0	0	60	NR	147,110
Sudan	4,836	12,000	1,836	542	308	959	596	6	0	0	0	0	0	0	21,083
Yemen	0	0	0	0	0	0	0	0	0	0	0	0	175	0	175
total	7,446	54,320	115,082	251,952	213,619	578,121	742,273	1,052,409	1,723,300	1,590,170	125,036	754,418	1,628,376	1,586,459	10,422,981

NR = not reported