

REPORT OF THE TENTH SESSION OF THE EXECUTIVE  
COMMITTEE OF THE COMMISSION FOR CONTROLLING THE  
DESERT LOCUST IN THE NEAR EAST  
HELD IN AMMAN, JORDAN  
11 - 12 OCTOBER 1980

INTRODUCTION

The tenth session of the Executive Committee of the Commission for Controlling the Desert Locust in the Near East was held in Amman, Jordan from 11 to 12 October 1980. Mr. Gharib Khamis Algarib (Kuwait), Chairman of the Executive Committee, welcomed the members of the Executive Committee and the other participants and thanked the Government of the Hashemite Kingdom of Jordan for holding this session in Amman. He also expressed his satisfaction at the interest of the Director-General of FAO in the control of locusts as expressed by delegating the Regional Representative for the Near East to attend this meeting. Mr. S. Jum'a also thanked the Government of Jordan on behalf of Mr. E. Saouma, Director-General of FAO, for inviting the session and hoped that fruitful discussions would lead to constructive recommendations by the Committee.

Officers of the Session

Chairman: Mr. Gharib Khamis El Gharib (Kuwait)  
Vice-Chairman: Delegate of the United Arab Emirates (absent)

Drafting Committee

Delegates of Iraq and Egypt along with the FAO Secretariat were entrusted with the drafting of the report of the Committee. Messrs. R. Skaf, A. Khasawneh, M. Talhouni and M. Shafi acted as Technical Secretaries.

PARTICIPANTS IN THE SESSION

Members of the Executive Committee

Arab Republic of Egypt

Mohamed Said El Garby  
Director of Locust Research Station  
Plant Protection Research Institute  
Cairo

Iraq

Alladin Daoud Ali  
Director General of Plant Protection  
Ministry of Agriculture and Agrarian Reform  
Baghdad

Kuwait

Gharib Khamis El Gharib  
Chief of Plant Protection and Plant Quarantine  
Direction of Agriculture  
Kuwait

Delegates of Saudi Arabia and United Arab Emirates did not attend the meeting.

Observers

Hani Haddadin  
Chief of Plant Protection  
Ministry of Agriculture  
Amman, Jordan

FAO Staff

S. Jum'a  
ADG, Regional Representative for the Near East

R. Skaf  
Senior Officer  
Locusts, Other Migratory Pests and Emergency Operations

A. Khasawneh  
Regional Locust Officer, Jeddah

M. Talhouni  
Locust Officer, Hodeidah

M. Shafi  
Locust Officer, Aden

AGENDA

1. Opening of the Session
2. Adoption of the Agenda
3. Election of the Drafting Committee
4. Programme of Work and Budget for 1980 and Accounts for 1979
5. New Scale of Contributions
6. Reporting, Forecasting and Transmission of Locust Information
7. Training and Research

- (i) Training
  - (ii) Research activities within the Region
  - (iii) Research activities in other Regions
  - (iv) Remote sensing in locust survey and control.
8. Any Other Business
  9. Date and Place of Next Session
  10. Adoption of the Report.

#### SUMMARY OF DISCUSSIONS

##### Programme of Work and Budget for 1980

1. The Committee studied the 1980 budget (Appendix 1) and recommended its approval.
2. The Committee was informed about the approval of the budget 1978-1982 by the Finance Committee and recommended the increase of the training element by 50%.
3. The Committee reviewed FAO statements and these included the balance of the Trust Fund at the middle of 1980 and recommended that such statements continue to be presented in the future.

##### Expenditure for the Year Ending 31 December 1979

4. A statement of expenditure for the year 1979 is shown in Appendices I and II. The Committee recommended its approval.
5. Expenditure in the year 1979 for Personnel Services and Travel exceeded the approved budget; however less was spent on contractual services, general operating expenses, supplies, equipment and fellowships. Total expenditure remained within the approved budget.

##### Contributions Received and Outstanding

6. Appendix III shows the annual scale of contributions to the Trust Fund 9409 and the position of contributions as at 30 April 1980. The Committee thanked the countries who paid their contributions regularly and again requested those Member Governments who had not paid outstanding contributions for past years to settle their arrears as soon as possible.\*

##### New Scale of Contributions

7. Due to financial obligations of the Commission towards its various projects in the Region concerning survey, control, research and equipment, the Committee recommended that the Commission approve the increase of Member Countries contributions to the Trust Fund by 25%. (X)

##### Reporting, Forecasting and Transmission of Locust Information

8. The Committee reviewed with great interest the document prepared by the Secretariat on this subject (Appendix IV), which includes details on the aims of a reporting system, information required, best ways to transmit information and the role of FAO Headquarters and regional locust control Commissions. The document also includes a guide for locust

\*Qatar since 1978 and Sudan since 1977.

officers and forms devised for reporting locust populations. This document should be adopted and distributed to all locust officers.

9. Fixed and mobile radio sets should be maintained in order to keep their efficiency, more particularly in desert areas.

#### Training

10. The document prepared by the Secretariat was reviewed; it showed the progress achieved as follows:

##### i - Training courses

- Mr. Jaidi from The People's Democratic Republic of Yemen attended a group training session in India for four months; candidates from Iraq were unable to attend;
- Mr. M. Harb (Egypt) joined a training course on plant protection in India in September 1980 for a period of four months;
- Mr. S. Ghamdi (Saudi Arabia) started a training course in agricultural aviation in Sudan for a period of three months starting September 1980.

##### ii - Fellowships

- Mr. Y. Ashur (Saudi Arabia) was unable to join the University of India as he was unable to produce the required documents;
- Mr. S. Ibrahim (Egypt) obtained a Ph.D. Diploma from India and returned in late March 1980;
- Mr. M. Shahari (Yemen Arab Republic) attended English language course in London and is due to join Riyadh University for the year 1980-1981 to prepare a MSc in plant protection with special emphasis on desert locust control;
- Mr. T. Bahakim (People's Democratic Republic of Yemen) joined Khartoum University.

##### iii - Exchange visits

Mr. A. Refaat (Egypt) visited India for ten days in September; Mr. I. Madini (Saudi Arabia) visited Pakistan and India between 20 August and 10 September; Mr. M. Talhouni, FAO locust expert in Hodeidah, visited Pakistan and India from 20 August to 10 September and Mr. M. Shafi, FAO locust expert in Aden, visited India in September.

11. The Committee recommended giving priority to group training at both regional and national levels.

12. The Secretariat informed the Committee that one month's training courses on locust problems were organized in India twice a year starting on 1 May and 1 September respectively. It was recommended that the Commission take advantage of these courses within available funds.

13. It was recommended that Dr. M.S. El Garby (Egypt) should make a one month advisory visit to follow activities and organization of locust research in India, Pakistan and DLCO-EA.

14. It was recommended to arrange a one month training course to Mr. A. Arafa and Mr. A. Bajuweiber (Saudi Arabia) in India on locust research.

15. The Committee recommended the organization of a training course on locust control in the Region; the regional locust officer was requested to make all the necessary arrangements with a country of the Arabian Peninsula during 1981.

16. An alternate should be designated for each candidate to any training course, in order to facilitate acceptance procedures in host countries in case conditions for admission of the first candidate were not fulfilled.

#### Research Activities in the Region

17. In conformity with Recommendation 34 of the 10th Session of the Commission, the regional locust officer visited Cairo and Khartoum stations. The Committee received his report and recommended to reactivate past research within a well-developed programme.

18. Regarding the role Dokki Station played in desert locust research in the past, including training and the availability of highly qualified personnel, the reactivation of the station is much-desired. The Committee expressed satisfaction for measures undertaken in this respect.

19. Based on the programme of research submitted by Egypt's delegate, it was recommended that assistance to the value of \$15,000 from the budgets of 1980 and 1981 be allocated to Dokki Station, of which \$3,000 is to be paid in cash for local purchases of breeding cages. The director of the station should give priorities in the list of equipment and supplies already submitted.

20. Each research station in the region should submit during the next annual meeting a detailed statement on research achieved and future programmes.

21. The discontinuation of locust research at Khartoum Station was regretted. It was recommended to approach the authorities concerned in Sudan in order to resume necessary activities in the station and indicating the readiness of the Commission to provide the necessary support and assistance.

22. Research activities in Jeddah Station were reviewed; they are focused on alternative insecticides based on pyrethroids. Research along this line should continue.

#### Remote Sensing in Locust Survey and Control

23. The Secretariat gave a summary of progress achieved; the matter will be discussed in detail at the DLCC meeting to be held during November 1980 in Rome.

#### Any Other Business

24. It was considered important to continue survey operations on the Red Sea coast bordering Egypt and Sudan which experienced some swarms in April and May 1980; also in areas bordering the High Dam between Egypt and Sudan between December and March. A joint survey in both areas should be organized starting in the 1980-1981 season. The Commission should coordinate this operation according to a plan to be prepared by the Secretariat in conjunction with both countries concerned.

25. The importance of aerial survey and control was emphasized. A study on establishing an aerial unit in the area should be made. It was recommended that the Secretariat prepare a detailed study on this subject in order to assist the Commission in taking a decision.

26. The Committee was informed by the Secretariat about the preparedness of Iraq to provide assistance to Arab countries in the field of aerial locust control. It thanked the Government of Iraq for this offer.

27. It was recommended that FAO extend invitations to attend the Commission's session well in advance.

DATE AND PLACE OF NEXT MEETING

28. The eleventh session of the Executive Committee should be held in conjunction with the twelfth session of the Commission on a date and place to be decided by the Director-General of FAO.

COMMISSION FOR CONTROLLING THE DESERT LOCUST IN THE NEAR EAST

TRUST FUND No. 9409

Statement of Account (expressed in US dollar equivalents)

	Approved	Actual Costs		Estimates		
	budget 1978-82	1978	1979	1980	1981	1982
<u>Receipts</u>						
Balance brought forward from previous year	-	53 363	137 380	176 788	273 127	286 527
Contributions	200 000	218 675	151 079	282 939	200 000	200 000
Interest		5 011	12 882			
	<u>200 000</u>	<u>277 049</u>	<u>301 341</u>	<u>459 727</u>	<u>473 127</u>	<u>486 527</u>
<u>Cash Expenditure</u>						
<u>Personal Services</u> Short-term experts, local assistance	35 000	31 020	48 297	50 000	35 000	35 000
<u>Travel</u> Delegates, teams, consultants	15 000	5 698	17 368	15 000	15 000	15 000
<u>Contractual Services</u> Printing reports	5 000	3 495	3 118	5 000	5 000	5 000
<u>Supplies and materials</u> for field surveys, POL, vehicle maintenance	20 000	13 130	6 447	20 000	20 000	20 000
<u>Equipment</u> for field projects	60 000	68 229	24 165	45 000	60 000	60 000
<u>Fellowships and Grants</u> Individual and Group Training	20 000	-	626	20 000	20 000	20 000
<u>General Operating Expenses</u> Misc., rent, communications	15 000	7 368	11 653	15 000	15 000	15 000
	<u>170 000</u>	<u>128 940</u>	<u>111 674</u>	<u>170 000</u>	<u>170 000</u>	<u>170 000</u>
Project Servicing Costs (5% on Supplies and Equipment 14 % on the other items)	16 600	10 729	12 879	16 600	16 600	16 600
	<u>186 600</u>	<u>139 669</u>	<u>124 553</u>	<u>186 600</u>	<u>186 600</u>	<u>186 600</u>
Balance	13 400	137 380	176 788	273 127	286 527	299 927

Subject to the total commitments at any given time not exceeding the total contribution pledged and received at that time, the Director-General shall have discretionary powers to vary the allocations between one expenditure heading and another as may be necessary to meet the changing locust situation. All such variations shall be reported and justified when submitting annual accounts to the Commission.

TRUST FUND NO. 9409

BREAKDOWN OF 1979 EXPENDITURE  
AND 1980 EXPENDITURE & COMMITMENTS

	<u>ANNEX II</u>	<u>APPENDIX II</u>
	1979 <u>Expenditure</u>	1980 Expenditure and Commitments <u>(1.6.80)</u>
10. <u>Personal Services</u>		
Near East Secretariat	4 305	-
Temporary Staff, Sessions of Commission	14 579	14 508
Local costs, PDR Yemen	13 013	20 000
Consultants (Bashmaf - Locust Control)	13 383	-
" (Thompson - Aerial control)	3 017	-
	<u>48 297</u>	<u>34 508</u>
20. <u>Travel</u>		
Session of Commission, Delegates	9 170	1 096
Staff travel to Commission	657	-
Exchange Visits of Locust Officer from UAE	3 057	-
" " " " " " YAR	499	-
" " " " " " PDRY	-	3 314
Consultant (Radio)	3 985	-
	<u>17 368</u>	<u>4 410</u>
30. <u>Contractual Services</u>		
Printing, reports	3 118	369
	<u>3 118</u>	<u>369</u>
40. <u>General Operating Expenses</u>		
Near East secretariat	2 478	-
Session of Commission	789	-
PDR Yemen operating expenses	8 258	10 101
Miscellaneous	128	-
Radio training, PDRY	-	664
	<u>11 653</u>	<u>10 765</u>
50. <u>Supplies and Materials</u>		
PDR Yeman, Land Rover and radio parts	5 126	-
Sudan, radio supplies	246	-
Qatar, Land Rover spares, radio supplies	635	-
Egypt, radio supplies	345	-
Miscellaneous	95	-
	<u>6 447</u>	<u>-</u>



	<u>ANNEX II</u>	<u>APPENDIX II</u>
60. <u>Equipment</u>		
PDR Yemen, tyres, office equipment	-	5 050
Egypt, radios	2 486	-
Quator, Land Rovers	21 272	-
Insurance, etc.	407	-
	<u>24 165</u>	<u>5 050</u>
80. <u>Fellowships and Training</u>		
Al Kawari, Qatar (withdrawn)	647	-
Training Course, Dubai (cancelled)	(21)	(41)
Iraq participants, India study tour (withdrawn)	-	353
Harb, Egypt to India	-	3 500
Al Jaidi, PDRY to India	-	3 100
	<u>626</u>	<u>6 912</u>
TOTAL:	<u>111 674</u>	<u>62.014</u>

## TRUST FUND No. 9409 - INTERNATIONAL - COMMISSION FOR CONTROLLING

THE DESERT LOCUST IN THE NEAR EASTPledge Position at 30 April 1980  
(U.S. Dollars)

	Annual Scale of Contribs.	Outstanding 1977/78	Outstanding 1978/79	Outstanding 1979/80	Outstanding 1980/81	Total Outstanding Contributions Due
Bahrain	7 000	-	-	-	7 000	7 000
Egypt	26 032	-	-	-	26 032	26 032
Iraq	23 000	-	-	-	-	-
Jordan	11 486	-	-	-	11 486	11 486
Kuwait	20 000	-	-	20 000	20 000	40 000
Lebanon	8 970	-	-	8 014	8 970	16 984
Oman	8 000	-	-	-	8 000	8 000
Qatar	10 000	-	10 000	10 000	10 000	30 000
Saudi Arabia	35 228	-	-	-	35 228	35 228
Sudan	14 934	14 934	14 934	14 934	14 934	59 736
Syria	13 350	-	-	13 350	13 350	26 700
United Arab Emirates	21 000	-	-	-	21 000	21 000
Yemen Arab Republic	640	-	-	-	413	413
Yemen P.D.R.	360	-	-	-	360	360
	<u>200 000</u>	<u>14 934</u>	<u>24 934</u>	<u>66 298</u>	<u>176 773</u>	<u>282 939</u>

REPORTING, FORECASTING AND TRANSMISSION OF LOCUST INFORMATION

1. The present strategy of desert locust control is based on the timely detection and control of populations before they reach plague proportions and cause serious crop damage. Its success depends on a continuing flow of information on the whereabouts of locusts and about the weather, so that control measures can be planned and carried out more efficiently and effectively.
2. Because desert locusts are so mobile (many swarms migrate more than a thousand kilometres in the course of their life) and affect so many countries, a system of reporting locusts was evolved by which all reports were sent to a single centre (ALRC London) where they were plotted and analysed, and a summary and forecast was prepared in the light of the current weather and similar situations in previous years. This summary and forecast was sent out to all those concerned with locust survey and control in the countries liable to invasion, so that all were aware of where the main infestations were and where they were likely to be in the near future.
3. During the long period which has elapsed since the end of the last major plague in 1962, desert locust numbers have been much lower than during the plagues of the 1940's and 1950's. By 1972 the members of the Desert Locust Control Committee decided that the main means of exchanging information should be at the level of the five regional commissions and organisations, and FAO assumed responsibility for coordinating this service in 1973.
4. With the advent of a new major desert locust upsurge in 1978, there has arisen a clear need for recentralising desert locust reporting and forecasting services. The FAO Locusts, Other Migratory Pests and Emergency Operations Group at Headquarters has responsibility for the day-to-day running of the Reporting and Forecasting Service, as part of its function as overall coordinator of anti-locust measures, while the Centre for Overseas Pest Research in London will continue to maintain the locust archives built up there over the last 50 years and make them available to specialists engaged in anti-locust research around the world. In order to re-establish a system of high quality reporting of locusts and the speedy transmission of those reports to those who need them, this guide has been written to help those who report locusts and those who transmit reports of locusts.

The Aims of a Reporting System

5. The aim in preparing locust reports is for the person who sees the locusts to give someone else who needs to know about them an accurate and useful picture of what is happening in the infested area as soon as possible. This guide shows how that can be done, but it must not be forgotten that the usefulness of any report depends not only on the skill, accuracy and energy of those who prepare it, but also on the experience and efficiency of those who interpret and use it. All must be trained and disciplined to use the chosen system correctly.
6. It is fairly easy to report whether locusts are present or not. It is far more difficult to ascertain and describe the scale of infestation, but it is this information which is necessary for forecasting and planning and successful conduct of control operations.
7. The question "What is the scale of the infestation?" can be answered by carrying out detailed surveys involving specially trained and specially equipped survey units, but usually there is inadequate time and resources to do such surveys. A system of reporting has, therefore, been devised whereby simple observations, which can be made by all concerned with locust survey and control operations, can be put together and with other information, e.g. about the weather, produce a picture of the situation in each area. Since the locust situation and the weather are continually changing, and there are vast uninhabited areas where locusts are rarely, if ever, reported, IT IS ESSENTIAL THAT ALL SIGHTINGS AND EVEN VAGUE REPORTS OF LOCUSTS ARE RECORDED ON THE APPROPRIATE FORMS AND FORWARDED TO THE NATIONAL/REGIONAL LOCUST HEADQUARTERS AS SOON AS POSSIBLE.
8. In preparing a system of reporting, five things have to be considered:
- (a) Who needs the reports?
  - (b) Why do they need the reports, and how can they be used?
  - (c) What information is required?
  - (d) How can the information be collected and recorded?
  - (e) How can the information best be transmitted to those who need it?

Who needs the Reports?

9. Locust reports are needed at:
- (a) National and Regional Locust Headquarters
  - (b) FAO Headquarters, Rome
  - (c) Centre for Overseas Pest Research, London

Why do they need the reports and how can they use them?

10. (a) Those in charge of survey and control operations at National and Regional Headquarters need them so that they can plan further ground or aerial survey operations to reduce the chances of large populations going undetected, arrange for field officers to be sent to infested areas and supplied with adequate transport, P.O.L., insecticides, stores, etc.

- (b) FAO Headquarters requires reports for the preparation of the monthly situation summary and in order to make continuing assessments of the situation, which are an essential step in the preparation of forecasts and warnings. They are also required by Headquarters in order to support requests for assistance from donor agencies and governments.
- (c) They are needed at COPR so that research workers can have access to the unique set of locust reports which are housed there, and thus further improve our knowledge of desert locust breeding and migration.

What information is required

11. A good report should provide information on as many as possible of the following:

- (a) Date and time of observation
- (b) Where the locusts were seen
- (c) The type of population seen, i.e. eggs, hoppers, adults or mixed, whether they were swarming or non-swarming
- (d) The extent and scale of the infestation or population
- (e) The present weather
- (f) Control measures undertaken and their success
- (g) Damage observed

12. Information required by research workers depends upon the kind of research being undertaken and special requests for extra information may be made as the occasion demands.

How can the information be collected and recorded?

13. The basis of all reporting is the record maintained by each Locust Officer. This should be composed of what he sees himself and information he is able to obtain by careful questioning of local inhabitants, locust scouts, travellers, etc.

14. The most convenient way for a Locust Officer to keep a record of the locusts he sees or hears about, and the control measures he undertakes, is in the form of a DAILY DIARY. This should be filled in at the time when the observations are made or reports received from other people. DO NOT RELY ON YOUR MEMORY.

15. Similarly, the officer responsible for aerial survey units should ensure that reconnaissance reports should be written up each day from in-flight notes.

Recording details of locusts observed or heard about

16. One of the most important features of a good reporting system is consistency in standard of reporting. Thus a swarm  $\frac{1}{2}$  square kilometre in extent might be regarded by an inexperienced person as very large, but an experienced Locust Officer will know that it is small by plague standards, when swarms may be hundreds of square kilometres in extent. For this reason standard reporting forms have been devised with instructions on the reverse side about how to complete them. These will help the Locust Officer or aerial survey unit to make a precise, complete and consistent record of what he has seen or heard about. ALL

LOCUST OFFICERS AND AERIAL UNITS SHOULD MAKE EVERY EFFORT TO RECORD DETAILS OF ALL LOCUST SIGHTINGS AND EVEN VAGUE REPORTS ON THESE FORMS. A convenient time to fill in the reporting forms is just before the daily radio session, using the daily diary or aerial reconnaissance reports for details. Again, DO NOT RELY ON MEMORY. Further information about completing the forms is presented in Annex I, and on the reverse sides of the forms.

17. At the end of each period of survey or campaign all Locust Officers and officers in charge of aerial units should prepare full written reports on their activities and findings. Further details about survey and campaign reports will be found in Annex I.

How can the information best be transmitted to those who need it?

18. The object of a reporting service is to ensure that information is transmitted to those who need it speedily and in as much detail as is required. Thus, information which is needed for immediate action must be sent rapidly, i.e. by radio, cable, telex or telephone. It should be confirmed later in writing. As a result of the upsurge, there is now a need for the rapid and regular transmission of high quality reports. The scheme which follows is designed to provide that service. It is described in some detail so that everyone at all levels, from the Locust Officer in the field to staff at Headquarters, will know what they should do and where they should send their information.

#### Locust Officers and aerial units

19. Locust Officers and aerial units should send the following to the national headquarters:

1. Details of all locusts observed or heard about by radio or telephone every day.
2. Completed locust reporting forms and copies of the daily diary every 3-4 days if possible, by mail, government vehicle, etc.
3. Completed survey reports and campaign reports at the end of each survey or campaign (in practice it is anticipated that such reports will normally be written at national headquarters).
4. Requests for supplies, e.g. P.O.L., insecticides, vehicle spares, by radio or telephone or mail, as necessary.

#### National headquarters

20. The Senior Officer, or the person nominated by him to be responsible for reporting, should ensure that the following duties are undertaken:

1. Visit or telephone the national meteorological headquarters daily to obtain information on low-level (i.e. at surface or 850 millibars) wind patterns, surface air temperatures (maximum and minimum) and rainfall amounts during the past 24 hours at selected stations, i.e. those representative of areas where locusts are known or expected to be, and to obtain a short-term forecast of the weather.

2. Operate a daily radio schedule to receive reports of locusts from Locust Officers and Aerial Survey Units and requests for supplies, and to inform Locust Officers and Aerial Survey Units of any new area to be surveyed in the light of the meteorological data obtained daily from the Meteorological Office.
3. All locust information received at the headquarters each week should be recorded on the appropriate locust reporting form. Number reports consecutively, starting with No. 1 each week. If no populations of each type (swarms, bands, non-swarms) have been reported, this should be recorded as a "nil" return on the appropriate form.
4. Send copies of all three forms each week to the following addresses:  
  
FAO Rome by FAO pouch (FAO Country Representatives have been requested to forward locust reports to Headquarters)  
the Regional Organization/Commission in your region by the fastest and most reliable method  
COPR London.
5. Prepare summaries of the locust situation at 7-, 10- or 15-day intervals (countries vary) including the number and estimated total area of swarms present, areas, districts, provinces infested, general direction of displacement, maturity, main areas of breeding, number of bands controlled, insecticides applied.
6. Cable or telex these summaries to FAO Rome, Regional Organizations/Commissions, National Headquarters in adjacent and key countries, and COPR London.
7. Prepare a monthly report on the locust situation in the country (some countries already do this fortnightly). This should include summaries of the following.

Weather: dominant wind-flow, major or persistent low pressure areas, rainfall - giving monthly total amounts in main locust-infested areas, unusually low or high temperatures.

Ecological conditions: areas with moist soil, presence and state of annual vegetation.

Locust situation:

Adults - total number of swarms, dates, areas, densities and maturity, areas and dates of oviposition, major displacements, number controlled, number known not to have been controlled, notable natural mortality.

Hoppers - names and extent of main infested areas, dates of hatching, predominant instars, number and disposition of control units in field, number of bands controlled by area, instar and date, areas and dates of fledging.

Low density populations - survey routes, names and extent of areas where locusts found, dates of sightings, average or maximum densities - hoppers per square metre or plant, adults per hectare, or numbers seen in stated distance traversed - maturity, coloration, evidence of gregarisation - group formation, development of black markings on hoppers, evidence of migration - night flight.

Control measures - name, formulation and amount of each insecticide used (distinguish between insecticides used for ground and aerial operations), assessment of success of operations, scale of escapes.

Any other significant features, e.g. notable predation or parasitisation.

The monthly summary should be prepared as soon as possible in the month after the month being reported upon and despatched no later than the end of the first week in the month. It should be sent to the same addressees as the locust reporting forms (see paragraph 20.4) and to National Headquarters and other key countries. The normal method of transmission will be by air mail, but to FAO Headquarters it will normally be quicker through the FAO Country Representative.

8. At the end of each campaign a Campaign Report should be prepared at headquarters from the Campaign Reports prepared by all Locust Officers involved in the campaign (see paragraph 17 and paragraph 9.8, Annex I). Copies should be sent to FAO Headquarters, the appropriate Regional Organization/Commission and CPR, London.
9. In addition, National Headquarters should transmit, by fastest possible means, information about major or unexpected changes in the locust situation or the weather, as and when necessary. Addressees are likely to vary according to the nature of the event.

#### FAO Regional Locust Commissions

21. The main role of the FAO Regional Locust Commissions in the reporting network is to ensure its smooth running within the region by coordinating survey and control operations, advising member governments of developments in the ever-changing locust situation and informing FAO, Rome, other Regional Organizations/Commissions and CPR London of the locust situation and the weather within the region, particularly in those countries within the region which are unable to produce their own situation summaries. FAO Regional Locust Commissions should therefore:

1. Collate the 7-, 10- or 15-day cabled summaries prepared by national headquarters in the region (see paragraph 20.5) and cable, telex or pouch weekly to -

FAO, Rome

Member Governments

Other Regional Organizations/Commissions

CPR, London.



2. Prepare consolidated monthly situation summaries for the region in the first week of each month, as in paragraph 20.7. This should be despatched to the following addressees by pouch or air mail:

FAO, Rome

Member Governments

Other Regional Organizations/Commissions

National headquarters in key countries

COPR, London.

#### FAO Headquarters

22. The FAO Headquarters Locusts, Other Migratory Pests and Emergency Operations Group will be responsible for ensuring that all national and regional organizations and commissions are kept fully informed about the current locust situation, and will provide forecasts and warnings of expected major changes in the desert locust situation. This will be achieved by preparing the following reports:

1. A Desert Locust Situation Summary and Forecast for the whole of the desert locust area each month in the third week of each month. This will include a summary, a detailed account of the situation, a forecast of expected changes in the next 1 - 3 months and a map showing the most important populations reported in each degree square. The assessment of the current locust situation and the forecast will be prepared in the light of the current meteorological situation, obtained by plotting and analysing synoptic data daily, from meteorological satellite imagery and, in special situations, from Landsat imagery. The monthly Summary and Forecast will be despatched to all National Locust Headquarters, Regional Locust Organizations and Commissions, COPR London and donor agencies by the fastest and most reliable means (usually this will be through the FAO Country Representative).
2. A Summary of the desert locust situation will be prepared twice a month. This will be based on the cabled summaries received from each country (see paragraph 20.5) and will be cabled or telexed to all those immediately concerned and airmailed to all other national headquarters, regional organizations and commissions, and to COPR.
3. FAO will also send warnings of major or unexpected changes in the locust situation to all countries likely to be affected by the change.
4. FAO will also prepare special situation reports as occasion demands, summaries and forecasts for the Desert Locust Control Committee and the Locust Newsletter. It will also supply donor agencies and donor countries with information on the locust situation, control potential, etc., to enable them to evaluate requests for assistance.

Fig. 1 shows a simplified summary of the Reporting Network.

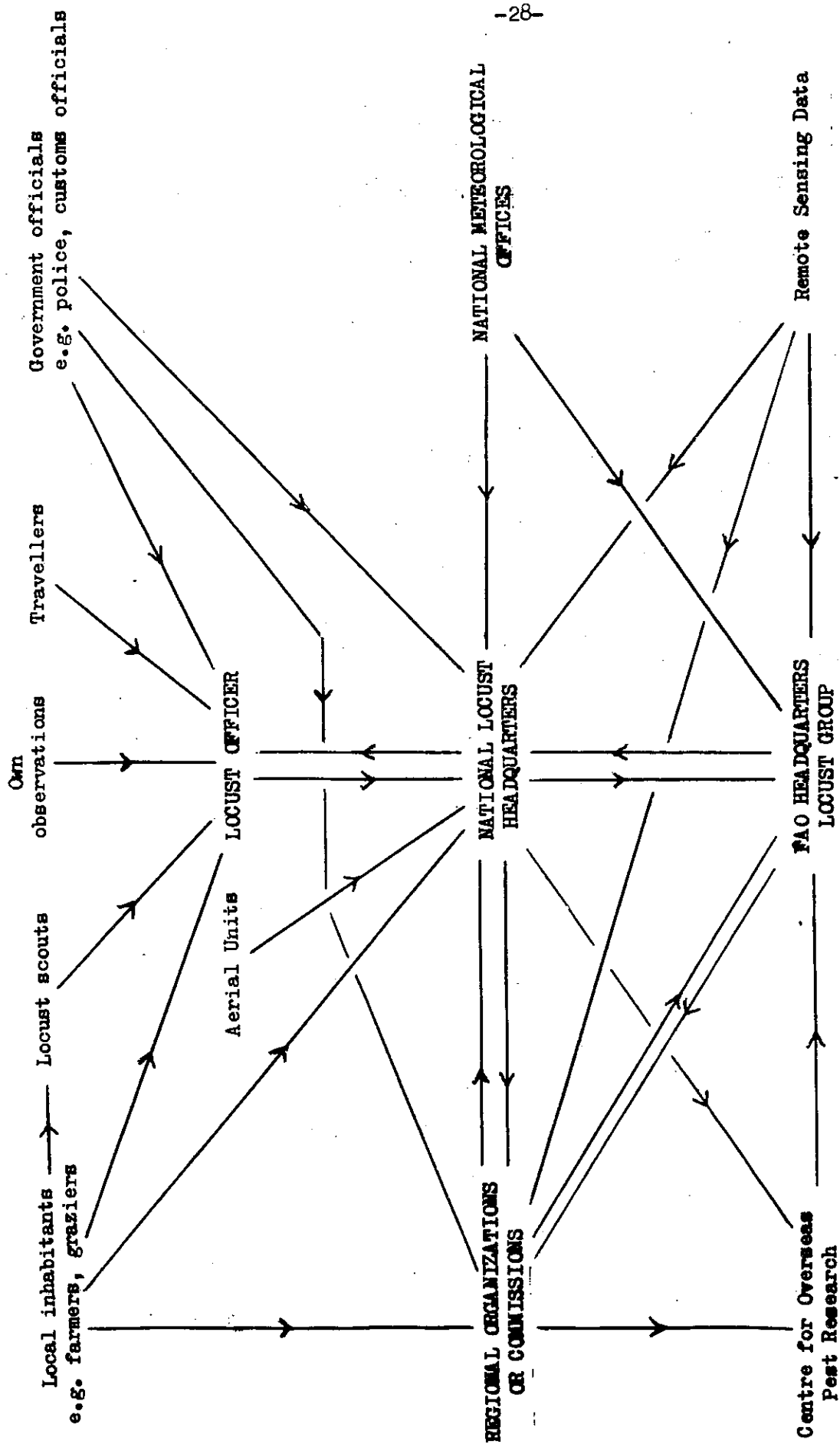


Fig.1 - SUMMARY OF REPORTING NETWORK

REPORTING OF DESERT LOCUSTS

GUIDE FOR LOCUST OFFICERS AND AERIAL SURVEY UNITS

Recording details of locusts observed or heard about

1. The basis of all reporting is the record maintained by each Locust Officer. This should be composed of what he sees himself and information he is able to obtain by careful questioning of local inhabitants, locust scouts, travellers, etc.
2. The most convenient way for a Locust Officer to keep a record of the locusts he sees or hears about and the control measures he undertakes is in the form of a DAILY DIARY. This should be filled in at the time when the observations are made or reports are received from other people. DO NOT RELY ON YOUR MEMORY.
3. FROM THE DIARY THE LOCUST OFFICER CAN PREPARE A DAILY REPORT to be sent to national headquarters by radio. This should contain the following information:
  - (a) Details of locusts observed or heard about;
  - (b) Requests for supplies, e.g. P.O.L., insecticides, vehicle spares.
4. Similarly, the officer responsible for aerial survey units should ensure that reconnaissance reports should be written up each day from in-flight notes and details of any locusts observed should be sent by radio to headquarters.
5. For the purpose of reporting, there are three kinds of locust populations:
  - (a) swarms
  - (b) hopper bands and fledglings
  - (c) populations other than obvious swarms or hopper bands.
6. For each kind of population a standard reporting form has been devised which will help the Locust Officer/Aerial Survey Unit to make a precise and complete record of what he has seen or heard about. There are notes on the reverse sides of each of the forms to assist Locust Officers/Aerial Survey Units in completing the form. It will not always be possible for a Locust Officer to fill in each of the columns, even if he has seen the population himself. For example, it is rarely possible for a single ground observer to measure the area of a flying swarm, and it is often very difficult to obtain precise information about sightings of locusts from local inhabitants. Nevertheless, LOCUST OFFICERS/AERIAL SURVEY UNITS SHOULD MAKE EVERY EFFORT TO COMPLETE ALL COLUMNS OF THE APPROPRIATE FORM. IF INFORMATION IS NOT AVAILABLE, WRITE "NOT KNOWN". PARTICULAR CARE SHOULD BE TAKEN IN RECORDING THE DATE OF AN OBSERVATION MADE BY ANOTHER PERSON. RECORD THE DATE HE SAW THE LOCUSTS, NOT THE DATE WHEN YOU SPOKE TO HIM. ALWAYS GIVE THE NAME OF THE PERSON WHO MADE THE OBSERVATION, i.e. YOUR OWN NAME, THE NAME OF THE LOCUST SCOUT OR THE LOCAL INHABITANT. IF NOT KNOWN, WRITE "LOCAL INHABITANT TO LOCUST OFFICER (YOUR OWN NAME)". This will enable people who have to assess the locust situation to judge the reliability of each report.

7. Locust Officers and Aerial Units should fill in the appropriate locust reporting form at the end of each day or before the daily radio session, using the daily diary or reconnaissance reports for details. Send the completed reporting forms and copies of the daily diary or reconnaissance reports to the national headquarters every 3-4 days, if possible. Copies of each of the three forms are attached to this guide and others are available at national and regional headquarters.

8. AT THE END OF A SURVEY, LOCUST OFFICERS AND OFFICERS IN CHARGE OF AERIAL UNITS SHOULD PREPARE FULL WRITTEN REPORTS on their activities and findings. There is no standard format for a survey report, but it should include at least the following sections:

- survey route
- ecological conditions
- weather
- locusts sighted
- any other observations, e.g. predation
- discussion of origin and significance of populations seen, including recommendations for control
- summary.

9. AT THE END OF A CAMPAIGN, LOCUST OFFICERS AND OFFICERS IN CHARGE OF AERIAL UNITS SHOULD PREPARE FULL WRITTEN REPORTS on their activities and findings. The campaign reports of Locust Officers and Aerial Units should be compiled under the following headings:

- |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <u>Introduction</u> | Background to campaign, origin of populations controlled, description of preparations for campaign.                                                                                                                                                                                                                                                                                                                                                                      |
| <u>Intelligence</u> | Summary of methods of obtaining information and their relative importance and efficiency.                                                                                                                                                                                                                                                                                                                                                                                |
| <u>Weather</u>      | General description of weather preceeding and during campaign, with particular reference to rainfall.                                                                                                                                                                                                                                                                                                                                                                    |
| <u>Infestation</u>  | Description of infested area (size, position, terrain, vegetation).<br>Summary of laying, hatching and fledging by areas; sketch map of infested areas.<br>Details of intensity of infestations:<br>- total number of bands seen/destroyed, by instar<br>- size of largest bands in each instar.<br>Observations on swarm and hopper behaviour (direction of displacement).<br>Information about natural mortality (predation and parasitisation of adults and hoppers). |
| <u>Organization</u> | Staff<br>Base, sub-base, insecticides, spraying and dusting equipment available<br>Airfields used.<br>Supply arrangements - food, water, P.O.L., vehicle spares.                                                                                                                                                                                                                                                                                                         |

Operations and Communications

Areas worked, starting and finishing dates.  
Methods used, with comments on efficiency.  
Labour employed.  
Materials used, types and quantities for each area worked.  
Transport used, vehicles, aircraft, animals.  
Roads and tracks, including any new tracks made.  
Radio: reliability and schedules.

Assistance from other organizations

Other Government departments.

Results and suggestions for improvements

Number of swarms attacked; assessment of results, even if vague.  
Estimated number and sizes of hopper bands destroyed, by instar and for each infested area.  
Estimate of total area worked.  
Estimate of any infested areas not worked.  
Areas from which no reports received.  
Estimate of number and size of swarms not destroyed.  
Suggestions for improvements before next campaign, e.g. more vehicle spares to be taken into field, more petrol, water drums.

Summary

District  
Starting date  
Finishing date  
Area infested, in square kilometres  
Area worked, in square kilometres  
Paid labour, in man-days  
Unpaid labour, in man-days  
Vehicles used (type, number, number of days used, distance)  
Aircraft used (type, number, number of hours flown on reconnaissance, spraying)  
Hired aircraft or vehicles  
Animal transport: type, number of days  
Insecticides used: bait, dust, spray (type, formulation)

10. THE SENIOR LOCUST OFFICER AT THE NATIONAL HEADQUARTERS SHOULD PREPARE A CONSOLIDATED CAMPAIGN REPORT from all the Locust Officers' campaign reports. These should be sent to the Regional Organization/Commission for the region in which the country is located.

11. Summarising, LOCUST OFFICERS AND AERIAL UNITS should send the following to their national headquarters.

Details of locusts observed or heard about by radio or telephone every day.

Completed locust reporting forms and copies of the daily diary every 3-4 days if possible, by mail, government vehicle, etc.

Completed survey reports and campaign reports at the end of each survey or campaign (in practice it is anticipated that such reports will normally be written at national headquarters).

Requests for supplies, e.g. P.O.L., insecticides, vehicle spares, by radio or telephone or mail, as necessary.



NOTES ON THE REPORTING OF DESERT LOCUST SWARMS

**MATURITY:**

Colour - pink, yellow or mixed.  
State of ovaries - eggs undeveloped, partly developed or fully developed; evidence of previous laying.  
Egg-laying or copulation - whether seen. Details of egg-fields should also be entered on this form even when the laying swarm itself was not seen.

**DENSITY:**

i.e. thin (swarm visible only when near enough for separate locusts to be distinguished), medium, dense (swarm obscuring parts of nearby features, e.g. trees).

**HEIGHT OF FLIGHT:**

i.e. low (topmost locusts below 10 metres, i.e. below "tree-top" height), medium, high (locusts as high as naked eye can see, i.e. several thousand feet).

**ESTIMATED SIZE:**

i.e. small (estimated size less than 1 sq. kilometre), medium, or large (estimated size more than 100 sq. km.), together with any facts providing evidence of size - e.g. lengths of traverses, or time taken by swarm to pass with weather conditions including wind-speed. The estimation of swarm size is always difficult and often impossible for a single observer on the ground.

**ESTIMATED DIRECTION OF DISPLACEMENT:**

The direction of movement, both of individual locusts and even of whole groups, provides no indication of the direction of displacement of the whole swarm. The best approximation to the direction of displacement of the swarm as a whole which is obtainable from the ground is by taking a compass bearing on the swarm when it has passed over and is retreating. Even this direction will apply only to the time of observation, and can change and even be reversed from hour to hour. Direction from which wind is blowing, and approximate wind strength, should also be included (under "Remarks") in reports of flying swarms whenever possible. The following terms are recommended for non-instrumental records of wind-strength:

Calm - smoke arises vertically (less than 0.3 metres per second)

Light air - wind direction shown by smoke drift (0.4 - 1.5 metres per second)

Slight breeze - wind felt on face (1.6 - 3.0 metres per second)

Gentle - wind extends light flag (3.1 - 5.4 metres per second)

Moderate - raises dust and loose paper (5.5 - 8.0 metres per second)

Fresh - small trees in leaf begin to sway (8.1 - 11.0 metres per second)

Strong - large branches or whole trees in motion; whistling in telegraph wires (11.1 - 17.0 metres per second)

Gale - generally impedes progress; trees damaged (above 17.1 metres per second).

**REMARKS:**

Air temperature, cloudiness, etc.; notable recent weather (rain, dust-storms, high winds); for settled swarms any available information on date and time of first arrival; feeding; damage; whether specimens obtained.

**ORIGIN OF REPORT:**

In cases of "unconfirmed swarm reports" - state whether, and how soon after the report, locality was visited; if so, whether any grass or crop cover (in which stragglers might be expected); if excreta present; and evidence of any available local witnesses.





NOTES ON THE REPORTING OF DESERT LOCUST HOPPER BANDS AND FLEDGLINGS

**INFESTED AREA:** Area within which hopper bands or groups of fledglings occur at intervals of less than 10 kilometres.

**NO. OF BANDS OR GROUPS:** Total, if known; when infested area extensive, give number of bands or groups seen in stated distance traversed.

**SIZE OF BANDS OR GROUPS:** State whether small, medium, large or very large, from following scale:

small: 5 x 5 to 50 x 50 metres  
medium: 50 x 50 to 200 x 400 metres  
large: 200 x 400 to 400 x 800 metres  
very large: above 400 x 800 metres.

Whenever possible, give actual sizes of largest bands.

**DENSITY:** Thin, medium or dense, or numbers per sq. metre, if available.

**INSTARS PRESENT:** For fledgling reports insert the letter "F".

**REMARKS:** e.g. feeding; damage; control in progress.



NOTES:

D. Hopper instars, or adults

F. Isolated = locusts seen singly

Groups = several or many locusts seen at once

E X A M P L E S

A	B	C	D	E	F	G	H	I	J
1	7 March 1979 10.00 - 10.30	20.12N 40.36E to 20.08N 40.50E	Adult	?	Isolated	23 km. x ?	7 in 3 km. by vehicle	Dry Panicum plain	Cloudless
2	10 March 1979 12.00	20.00N 40.39E	V	Green	Isolated	60 x 20 m.	5 in 10 x 15 m.	Stand of green Dipterygium	Intermittent sun
3	12 March 1979 08.30	19.40N 40.52E	I, II, III	Dark green	Groups	250 x 150 m.	9 in a Heliotro- pium patch 1 m. in diameter	Dense low Helitropium	Overcast
4	13 March 1979 12.00 - 12.15	19.18N 41.08E	III, IV, V	Black and yellow with a few green	Groups	50 x 50 m.	Groups of 15-20 in areas of 0.1 -0.2 sq.m.	Pennisetum up to 2 m. high and free from weeds	Groups on patches of bare ground in sun- shine
5	20 March 1979 14.00 - 15.00	17.40N 42.07E	Adult	Greyish brown	Groups	300 x 30 m.	10-15 flushed in 2's and 3's for 150 m. of foot traverse	30-60 cm. Aerva along drainage channel	Slight NW breeze after several days moderate SE
6	22 March 1979 10.00 - 12.30	17.10N 42.30E	Maturing adults (eggs half de- veloped)	Yellowish	Groups	4 x 5 km.	Up to 100 per Pennisetum plant in stretches of 50-100 m.	Edges of ripe Pennisetum cultivations	Rain overnight; soil moist to 2.5-5.0 cm.; sample of 50 males and 50 females

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