

**Summary Multilateral Evaluation of the 2003–05 Desert Locust
Campaign**

**Towards a More Effective Response to Desert Locusts and their
Impacts on Food Security, Livelihoods and Poverty**

Evaluation Team

L. Brader (Team Leader)

H. Djibo

F.G. Faye

S. Ghaout

M. Lazar

P.N. Luzietoso

M.A. Ould Babah

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BACKGROUND

The 2003-2005 Desert Locust upsurge began in the Sahel region in June 2004 and a wide geographical area came under threat from locusts with the upsurge effectively coming to an end in 2005. The response to the locust upsurge involved FAO in a major coordinating and implementing role with funds entrusted to it by donors. Significant direct support was also provided to affected countries by several donors and Algeria and Morocco assisted their neighbours. There were also major efforts by the affected countries themselves.

An evaluation of the Campaign was proposed at the extraordinary session of the Desert Locust Control Committee (DLCC) in December 2004, with the objective of assessing the campaign in its entirety, including the role of FAO. The Netherlands followed up in initiating the process and during a meeting of the affected countries and donors convened by the FAO Director-General in August 2005, the evaluation was endorsed by all parties as a multilateral evaluation overseen by a Steering Committee with representation from all the partner countries in the Desert Locust Campaign. FAO Evaluation Service provided secretariat and methodological support for the work which was undertaken by an independent team.

The terms of reference of the evaluation, as approved by the steering Committee, stated that the “main objectives are to serve the needs of all partners in the campaign (i.e. affected countries, donors working directly with affected countries and donors working through FAO, Desert Locust organizations, and FAO), in order to strengthen future response capacity. Based on a comprehensive evaluation of the efficiency, effectiveness and impacts of the roles and activities undertaken by all partners in the locust campaign, the evaluation should first and foremost provide findings and recommendations to be considered by all partners in strengthening future work to prevent and counter future locust outbreaks and upsurges. The evaluation will also provide accountability to all partners on the efficiency and effectiveness of resources deployed in the campaign”.

The evaluation was led and carried out by consultants, external to FAO. Competences included crop protection, locust operations, environmental management, sociology and rural economics. The evaluation team: interviewed a wide range of persons directly involved in the campaign; collected and analysed information from the affected countries and donors through two separate questionnaires, made desk studies and reviews of the activities carried out by FAO; visited the affected countries (governments, control organizations, affected areas, NGOs and donor offices); held telephone interviews with donors; and undertook a literature review. In-depth surveys to assess the impact of the locust invasion on food security and livelihoods, were also completed, in Burkina Faso, Mali and Mauritania. Two workshops, at the beginning and at the end of the evaluation process, and views expressed in the steering committee contributed to better focusing the team’s work and to finalising the report.

The final evaluation report was presented to the DLCC in September 2006 for discussion. It is available on the FAO Evaluation website <http://www.fao.org/pbe/pbee/en/index.html>

KEY ASPECTS OF THE CAMPAIGN

1. The evaluation team considers the following as the key aspects of the 2003–05 Desert Locust control campaign.
 - a) Within a very short period, from June to December 2004, a very wide geographical area in the Western Region was invaded by large and very dense Desert Locust populations.
 - b) The 2003–05 upsurge started in the Sahel region, while in the past swarms originating from the Central Region breeding areas, around the Red Sea coasts

and in the interior of the Sudan and Saudi Arabia, have usually preceded Desert Locust population explosions in West and Northwest Africa.

- c) Donors generally considered that they were not adequately informed by FAO on the actions to be undertaken to address the Desert Locust invasion, and on the potential impact of the invasion on the food security situation, which led to delays in donor response. This delayed reaction may also be a sign of a lack of trust in the way Desert Locust emergencies are handled by the various parties concerned.
- d) Donors and affected countries believed that costs of the control operations would have been reduced, and the impact of the locust invasions more limited, had interventions started earlier.
- e) The control strategy focused on killing the maximum number of locusts and saving crops and pasture. The measures taken in a number of countries to minimize the impact of the control operations on the environment and human health were inadequate.
- f) The Desert Locust invasion had serious consequences on the food security situation of more than eight million people in the Sahel region, for whom food assistance and rehabilitation measures were not initially foreseen. However, in early 2005, a UN appeal was launched for Western Africa seeking funding for agricultural rehabilitation measures to address the combined effect of drought and locusts.
- g) Substantial costs were also incurred by the affected countries, which had not been foreseen in their national budgets, resulting in less resources being available for other national development activities.
- h) Algeria, the Libyan Arab Jamahiriya and Morocco were well prepared to face the invasion and also provided substantial assistance to countries in the Sahel during the campaign. The latter were generally inadequately prepared and unable to launch timely, effective control operations to minimize damage to crops and pastures.
- i) The effective control operations, especially aerial control undertaken during the autumn and winter of 2004 by Algeria and Morocco, combined with poor locust breeding conditions in northwestern Africa owing to unusually cool weather, led to the rapid decline of the upsurge in early 2005. This avoided renewed invasions of the Sahel countries in 2005 and demonstrated that Desert Locust invasions can be stopped with currently available techniques.
- j) The Sahel countries, depending on their state of alertness and the availability of resources, have contributed to the control campaign to the best of their ability. In all affected countries, staff, often working under harsh conditions, spent enormous efforts to limit the impact of the Desert Locust invasion.
- k) There were large differences in the efficiency of the control operations carried out by the countries, resulting in control costs ranging from US\$13 to over US\$200 per hectare from one country to the other.
- l) During the campaign, an estimated 12.9 million ha were sprayed with over 13 million liters of pesticides. More than 6.3 million liters of pesticides were left over at the end of the campaign. This was partly caused by the fact that, in a number of cases, additional quantities of pesticides were purchased towards the end of the campaign against the advice of technical staff. These pesticide stocks may represent a substantial disposal problem in the near future. This could have been avoided through better coordination, and if contractual arrangements for the rapid provision of pesticides had been in place.
- m) Donors contributed generously to the campaign costs. The relatively late arrival of the bulk of the donor contributions and the early ending of the campaign have resulted in a significant amount of unspent financial resources. These could help strengthen the national locust control units in the frontline countries in the Sahel.

- n) The total costs of control operations amounted to at least US\$280 million, most of which were provided by the affected countries, especially Algeria, Morocco and the Libyan Arab Jamahiriya. The so-called traditional donors and FAO contributed over US\$80 million. Considerable assistance was also provided to the affected countries by both traditional and non-traditional donors through bilateral means. In addition, more than US\$90 million were spent on food assistance, as well as for the rehabilitation of communities affected by the upsurge. Thus, the total costs of the campaign may be estimated at about US\$400 million.

PLANNING AND IMPLEMENTATION OF THE 2003–05 DESERT LOCUST CONTROL CAMPAIGN

2. The primary responsibility for organizing the control campaign resides with the affected countries. Countries resort to the international donor community and FAO for support when they do not have the required resources to undertake the necessary surveillance and/or control measures. FAO and the donors endeavor to respond through a planned and prioritized approach. In this FAO takes into account governing bodies' policy directives and the advice of the Desert Locust Control Committee and of the Regional Locust Control Commissions.
3. Following a review of the various activities undertaken with respect to the planning and implementation of the 2003–05 Desert Locust control campaign,

It is recommended that:

1. FAO define, in clear terms, the different categories of emergencies and establish the criteria to decide which ones would make use of the Consolidated Appeals Process (CAP), for which guidelines have been published by the Office for the Coordination of Humanitarian Affairs (OCHA). When an emergency is not considered complex, the Organization should also spell out the specific rules that will apply and make them known to all concerned;
2. in future campaigns, in the affected countries, through the appropriate committees, effective exchange of information be ensured among the various stakeholders involved to avoid duplication of efforts and unnecessary high costs;
3. FAO initiate discussions with donors to arrive at a common format for both the funding agreements and the subsequent project document. Such formats should be as simple and user-friendly as possible, but detailed enough to ensure a clear understanding by all the interested parties of what is at stake;
4. FAO initiate discussions with donors on the opportunity of having, in future campaigns, only one or two multidonor projects, and those projects be deemed regional in geographical coverage to facilitate dealing with a pest that knows no national frontiers. Due attention should be given during the negotiations to how donor visibility and preferences, as well as applicable policy and regulatory requirements, would be factored into any multidonor arrangement that is reached;
5. the rather ad hoc procurement requirements be transformed by FAO into systems and methods that are specific to Desert Locust control and to similar emergency operations in

which FAO is involved, as was also recommended by the Technical Group of the Desert Locust Control Committee (DLCC) in early May 2005 in its workshop on contingency planning for Desert Locust control;

6. the FAO Plant Production and Protection Division plan ahead and set up a well researched roster of dependable, experienced and qualified candidates to fill expert positions pertaining to Desert Locust control, especially in the field, and tries to ensure that their conditions are known and are acceptable to FAO;
7. delegation of authority for operational activities, lasting for the duration of the Desert Locust campaign, be given by FAO to the lowest possible level;
8. a single unified command and wide delegation of authority be bestowed in a future FAO Emergency Centre for Locust Operations (ECLC) and that it be recognized as an operational entity, with its own accounting code rather than that of the Office for Special Relief Operations (OSRO), to facilitate the identification of regular programme and extrabudgetary appropriations put at its disposal by the Organization;
9. FAO strive to present a clear strategy to the donors at the time of launching the appeals that is part of the relief–rehabilitation–development continuum, by focusing not only on the immediate problem of eliminating Desert Locusts but also on related humanitarian and livelihood protection issues.

4. The above recommendations require appropriate action from FAO to ensure that it is well prepared to address future Desert Locust emergencies. The necessary proposals should be prepared by both the technical and administrative units of FAO in consultation with relevant stakeholders.

ANALYSIS OF THE CONTROL CAMPAIGN

Impact on the food security situation and livelihoods of affected communities

5. Officially, the impact of the Desert Locust invasions is considered to be very limited by the national authorities in almost all the affected countries. However, data collected by the evaluation team indicate that the invasions had a major impact on the food security situation and on the livelihoods of the affected communities. The control campaigns were focused mainly on the protection of regions with a high production potential. Consequently, regions with low agricultural potentials have suffered significantly from Desert Locust infestations, and losses to crops and pastures have resulted in (i) relatively severe food shortages; (ii) strong price movements in the markets; (iii) insufficient availability of grazing areas; (iv) selling of animals at very low prices in order to meet the subsistence needs of the households and to buy feed for the remaining animals; (v) early transhumance of the herds (migration to better grazing areas by pastoralists); (vi) severe tension between the transhumance pastoralists and the local farmers over resources, and heavy pressure of the animals on the transhumance zones; and (vii) extensive migration to urban areas.

6. The evaluation team came to the conclusion from information collected from various sources in the course of the visits to the affected countries that the number of people in the Sahel that have suffered to varying degrees from the Desert Locust invasions may be estimated at over eight million, distributed as shown in Table 1.

Table 1. Number of people affected to varying degrees by the Desert Locust invasions

Burkina Faso	500,000
Mali	1,000,000
Mauritania	1,300,000
Niger	3,000,000
Senegal	1,580,000
Chad	1,000,000
Total	8,380,000

7. The Desert Locust invasions have made the long-term food security of the local populations even more uncertain, by aggravating the poverty and vulnerability of households already living under very precarious conditions, in regions where food insecurity is almost structural. The impact of reduced and irregular distribution of rainfall on crops in 2004 was very strongly aggravated by the Desert Locust invasions; the locust passage changed the situation from limited crop losses to almost complete destruction. In response to this situation, pastoralists adopted the solution of early transhumance.

8. With respect to the incidence of the Desert Locust invasion on markets, it should be noted that the shortage of cereals had important implications on price levels, causing a significant increase, out of reach of a large majority of the households. For livestock the inverse movement occurred; the sharp drop in animal prices in the market resulted in a strong reduction of the value of the herds and of the purchasing power of the producers. The famine in the pastoral zone in Niger in 2005 is one of the most dramatic examples of the link between the drop in price of cattle, its influence on incomes and food availability at household level.

9. Completing the work undertaken by the evaluation team, a survey was carried out in Burkina Faso, Mali and Mauritania in February/March 2006 to determine the impact of the Desert Locust invasion on the food security and subsistence means of the rural populations. In Burkina Faso and Mali, three zones were selected, and in Mauritania four, and a total of 30 villages were covered by the survey in each country. This has led to the following conclusions.

10. The losses caused by the Desert Locust invasion in 2004 have been evaluated at 80 percent of the expected cereal production in the zones investigated in Burkina Faso, 90 percent in Mali, and 90–100 percent in Mauritania. For the staple leguminous crops (cowpea and groundnut), losses were close to 85–90 percent of the expected production in 2004 in the affected zones in the three countries. One-third of the pastures were also lost in the same zones in Mali and Burkina Faso. The most important losses were observed in Mauritania, where they reached 85 percent of the fodder production. The majority of households were forced to decrease their food consumption, and the volume and number of daily meals were reduced.

11. In 2004, external aid to the areas surveyed in Burkina Faso, essentially in the form of food aid, was provided to 90 percent of the households, who each received on average 140 kg of cereals, representing 8 percent of their food deficit. In Mali, 75 percent of the households received on average 300 kg of cereals, covering 15 percent of their deficit. In Mauritania, 65 percent of the households received on average 130 kg of cereals, representing 10 percent of their deficit. Although the 2005 agricultural season has been relatively satisfactory, household food consumption has nowhere reached pre-locust invasion levels. The consumption of cereals and food legumes during 2005 was about 10 percent below the 2003 level in Burkina Faso and Mauritania. This persistence of the famine in 2005 concerned 30 percent of the households in Mali and 40 percent of the households in Burkina Faso, while at the same time external food aid tended to be withdrawn from the villages, because the crisis was considered finished.

12. In 2004, the average household expenditures for the purchase of food had to be multiplied by three or four depending on the zone studied. To face this increase, household heads had to reduce non-food expenditures: clothing, social expenditures, travel, and sometimes health and schooling. At the same time, they sought supplementary monetary revenues through departure to urban areas to seek employment opportunities or the development of non-agricultural activities. As these strategies proved insufficient to cover the food deficit, farmers had to sell part of their capital, such as their livestock. Women sold personal goods, in particular jewellery. They often incurred debts themselves through women's associations, became involved in extra-agricultural activities and reverted to gathering wild food products for the provision of food for the family (Burkina Faso). To address the food deficit, many household heads have also become indebted. Mauritania is the most affected, with 60 percent indebted households, followed by Mali (45 percent) and Burkina Faso (33 percent).

13. The long-term effects of the locust invasion were the same in all interview zones. They included the departure of young people, increased poverty of the households, reduction of the agricultural workforce and increase of food insecurity. The relative importance of the different types of impacts varies in the countries and zones surveyed. The departure of young people is perceived in all the village communities as the most important impact of the 2004 crisis.

14. In general, at the beginning of 2006, less than 10 percent of the households had reconstituted their livestock. More than 50 percent of the households in Burkina Faso, 30 percent in Mali and 40 percent in Mauritania have not yet been able to repay the debts contracted in 2004. Only 10–20 percent of the households so far have been able to reconstitute their cereal reserves. The security offered by livestock in case of a major problem has been strongly reduced, leaving the households even more vulnerable when facing future crises.

15. The consequences of the crisis still being visible in 2006, only sustained assistance can slow down the degradation of the socio-economic situation of many households. However, as noted by the evaluation team, given the scant attention paid to the socio-economic dimensions of the impact of the Desert Locust control campaign, the assistance provided so far has not always been targeted in an adequate and satisfactory manner.

16. On the basis of the foregoing,

The evaluation team recommends that:

10. strategies be adopted by the affected countries to ensure that locust control operations are carried out both in zones with high production potential and in zones with low production potential, where agriculture is usually practiced by farmers with very limited resources.

Economic benefits and costs

17. The total cost of the locust control campaign 2003–05, including food aid and rehabilitation projects, was about US\$400 million. Data on crops and pastures saved by the locust control operations have not been collected in a systematic manner in any of the affected countries. The campaign succeeded in protecting the subsistence means of some affected communities: in these cases, benefit/cost analysis shows a ratio of 1.5 to 1. The evaluation team did not have the means to carry out an in-depth macroeconomic study of the campaign; however, it addressed in particular the socio-economic impact at the community level.

18. For the determination of benefit/costs ratios of future locust control campaigns,

It is recommended that:

11. mechanisms be put in place by the countries concerned to estimate the total benefits of the control campaign (value of production saved and additional benefits);
12. relevant national structures be involved in the collection of the necessary data and in the preparation of these benefit estimates (agricultural statistics services, etc.).

Impact on human and animal health and the environment

19. As in preceding Desert Locust campaigns, chemical control remained the most utilized approach, if not the only one, during the 2003–05 campaign to address the locust invasions. Compared to previous campaigns, increased attention has been paid to human and animal health, and environment matters, during this campaign. However, the negative consequences of the pesticides used were not always easy to determine. Gaps exist between the official figures and the information collected in the treated areas, but, in the absence of monitoring of these impacts in a regular and timely manner, it was not possible to obtain reliable data.

20. The national locust control units in the Maghreb countries and in Mauritania have usually been able to ensure medical protection for and monitoring of the professional staff involved in Desert Locust control. In most Sahel countries, nearly all staff members from the Plant Protection Services who participated in the Desert Locust control operations had not undergone cholinesterase tests before the start of the campaign, although they were usually performed afterwards. However, without the availability of a pre-treatment reference, the determination of a possible effect of pesticide contamination on the cholinesterase level becomes erratic.

21. To minimize the risks to the safety and well-being of the populations, and to ensure the effective protection of the environment,

It is recommended that in the countries concerned:

13. the capacity of environment and health professionals be strengthened through training aimed at understanding and respecting norms and quality standards, environmental procedures and regulations, and precautionary, reduction and mitigation measures, and that these professionals be provided with logistics and financial means to carry out quality tests and field inspections;
14. those who apply pesticides be trained and sensitized to ensure that they fully understand and follow the rules and regulations pertaining to the use of pesticides;
15. medical surveillance of specialized staff involved in chemical control be ensured, including provision of adequate protection kits;
16. the involvement of village and phytosanitary brigades in the chemical locust control campaign operations be stopped on safety grounds, but their locust monitoring capacities be strengthened.

22. Only 30–80 percent of the empty pesticide containers were collected, according to information received from the Sahel countries. In the countries where village brigades were a key part of the chemical control operations, plastic containers of 1–5 litres have been provided to facilitate the handling of the pesticides. These containers are frequently used for domestic purposes and hence have often been a major source of contamination.

It is recommended that:

17. ordering and distribution of pesticides in containers of less than 50 litres be avoided by all parties concerned and that pesticides be purchased in metal containers of a large capacity (100–200 litres);
18. drum crushers be introduced in all countries affected by the Desert Locust for the destruction of metal containers and recycling of crushed containers by foundries be promoted by the national locust control units;
19. in collaboration with FAO and the Commission de lutte contre le criquet pèlerin dans la région occidentale (CLCPRO) member countries, an agreement be developed with pesticide manufacturers concerned for the recovery of their containers.

Institutional and organizational aspects

23. All partners have directly or indirectly supported the overall strategy for locust control during the campaign. This consisted of the timely detection of the different Desert Locust populations and elimination through chemical control. In the Sahel countries, owing to inadequate means, control operations were in general carried out after agricultural production areas had already been invaded. In Algeria and Morocco, these operations concentrated on eliminating the locusts before they reached these areas.

24. Countries differed considerably with respect to the type of personnel involved in the control operations. In some, control operations were exclusively carried out by well-trained professionals, in others they involved a wide range of people with limited or no experience. The affected countries are responsible for the planning and implementation of Desert Locust control operations. To carry out these responsibilities in an effective manner, the frontline countries (Chad, Mali, Mauritania and Niger) should establish autonomous national locust control units and provide them with adequate resources. Coordination of the various activities at the national level varied considerably, from virtually no specific arrangements, to the establishment of a range of committees at different technical and political levels.

25. FAO has the following responsibilities with respect to Desert Locust forecasting and control operations: (i) as a forum for discussion for the development of appropriate policies, strategies, and plans; (ii) coordinating knowledge and information related to the distribution and abundance of Desert Locusts, covering the daily monitoring of locust and environmental conditions on a global scale, leading to regular bulletins, early warning, alerts and forecasts of timing, location and scale of breeding and migration; (iii) strengthening of National Locust Control Units and promoting collaboration at the regional level, within the framework of the Regional Desert Locust Control Commissions; and (iv) declaring Desert Locust emergencies,

organizing international assistance and providing technical advice in support of the control activities to be undertaken.

26. However, the capacity of FAO to carry out these responsibilities effectively is limited. It should be emphasized that FAO does not coordinate the control operations at the field level. This is the responsibility of the countries, over which FAO has no direct control. The specific organizational aspects linked to the management of the 2003–05 campaign by FAO were characterized by appeals to donors since February 2004 and the re-establishment of ECLO in August 2004. However, ECLO was constrained by the established administrative and financial procedures, as it had not been given special delegation of authority for handling the Desert Locust emergency, as had happened during the 1986–89 campaign. Donor resources became available mainly during September to December 2004, when Desert Locust invasions were already taking place on a very large scale.

27. A number of comments on the above matters have been received from donors through responses to a questionnaire. With respect to the implementation of Desert Locust control operations, 62 percent of the donors consider that FAO involvement should be limited mainly to coordination and information activities. Only one donor felt that FAO should be involved mainly in project execution; instead, 31 percent favoured involvement in both types of activities.¹ *The evaluation team believes that FAO continues to be the logical choice for the implementation of multilateral Desert Locust control campaigns. However, it should try to do so in a much more effective manner and allow staff responsible for the various project activities to take decisions and carry out their responsibilities expeditiously.*

28. From an organizational and technical point of view, the campaign has suffered from a lack of effective contingency plans at the national, regional and international levels. The collection and transmission of data among the countries, the Regional Commission and FAO headquarters, has been handled reasonably well. It has also suffered from a lack of active involvement of all the relevant parties, especially donors and affected countries, in Desert Locust monitoring and control matters. The linkages between Desert Locust recession, the pre-emergency and emergency phases should be better understood by all stakeholders to allow for timely and effective reaction and action by all concerned.

Technical quality and adequacy

29. One of the most important constraints noted during the Desert Locust control campaign was the insufficient availability of well-qualified human resources in most of the countries concerned, in particular the Sahel countries. In a crisis situation, the staff of the control structures in these countries is strengthened by people from various departments, who generally do not possess sufficient knowledge to be able to undertake the monitoring and control activities appropriately.

30. With respect to pesticides, most of the products used during the Desert Locust control campaign are on the list of products recommended by the FAO Pesticides Referee Group. In a small number of cases, other products were used. Specialists agree that, in an invasion situation, the best means to return as quickly as possible to remission is still the utilization of conventional pesticides with a rapid knock-down effect. Alternative control means, such as entomopathogenic fungi and pheromones, are ecologically highly attractive, but do not kill locusts rapidly. Further tests are needed to determine how they can be used most effectively. The management of pesticide stocks has become a major preoccupation for the locust control authorities, who try through different measures to ensure better storage based on the available means, while waiting for the construction of the appropriate stores.

¹ In the report, comments received from the affected countries and the donors through two separate questionnaires have been included. To facilitate the identification of these comments, they are presented in italics.

31. The effectiveness and efficiency of the control operations undertaken in the various countries are, to a large extent, expressed by the costs of the control operations per hectare. Based on the data collected from eight countries, it was shown that these costs ranged from US\$ 13 to over 200/ha. These costs are largely dependent on the effective planning of the campaign and the timely provision of the various campaign inputs. These data show that there is considerable scope for improvement in a number of countries.

32. Given the wide range of the costs of the Desert Locust control operations in the affected countries during the 2003–05 campaign,

It is recommended that:

20. a study be undertaken jointly by FAO and the countries concerned to identify the reasons for the high costs of Desert Locust control operations in some of the affected countries, as a basis for the development of guidelines for the more efficient control of locusts.

Overall appreciation of the effect and impact of the control campaign

33. The following impressions have in particular been obtained by the evaluation team in the course of the country visits. Donors, affected countries and populations are unanimous in their opinion with respect to the importance of the potentially devastating effect of the Desert Locust invasions and their negative repercussions, combined with those of drought, on the productive activities and on household food security. They also share the conclusion that costs of the control operations would have been less, and the impact of the invasion more limited, had control operations been launched in time to avert major invasions.

Affected populations

34. From the local populations' point of view, on balance the result of the campaign is mixed: while they recognize that the control operations have had an irrefutable impact, they were unhappy about the late start, which has entailed heavy consequences in terms of prolonged exposure to damage by locusts. Within a couple of hours, some lost a considerable part of their capital. Notwithstanding the severe losses of crops and other assets, there is general agreement among the local populations that the disaster might not have been avoided, but it could have been reduced, if assistance had been provided at the appropriate moment. These groups and communities, the appeals of which have not been heard, had the impression that they were abandoned by the authorities.

Affected countries

35. Agricultural losses, according to the majority of the countries affected in 2003–05, could have been less. The level of damage caused was linked to a certain number of factors, in particular the shortage of resources. Clearly, the importance of the development of the Desert Locust has been underestimated by the technical ministries, and the countries were taken by surprise by the rapid evolution of the events. Also, because of lack of preparedness, they depended largely on the assistance provided by the international donor community, and on that matter the affected countries were unhappy about the slowness in the provision of aid.

Donors

36. From the donors' point of view, notwithstanding the overall delay experienced in the provision of assistance, the control objectives have been met in general terms, and the campaign has been largely successful considering the fact that the control operations have contributed to a reduction of the locust populations and have limited the losses to crops and

pastures. The donors recognize, however, that rural communities in certain places have been heavily affected and that there was a need to provide rehabilitation assistance. Donors agree with the affected countries that support for the control campaign has been provided late, but they differ in opinion on the reasons for the delays. Some mention the heavy bureaucracies and the lengthy administrative procedures within donor agencies; others note the weaknesses of the organization charged with this task.

SUSTAINABLE DESERT LOCUST CONTROL

37. The evaluation team concluded that in future the frequency and impact of Desert Locust invasions can be significantly reduced, provided effective action is taken on the following general recommendations for which further elaborations are provided in the report. It has been suggested to prioritize these recommendations. However, the evaluation team believes that, to arrive at lasting improvements with respect to sustainable Desert Locust control, they must be handled as a comprehensive package that requires urgent attention and follow-up action by all concerned stakeholders.

38. Contrary to the current situation, effective Desert Locust control requires a much better awareness and more effective and joint involvement in the various activities to be undertaken by all groups concerned. These include FAO, the DLCC, the Regional Desert Locust Control Commissions, the affected countries and the donors. The transition from, and the linkages between, a Desert Locust recession situation, through a pre-emergency stage, to a full-scale emergency should be well understood by all stakeholders to allow them to take timely and effective action. These stages are all too often looked at as independent events. Better awareness of the above facts and appropriate institutional arrangements to address them are essential to the implementation of the recommendations listed in this report.

39. Given also the fact that this evaluation has covered only one of the three major regions of the Desert Locust invasion area, the evaluation team considers that, in addition to the implementation of the recommendations presented in this report, action should be taken on how they might affect Desert Locust survey and control efforts in the other two regions. FAO should take the lead on this in close collaboration with relevant stakeholders.

Preventive control strategy at country level

40. The Western Region, covering West and Northwest Africa, contains important seasonal breeding areas that can result, as shown by the 2003–05 events, in large-scale outbreaks and invasions when ecological conditions become favorable. The seasonal breeding areas in the Sahel are mainly located in the so-called frontline countries (Chad, Mali, Mauritania and Niger). Regular surveying and monitoring in these breeding areas would allow control of Desert Locust populations at an early stage before they invade larger areas and become difficult to contain. So far, only Mauritania has established the necessary institutional framework for the implementation of a preventive control strategy.

21. It is recommended that:

- a) an effective preventive Desert Locust control strategy be put in place in all the countries of the Western Region where seasonal breeding areas exist to reduce the risk of future outbreaks and upsurges, through the timely detection of a pre-emergency situation. The implementation of such a strategy could avoid crop and pasture losses, and considerably limit control costs by intervening at an early stage with limited scale control operations, and allow implementation of safer and environmentally friendlier control means;

- b) an autonomous and operational national locust control structure, with the authority to take technical and administrative decisions as regards Desert Locust operations, be created in each of the frontline countries. This structure must be granted effective financial, material and policy support by the governments concerned. The structure should be able to take full advantage of the material, financial and technical resources received during the 2003–05 upsurge;
- c) an adequate national budget be allocated for the operation of the national locust control structure to ensure the sustainability of the preventive control strategy;
- d) the EMPRES programme in the Western Region be effectively supported by the CLCPRO member countries and by the donors;
- e) countries in the Sahel exposed to Desert Locust invasions maintain a capacity to control locusts within the Plant Protection Services and ensure that the experience gained during the 2003–05 campaign is captured, disseminated and preserved, through appropriate avenues such as training;
- f) the human capacity in acridology be strengthened for the timely replacement of the current Desert Locust specialists, many of whom will reach retirement age in the next 10–15 years.

41. Details of the requirements for the effective strengthening of the national locust control units in each of the frontline countries have been defined recently on the occasion of the first meeting of the Steering Committee of the Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases (EMPRES) programme for the Western Region, held from 4 to 6 March 2006 in Algiers.² For example, the minimum number of monitoring and control teams has been estimated at six for Mali, ten for Mauritania, five for Niger and four for Chad.

42. The total costs for the establishment and operation of the National Locust Control Units in each of the four countries over the period 2006–09 have been estimated at US\$21.9 million. From these estimates, it is evident that, for an average insurance premium of some US\$5 million per year, a new Desert Locust outbreak may be either avoided, or certainly be of much less importance than during the 2003–05 upsurge.

Strengthening of the Commission de Lutte contre le Criquet Pèlerin dans la Région Occidentale

43. The CLCPRO is responsible, among others issues, for the strengthening of national locust control units, through its own programmes and in collaboration with the EMPRES Western Region programme. However, the limited role and responsibilities of CLCPRO in the Western Region with respect to Desert Locust control operations, compared with the activities undertaken in the past by the Organisation commune de lutte antiacridienne et de lutte antiaviaire (OCLALAV), undermines its visibility and recognition by the member countries and the units within them.

² Programme EMPRES en Région Occidentale. *Rapport de la Première Réunion du Comité de Pilotage*. Alger, Algérie, 4–6 mars 2006. FAO, mars 2006.

44. In order to enable the CLCPRO to carry out its mandates and responsibilities in the region in a more effective and efficient manner,

22. It is recommended that:

- a) the CLCPRO Secretariat role and responsibilities be reviewed and that it be provided with adequate resources to be able to effectively carry out its responsibilities in the medium and long term. The Secretariat should be the main contact with the countries in the region both during recessions and emergencies.
- b) in the case of a new emergency, additional financial and operational responsibilities be delegated to the CLCPRO Secretariat, by member-countries, donors and FAO;
- c) in order to strengthen the CLCPRO and ensure a more efficient execution of its activities, the different components of the EMPRES Western Region programme be realigned immediately within the domain of the Secretariat in much the same way the Central Region programme was incorporated into the Central Region Commission structure.

45. FAO should, as a matter of urgency, develop the necessary plans for the implementation of this recommendation, including the way in which the CLCPRO Secretariat should be strengthened during the period of an emergency, to be able to undertake such additional responsibilities effectively.

FAO responsibilities

46. The Desert Locust is a threat to agricultural production in countries in Africa north of the equator, the Near East and Southwest Asia. Considering FAO's overall mandate with respect to Desert Locust monitoring and control activities for more than five decades, it has a clear responsibility to provide the necessary services to these countries so that they can prevent Desert Locust outbreaks and control upsurges effectively.

47. For FAO to continue to carry out its responsibilities for Desert Locust prevention and control in an effective manner,

23. It is recommended that:

- a) as a first step, the human capacity of the Desert Locust Information Service, which is currently staffed by only one professional officer, be increased, while at the same time a review is undertaken of the critical mass needed in the Locust and Other Migratory Pest Group to carry out its wide range of responsibilities effectively;
- b) FAO and member countries provide adequate recognition and support to the DLCC and take full advantage of the Desert Locust Technical Group to review the needs for the development of improved Desert Locust survey and control means, and prepare appropriate proposals;
- c) arrangements be made to enable FAO representatives, in the case of a new Desert Locust emergency, to collaborate effectively with and assist the countries in the steps to be

undertaken in coordinating and mobilizing the necessary international assistance by presenting well defined action plans and proposals on how to implement these plans, and by determining the international support needed for them.

48. FAO should develop the necessary plans and undertake the actions required to implement this recommendation. It should commit itself to ensuring that it is able to continue carrying out its mandated responsibilities with respect to Desert Locust forecasting and control in an efficient and effective manner. This will have budgetary implications, but the evaluation team considers that these are justified because this is a core FAO function, and thus should be paid for from its own resources. As a consequence, it may have to drop less essential activities.

Donor support for Desert Locust control

49. Effective control of a migratory pest such as the Desert Locust, which can move from one country to another within a matter of hours and days, requires flexibility in the planning and implementation of control operations. For the resources to be used most effectively, they should preferably be available for the control operations to be undertaken in the whole of the invaded region, and not restricted for activities in one particular country. Harmonization of project procedures, as recommended in the Organization for Economic Co-operation and Development/Development Assistance Committee (OECD/DAC) declaration of 2005, will also be an important element for the rapid implementation of control activities. A working document on alternative funding arrangements for Desert Locust control campaigns has been prepared by the FAO Secretariat for the next session of the DLCC.

24. It is recommended that:

- a) in case of a new emergency, opportunities be explored for the establishment of multidonor regional funds in support of regional control programmes facilitating the effective implementation of future Desert Locust control campaigns. Due attention should be given to how donor visibility and preferences can be factored into such a multidonor arrangement;
- b) FAO and donors explore the possibility of developing a mechanism that would allow flexibility in reorienting and reallocating donor funds at FAO with minimal administrative effort to respond effectively to emergencies as they surface or as the situation continues to evolve. Such a tool should be put in place during the budget negotiation process so that the project documents will explicitly capture the importance of flexibility;
- c) in future, to assist affected populations, provisions be made in Desert Locust control project agreements, for part of the financial resources to be reserved for food aid and rehabilitation activities as needed.

50. FAO, in close collaboration with interested donors, should take advantage of the experience gained during this campaign to develop the necessary plans and agreements for the

implementation of this recommendation. It should ensure, together with the international donor community and the affected countries, that it is able to continue to carry out its responsibilities with respect to Desert Locust forecasting and control in an efficient and effective manner.

Implementation of Desert Locust emergency campaigns

51. Addressing Desert Locust upsurges and plagues in an effective manner requires the availability of well-defined contingency plans at national, regional and international levels, which were mostly lacking during the 2003–05 campaign. These plans should preferably be developed as an integral part of the national food security risk management plans and ensure the permanent engagement of all stakeholders. Both the preventive and emergency control operations require the regular involvement and support of donors, the affected countries, FAO, the CLCPRO and other interested partners.

52. In order to be well prepared for an eventual new Desert Locust upsurge,

25. It is recommended that:

- a) contingency plans be developed for the medium- and long-term management of the Desert Locust risk, including action plans for locust monitoring and control at national, regional and international levels. These action plans should indicate: (i) the main activities to be undertaken (including those related to food aid and rehabilitation of the affected populations) and their provisional costs; (ii) the available financial resources, their origin (internal budgets, external resources) and the activities that will be covered by them; (iii) additional financial needs. These plans will be the basis for the preparation of annual work plans and budgets;
- b) in future emergencies, funding appeals be based on well-defined contingency plans and follow the principles and guidelines endorsed for appeals by the Inter-agency Standing Committee (IASC).
- c) strategies be adopted to ensure that locust control operations are carried out both in zones with high production potential, as well as in zones with low production potential, where agriculture is usually practiced by farmers with very limited resources.

53. With respect to FAO's operational procedures,

26. two options are recommended for future action:

- a) either FAO develops and introduces appropriate arrangements to address future Desert Locust emergencies in a more effective and expeditious manner;
- b) or opportunities for outsourcing most of the operational responsibilities should be pursued.

54. Given its specific responsibilities with respect to Desert Locust monitoring and control, FAO should take the leadership to develop the necessary contingency plans in close collaboration with the various stakeholders. In these plans, FAO should indicate how, in future emergencies, it will ensure that the Inter-agency Standing Committee (IASC) guidelines for appeals will be followed. At the same time, the Organization should reassess its capabilities to implement Desert Locust control emergency projects. If it is concluded that FAO should continue to be involved with this, then it should explore ways and means how this can be done in a more effective manner. Alternatively, it should develop plans for how these activities can be best outsourced.

Institutional arrangements

55. In the course of the evaluation, concerns have been raised on the effectiveness of the current institutional arrangements for Desert Locust control. Some of these have already been addressed in the above recommendations. From a more general point of view, it is essential that: (i) better recognition be given to the fact that Desert Locusts are a permanent major threat to the food security and livelihood situation of large numbers of people in countries that already require very substantial international development assistance; (ii) strong support is provided by the countries concerned and the international community to address the necessary Desert Locust monitoring and control activities effectively during the recession, pre-emergence and emergency phases; and (iii) that a productive partnership is created with the active support and trust of all concerned.

56. A much better understanding is needed of the role and responsibilities of all the stakeholders, the affected countries, the donors and FAO, and the way the DLCC and Regional Commissions promote and ensure effective Desert Locust monitoring and control. For example, the evaluation team had the impression that, with respect to the Desert Locust emergency, some affected countries seem to consider that action to be undertaken is in the first place a responsibility of FAO and the Regional Commissions. Also, donors and affected countries consider a Desert Locust emergency as a unique, stand-alone, event. It is essential to recognize that there is a continuum from recession, through pre-emergency to emergency. Limiting the frequency and importance of Desert Locust outbreaks and upsurges requires the involvement and support for the whole chain of activities related to these three phases.

57. To achieve this,

27. It is recommended that:

- a) the DLCC be transformed from an essentially technical committee into a mechanism in which all parties (affected countries, donors and FAO) determine their joint interests and activities, and deal directly with donors to determine joint work programmes;
- b) Regional Commissions meet regularly at a high level to ensure member country support for the decisions taken;
- c) a multilateral agreement for Desert Locust control be developed for the formal permanent engagement and support of all key stakeholders.

Assistance provided by Maghreb countries

58. A very special aspect of the 2003–05 control campaign was the solidarity demonstrated by the Maghreb countries towards neighbouring countries in the Sahel. The transboundary nature of the Desert Locust invasions calls for the countries to pool available

resources for the mutual benefit of the whole region. The strong control capacity available in the Maghreb countries offers a unique opportunity to address eventual new Desert Locust outbreaks in the Sahel countries more effectively. These outbreaks always precede the movement of swarms to the Maghreb countries by a couple of months.

28. It is recommended that:

- a) an appropriate action plan and legal framework be developed for the joint use of the existing control capacity in the Maghreb countries within the Western Region, under the supervision of CLCPRO;
- b) agreements are established among the various countries in the region to encourage, organize, facilitate and implement joint cross-border operations.
- c) cost estimates are developed to determine the amount of donor assistance required to use the Maghreb control teams and aerial resources in the Sahel countries effectively in case of a new emergency.

59. CLCPRO should take the necessary initiatives for the establishment of such an integrated Desert Locust control system for the Western Region. This should include matters such as the operational modalities, the necessary legal arrangements, steps needed to call this control system into action, the financial requirements for such a force and the international support needed for its effective intervention in the frontline countries.

Socio-economic impact

60. It is generally accepted that gregarious Desert Locusts need to be controlled, notwithstanding the fact that precise data on the damage that can be caused have not been collected systematically. Consequently, the calculation of benefit/cost ratios of the control operations remains a speculative exercise. A World Bank discussion paper on Desert Locust management (Joffe, 1995)³ suggests that locusts are not particularly serious pests in aggregate, and that Desert Locusts are unlikely in modern times to trigger widespread food insecurity. However, the evaluation team noted that such impacts have been very significant at the level of the affected communities, especially in the Sahel countries. In these countries, at least eight million people have suffered destruction of all or part of their food crops.

61. The control campaigns were focused primarily on the elimination of locust populations, while little attention was paid to the impact on food security and sustainable livelihood aspects. These impacts could not be evaluated in a complete manner because of: (i) the absence of an agreed upon methodology to evaluate these types of impacts; (ii) the lack of a global intervention framework that takes into account the social, economic and nutritional aspects; and (iii) the insufficient involvement of the different competent technical services/structures.

29. It is recommended that:

³ Joffe, S.R. 1995. *Desert Locust management. A time for change*. World Bank Discussion Papers. Washington, D.C., World Bank,

- a) a jointly agreed methodology to evaluate the socio-economic impacts of Desert Locust invasions be developed by the different authorities concerned;
- b) a global intervention framework that addresses effective assessments of the socio-economic impact of Desert Locust invasions and control operations be established;
- c) in case of a new emergency, economic, social and nutritional impact studies, integrating a broader spectrum of relevant disciplines and competencies, be carried out in a timely, systematic and multidisciplinary manner.

62. The DLCC should establish a multidisciplinary working group to develop proposals for the implementation of this recommendation. This working group should pay special attention to the specific actions needed at the national level to plan for and carry out the necessary impact studies.

Human and environmental health

63. Human and animal intoxications and negative environmental effects have been noted in certain countries. It has not always been easy to determine the undesirable consequences of the use of pesticides. Most of the affected countries do not have an environmental impact research strategy, specialized laboratories or a sufficient number of qualified staff to follow the fate of the pesticides in the environment, and within the framework of a public health policy. Large quantities of pesticides are still available in the countries affected by the Desert Locust invasion. Estimated at 6.2 million liters, they are either leftover from the 2003–05 campaign or come from purchases made after the campaign in order to be prepared for an eventual new invasion. This was partly caused by the fact that in a number of cases additional quantities of pesticides were purchased towards the end of the campaign against the advice of technical staff. To address health and environmental concerns more effectively,

30. It is recommended that the affected countries:

- a) procure only pesticides registered with the Comité Permanent Inter-États de Lutte contre la Sécheresse dans le Sahel (CILSS) and create the necessary conditions for the appropriate use of these pesticides;
- b) take the necessary steps to strengthen environmental compliances and enforce the application of regulations and rules for the safer handling, use and storage of pesticides;
- c) avoid placing unnecessary pesticides orders and overestimating pesticide needs;
- d) strengthen the technical capacity of the QUEST (Quality, Environment, Health and Treatments) trained specialists in collaboration and agreement with the EMPRES Western Region programme and the CERES-Locustox in Senegal, and ensure their linkage to the national locust control units in order to undertake in-depth operational health and environmental reviews;
- e) pursue, in collaboration with FAO, CLCPRO, donors and pesticide producers, the establishment of pesticide contractual arrangements, including a pesticide bank mechanism, to reduce the accumulation of pesticide stocks and for the disposal of empty containers.

64. The countries affected by the Desert Locust should determine the steps needed to implement this recommendation under their specific circumstances and develop the necessary action plans. If an effective preventive control strategy is put in place, as recommended, the negative effects of chemical control operations on public welfare and the environment will already be strongly reduced.

Research

65. Research activities related to Desert Locust have not generated much interest over the last decades. However, without effective research there will be no improvements in Desert Locust control operations.

31. Consequently, it is recommended that research studies aimed at the following issues are encouraged:

- a) improving operational Desert Locust monitoring and control techniques;
- b) developing alternative control means;
- c) using technologies such as satellite imagery and differential global positioning systems (DGPS), that will greatly improve survey, monitoring and control operations;
- d) gaining better understanding of population dynamics of the Desert Locust during the solitary phase; and
- e) determining the overall impact of Desert Locust invasions on the economies of the affected countries.

66. FAO should determine, in consultation with the DLCC, Regional Desert Locust Commissions and research institutions, what specific steps are needed to move forward in these specific areas, which are of major importance for the further improvement of the efficiency of Desert Locust monitoring and control operations.