REPORT OF THE

TWELFTH SESSION OF THE FAO DESERT LOCUST CONTROL COMMITTEE

Held in Rome, Italy
7 - 11 October 1968

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

Meeting Report
No. PL/1968/M/5

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Plant Production and Protection Division
Food and Agriculture Organization of the United Nations
Rome, 1968

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INTRODUCTION

The Eleventh Session of the FAO Desert Locust Control Committee, which was held in Rome from 25 to 28 September 1967, recommended that its next Session should be convened by the Director-General during 1968. Accordingly, the Director-General invited the following Governments to be represented by delegates at the Twelfth Session:

Afghanistan	Morocco
Algeria	Niger
Bahrain	Nigeria
Cameroon	Pakistan
Central African Republic	Qatar
Chad	Portugal
Dahomey	Saudi Arabia
Ethiopia	Senegal
France	Sierra Leone
Ghana	Somali Republic
Guinea	Spain
India	Sudan
Iran	Syrian Arab Republic
Iraq	Tanzania
Israel	Togo
Ivory Coast	Tunisia
Jordan	Turkey
Kenya	Uganda
Kuwait	United Arab Republic
Lebanon	United Kingdom
Libya	United States of America
Mali	Upper Volta
Mauritania	Yemen Arab Republic

He also invited the representation of the United Nations Development Programme (UNDP), the World Meteorological Organization (WMO), and invited the People's Republic of Southern Yemen, the League of Arab States, the Desert Locust Control Organisation for Eastern Africa (DLCO-EA), the Organisation Commune de Lutte Antiacridienne et de Lutte Antiaviaire (OCLALAV) and the International African Migratory Locust Organization (OICMA) to be represented by observers.

The Session was opened by Dr. O.E. Fischnich, Assistant Director-General, Agriculture Department, who welcomed all the participants on behalf of the Director-General of FAO and emphasized the importance of the matters to be discussed. He pointed out that a major change in the Desert Locust situation had taken place since this Committee last met and now most of the countries in Asia, Africa and Near East were threatened by the Desert Locust plague. He thanked the UNDP for providing very generous assistance and also a number of other countries who offered assistance to other countries and organizations. In particular, he mentioned the spirit of international co-operation and mutual assistance which had been demonstrated among countries and regions during the present emergency to fight this common enemy, the Desert Locust. In view of the present locust situation he considered it important for the Committee to make a complete assessment of the locust situation and to recommend to the Member Governments for intensification of efforts wherever needed.

With regard to future action he informed the Committee that the Director-General of FAO had taken action towards the establishment of an emergency fund to initiate control activities against the Desert Locust before the plague had an opportunity of becoming widespread.

Officers of the Session

The Committee unanimously elected the following officers:

Chairman: Mr. Bocar Ly (Senegal)

Vice-Chairman: Mr. Mas'ud Taji El-Faruki (Saudi Arabia)

Drafting Committee

Delegates of: Algeria, France, India, Uganda, United Arab Republic, United States of America, the FAO Consultant and the FAO Secretariat.

Mr. Gurdas Singh, Dr. K. Lubani, Mr. P. Tirot and Mr. M.F. Lehata, of the FAO Secretariat, served as Technical Secretaries.

Acknowledgements

The Committee unanimously expressed their great satisfaction with the conclusions conclusions and recommendations made at this Session to face the present Desert Locust situation and their keen appreciation of the efficient and tactful manner in which the Chairman had conducted the proceedings. The delegates also thanked the FAO Secretariat for the efficient way in which it had performed its various duties.

PARTICIPATION IN THE SESSION

The following delegations from Member Nations of the Food and Agriculture Organization of the United Nations, the United Nations and Specialized Agencies, observers and members of the FAO staff participated in the Session and contributed to the discussions summarized in this report.

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AGENDA

The Committee unanimously adopted the following Agenda:

1. Opening of the Session
2. Election of the Chairman and Vice-Chairman
3. Adoption of the Agenda
4. Election of the Drafting Committee
5. The Desert Locust Situation during 1967/68 and Forecast
6. Measures Taken by FAO and the Governments Concerned in the 1968 Desert Locust Emergency and Considerations for Future Action
7. Progress Report on the UNDP(SF) Assisted Desert Locust Project - 1.7.66 - 30.4.68
8. Status of the Various Locust Regional Organizations
9. International Anti-Locust Campaign in the Arabian Peninsula During 1967/68 and Plans for the Future
10. Other Business
11. Date and Place of the Next Session
12. Adoption of the Report.

SUMMARY OF DISCUSSIONS

Desert Locust Situation

1. The Committee had before it a summary of the Desert Locust situation prepared by the Desert Locust Information Service (DLIS). This was supplemented by information supplied by the delegates.

General Features during 1967/68

2. Between September 1967 and September 1968 a new plague of the Desert Locust had come into being thus ending one of the longest known recessions. In September 1967 no bands or swarms of the Desert Locust were reported; some may have existed but, if they did, they were few in number and small in size. In September 1968 breeding by swarms was taking place in parts of all the major sections of the summer breeding area, in many cases on a considerable scale.

South-West Asia

3. A number of small swarms and scattered adults were reported from the Persian Gulf coast of Iran between Bushehr and Gavbandi in late December 1967, but no locusts were found during January 1968 with the exception of two reports of swarmlets in the second half of the month. No further reports of these swarms were received but good rains fell on the coastal plain and hinterland in the winter and spring, and it was likely that they survived and bred. The next report of locusts in that area referred to scattered mature adults found in early April all along the coast from Bushehr to the Pakistan border. Scattered mature adults and hoppers of all instars were also seen in April in Iranshahr in central Baluchistan, and "swarming" newly fledged adults south of Kerman in late June. In late July three swarms reports were received from the area near the Pakistan border.

4. In Pakistan scattered hoppers were first reported in March in the Pasni and Kulanch areas and a few small bands were found in the second half of April. One heavy concentration of adults was described as a swarmlet. In July and early August a large number of swarm reports were received from the desert areas of India and Pakistan though in most cases the swarms were small. Swarms were also found near the Pakistan/Iran border. Most of these swarms were mature and resulted in breeding in the summer breeding areas of both India and Pakistan.

Eastern Africa and Near East

5. In eastern Africa breeding took place during late 1967 and the first months of 1968 along the Red Sea coastal plains of southern Sudan and northern Ethiopia. In the latter area there was a rapid increase in locust numbers following successful breeding. Scattered adult locusts had been present in September and third-instar bands were discovered in early November. Fledging began during mid-November, and by early December these adults were maturing. A number of swarmlets formed, the largest of which covered 5 square kilometres. Breeding of a second generation started in late 1967 and continued until March 1968, with further bands and small swarms being reported. Heavy rains were recorded in each month from January to April.

6. On the Gulf of Aden coastal plain and foothills of north-western Somali Republic a few locusts were found during August 1967 and locusts were seen at many points by mid-November, while in December a high concentration of third to fifth-instar hoppers and fledglings were found over 50-140 kilometres, and scattered copulating adults over a distance of 47 kilometres near Zeila. In early December two mature swarms were seen near Berbera. Subsequently, other groups or swarmlets were reported from the same area, including two unconfirmed swarms near the coast, and scattered adults over 13 square kilometres some 300 kilometres east of Berbera.

Following abundant rains in the beginning of 1968 very important breeding occurred. Low density flying groups of newly fledged locusts were seen from the air in April and the first swarms of young adults were reported in late April; it was then estimated that there was a total of 2,600 sq. kilometres infested by fledglings and immature adults. In late April and May swarms emigrated from north-western Somali Republic and moved mainly westwards and north-westwards through the "railway" area, the southern Danakil and in May were found in the valleys of the northern Ethiopian plateau and in the western part of the northern highlands where laying commenced in early June. Some of these swarms may have come from Southern Yemen and Yemen, but the majority were likely to have resulted from breeding in the Somali Republic. In the second half of June and in July swarms and hopper bands were found in the north-eastern Somali Republic, particularly in the northern Mijertein area. Breeding continued in northern Ethiopia in July, and in August many young adult swarms were found in this area and on the Red Sea coastal plains of Ethiopia.

7. In the Republic of Southern Yemen 141 hopper bands, some of which were described as "large", were seen in late November/early December over some 90 sq. kilometres north-east of Aden. On 21 December groups of mature adults were seen laying on the coastal plains 120 kilometres east of Aden. Successful breeding associated with good rains continued to occur on the Tihama of Saudi Arabia and Yemen and on the coastal plains of Southern Yemen in early 1968. This resulted in a steady increase in the population of this area. In Southern Yemen extensive hatching occurred between mid-March and mid-April in areas to the west of Aden and the first fledglings were reported in mid-April. In late April groups of laying adults were found west and east of Aden, and in the interior at Beihan 250 kilometres north of Aden. Hoppers of all instars were reported from these areas in early May and three swarms of newly fledged adults were found in the western part of the infested area. At the same time, but further east, swarms of mixed maturity were reported at Al Hami and Irqa. There was also an unconfirmed report of a large swarm in Wadi Hajer.

8. In the Arabian Peninsula about 200 small fourth-instar hopper bands were observed on the Yemen Tihama near Zaidiya in late October. Breeding occurred in the Gizan area in October and control was required throughout November and early December against hoppers, including a few small bands, fledglings and mature adults mingled with grasshoppers. By mid-December scattered adults were widespread in the Gizan area. The most important infested areas were found progressively further north along the Tihama during the first three months of 1968. In January and February 1968 mature adults, including a few small swarms, and hopper bands were found both in Yemen and on the southern Tihama of Saudi Arabia. Numerous bands were found in the Saudi Arabian Tihama in March and April, particularly in the central part where some large bands formed. In early March a number of immature swarms invaded the southern Saudi Arabian Tihama from Yemen. Some of the locusts on the Tihama remained there and laid in May, but a large part of the population moved into central Saudi Arabia. Widespread and heavy rains occurred throughout northern and central Saudi Arabia in April and May and successful breeding by locusts from the Tihama occurred on a considerable scale. In April and May laying swarms as well as groups were reported in southern Hejaz and Qassim areas and numerous hopper bands were found in both the areas. Fledging was recorded from late April onwards. In late May and early June swarms, some of which were mature, migrated northwards reaching southern Jordan and areas near the Iraq border; subsequently, hoppers were reported in all these areas.

9. As a result of the good spring rains breeding in northern and central Saudi Arabia was not only unusually successful but lasted unusually. Hopper bands were still being found in late July and early August though the area has become virtually clear by mid-August. In early June swarms probably came from northern Saudi Arabia and invaded south-eastern United Arab Republic and subsequently northern and central Sudan as far west as Darfur. Further swarms invaded Sudan. Summer rainfall has been above average in the infested parts of Sudan and widespread successful breeding has taken place in July and August. As well as moving south-westwards from northern and central Saudi Arabia swarms also moved southwards. This movement started in June and continued

in July and August. Swarms were reported in July on the southern Tihama of Saudi Arabia and in the Asir and southern Hejaz, in coastal and interior Yemen, on the coastal plain of Southern Yemen and the southern interior of Muscat and Oman.

West and North-West Africa

10. In western Africa in October and November 1967 there was a considerable increase in the scale of infestation. In Mali and Niger north of the Sahel breeding must have started in August and September on a somewhat larger scale than was reported. In the Timersoi valley of Niger in early November small marching bands were seen and adult densities reached an estimated maximum of 80,000 per hectare with short flights of up to 2,000 individuals seen at five occasions. Similar infestations were found in late October in neighbouring areas. In Mali adult locusts were reported at maximum densities of 10,000 per hectare in Tamesna of Mali and in early November three small flights were observed; some small bands were seen among the scattered hoppers. After control the survivors moved northwards in December 1967 and again in February and March 1968.

11. Successful breeding is likely to have taken place in the spring of 1968 in both southern Morocco and neighbouring areas, and in south-central Algeria. In the latter area, one hopper infestation requiring control was found in April and in the former area, extensive areas infested with mature adults at low density were found in the interior of Morocco at the same time. Locusts which had remained in north-western Niger during the winter began to breed in April. In June locusts probably coming from south-central Algeria invaded this area and also north-eastern Mali and bred. There were also unconfirmed reports of swarms in parts of Algeria bordering Mali and Niger, in early July. Also during July several swarms were seen in central north-western Mauritania, which were likely to have resulted from successful spring breeding in southern Morocco and areas nearby.

Forecast

12. South-West Asia: Conditions were unsuitable in breeding areas of India and Pakistan. A westward movement of young adults, occurred from the residual populations of locust concentrations of summer breeding areas by October 1968, to the Mekran of Pakistan and to south-eastern Iran, and possibly also to southern Iran, Trucial Oman and northern Muscat and Oman.

13. Eastern Africa and Near East: Hopper bands will continue to occur in parts of the northern half of Sudan with fledging continuing, though on a progressively decreasing scale, until the end of October. Many swarms have formed and further swarm formation will take place. Young swarms will move east to the Red Sea coastal plain of Sudan; some of these may cross the Red Sea to reach the Tihama of Saudi Arabia and a few will possibly get as far as the central and northern interior of Saudi Arabia and Yemen. Other swarms reaching coastal Sudan are likely to move south and some of these will probably reach northern Somali Republic. Young swarms from northern Sudan may also move north through the United Arab Republic and then east into north-western Saudi Arabia and bordering areas to the North. In particular any swarms forming in Darfur, may move north westwards to north-west Libya, southern Tunisia, north-central Algeria and southern Morocco and a report of a swarm in eastern Chad in early October may indicate the start of such a movement.

14. Breeding may take place on the Red Sea coastal plain of Ethiopia and the nearby coastal plain of Sudan both by swarms already present and by any swarms which invade these areas. Many swarms have formed there. Some of these are likely to have moved south-eastwards to northern Somali Republic and further swarm movement in the same direction will occur. Breeding by swarms may be occurring or may occur, in the Dessie escarpment area, the southern Danakil, the Railway area, Afar and Issa Territory and the Borama area of the north-west Somali Republic. Many swarms have been reported from northern Somali Republic and further swarms will invade this area. Swarms from northern Somali Republic will move south through the Ogaden and eastern Somali Republic into

northern Kenya probably commencing in mid-October; these swarms will possibly reach north-eastern Tanzania in November. Laying will occur in all the areas traversed by the swarms.

15. Breeding by swarms on a considerable scale is likely to occur on the Tihama of Yemen and the western part of the coastal plain of Southern Yemen, and may occur also on the southern Tihama of Saudi Arabia. Swarms from parts of eastern Africa bordering the southern Red Sea and Gulf of Aden will possibly invade these areas. Breeding by swarms is likely to take place in the interior of Yemen and possibly the Asir of Saudi Arabia, and has probably commenced in the western interior of Southern Yemen where rain fell in August. Swarms and scattered locusts are likely to commence to move slowly north from the Tihama of Yemen and the southern Tihama of Saudi Arabia in November. Any locusts reaching the central Tihama, either from the south or from Sudan, may breed in November. Swarms are now present, and have possibly commenced to breed, in the eastern half of Southern Yemen and in the south of Muscat and Oman. If breeding takes place a number of swarms are likely to be produced. Some of these swarms may move to northern Somali Republic and the coastal plains of the south-west of the Arabian Peninsula. In addition, some of the young swarms which may form in the interior of South of the Arabian Peninsula will possibly migrate to central Saudi Arabia.

16. West and North-West Africa: Hoppers, including bands, are likely to continue to occur in southern Mauritania and a few small swarms are likely to form. Any swarms, as well as locusts not in swarms, will move northwards, probably commencing in mid-October. Some of these locusts will reach southern Morocco and adjacent parts of the Spanish Sahara and Algeria. Others are likely to get only as far as southern Spanish Sahara and adjacent parts of Mauritania to the east and in both of these areas breeding may take place.

17. Scattered breeding may be occurring in a few places in the Sahel of Mali and Niger. Small numbers of locusts resulting from this breeding will move north into north-eastern Mali and north-western Niger. Breeding will continue in north-eastern Mali and north-western Niger, particularly in the Adrar des Iforas and in the Tamesna where rain fell in August, with further bands and swarms being produced. Breeding is probably occurring on a similar scale in the adjacent part of southern Algeria. Young adult locust populations including swarms will move north from these areas. The swarms will reach southern Morocco and north-central Algeria but most of the non-swarming locusts are likely to get only as far as southern and south-central Algeria. Breeding will possibly occur in southern Algeria.

18. Breeding is likely to be taking place in Ennedi, Chad, where rain fell in August, and a few bands may form there. Resulting young adults, possibly including one or two small swarms, are likely to move north-westwards. Breeding will possibly occur in Tibesti, Chad, by scattered locusts already present there in small numbers, as well as by locusts which may invade this area.

19. Important Features: The Committee, while recognizing that gregariously behaving Desert Locust infestations were present in most of the countries lying in the autumn and winter breeding areas of the Desert Locust invasion area, agreed that main concentration of the plague was still in the central area and heavy breeding was expected during the winter/spring 1968/69 in the countries lying on both sides of the Red Sea.

Upsurge of the Desert Locust - 1968

20. The Committee noted the review prepared by the Anti-Locust Research Centre for the period January 1967 to May 1968 concerning the upsurge of the Desert Locust. The matter of future research needed to improve the methods of forecasting, both for immediate purposes and in relation to possible future upsurges, was referred to the Special Conference on the Co-ordination of Field Research, scheduled to be held in early 1969 for discussions and preparation of proposals for consideration at the next Session of the FAO Desert Locust Control Committee.

Crop Damage

21. Based on incomplete information supplied by the delegates the damage done by the Desert Locust during 1968 did not appear serious. The Committee felt, however, that the present locust situation was critical and serious crop damage could occur during the coming season and could only be avoided by augmentation of the present control efforts. The Committee considered that complete information on crop damage by the Desert Locust was of vital importance for any future planning and requested FAO to prepare a questionnaire for obtaining information on the subject, and to circulate the same to all the countries and regional bodies concerned for supplying information.

Control Operations

22. Intensive control operations were undertaken by the various governments from August 1967 to September 1968. In South-West Asia the Governments of India, Iran and Pakistan treated approximately 5,168 sq. km. by using approximately 25.40 tons of BHC dust 10%, 6,023 litres of dieldrin 10%, 796 litres of dieldrin 20% and 732 tons of chlorinated and phosphatic insecticides. In the Near East, control operations were carried out in Jordan, Saudi Arabia, Sudan, United Arab Republic, Southern Yemen and Yemen Arab Republic. The total area treated in these countries was approximately 356,364 sq. km., for which approximately 614 tons of BHC dust 2.6% gamma, 3,838 tons of bait, 1,696 litres of BHC in oil, 28,571 litres of dieldrin, and 9,000 litres of BHC 10% and 16% were used.

23. In Eastern Africa, the only countries where control operations were needed were Ethiopia, Kenya, the French Territory of the Afar and Issa People and the Somali Republic. In these four countries, a total area of 10,382 sq. km. was treated by using approximately 150,200 litres of liquid insecticides (dieldrin and BHC in oil 14 and 16%) and 6,300 kg. of BHC dust.

24. In West Africa operations were undertaken against infestations in Chad, Mali, Niger and Mauritania, where an area of approximately 665 sq. km. was treated by using approximately 95,862 litres of dieldrin 5%, 2,350 litres of dieldrin 20% and 895 litres of Fenitrothion. In North-West Africa infestations were much lighter. Algeria and Morocco were the only infested countries; 58 hopper bands ranging from 20 sq. metres to 25 hectares, and an area of 5,000 hectares were treated by using bait and dieldrin 20%. Details of the control operations undertaken in each country are given in Appendix I.

25. The Committee, while appreciating the efforts made by various countries and regional organizations to control the Desert Locust infestations, recognized that this was the beginning of a new plague which would continue for some years. It was, therefore, considered important that all national and regional anti-locust services should intensify and strengthen control operations in their respective areas for the coming winter, spring and summer campaigns, and at the same time plan future programmes on at least a five-year basis.

Measures Taken by FAO in the 1968 Desert Locust Emergency and Consideration for Future Action

26. During 1967 important developments in the locust populations tending towards gregarisation were noticed in a number of countries, and in particular in the countries lying along the Red Sea. On 27 December 1967 the Director-General of FAO informed all the countries concerned about these developments through a special warning in which he stated that "if the present population build-up is followed by successful breeding in the spring of 1968, a plague could recur".

27. Throughout this period FAO had been keeping in constant touch with the developments in the countries immediately threatened, namely: Ethiopia, Somali Republic (DLCO-EA), Saudi Arabia, Southern Yemen and Yemen. In April 1968 the locust situation in these countries reached an alarming stage and the Director-General informed all the countries once again through an urgent warning about the impending threat of the Desert Locust to the neighbouring countries. In the meantime the Director-General of FAO obtained US$ 285,000 from the UNDP(SF) Desert Locust Project contingency and subsequently additional US$ 110,000 from the same source and, at the same time, requested the USAID to provide assistance to countries and organizations wherever possible. He also approached the Governments of India, Jordan, Pakistan, Sudan and the United Arab Republic to provide technical personnel, and each of these countries responded favourably. Taking into consideration the resources and control potentials of the individual countries and their capacity to deal with the present locust situation, the following assistance was provided:

Saudi Arabia

28. The FAO Regional Locust Officer, Jeddah, kept the neighbouring governments informed about the developments of the locust situation in the country. During 1967 and 1968 he had a series of meetings with the government officials in Jeddah as well as in Riyadh and assisted them in preparing appropriate plans for anti-locust operations. In addition, the Inter-Regional Locust Officer, Beirut, and Headquarters staff visited the country frequently for discussions with the Government at a high level on the arrangements required to cope with the situation and future plans. These meetings resulted in additional allocation of funds for buying insecticides and equipment, and alerted the various officials concerned about the importance and urgency of the problem. The need for using aircraft was emphasized and, at the request of the Government of Saudi Arabia, arrangements were made to appoint a consultant to advise and assist the Government on planning of aerial operations and chartering of aircraft.

29. The lack of an adequate number of technical personnel was another handicap, and to fill this very important gap FAO offered to secure the services of technical staff for a period of six months from the various interested governments. The following assistance was provided:

FAO: *(a) 4 Locust Officers from Jordan worked in Saudi Arabia from 22 June 1968 for a period of two months. These Officers will come back again in November 1968 to work in Saudi Arabia until February/March 1969.

*(b) 4 Locust Officers from Pakistan worked in Saudi Arabia for six weeks during July/August 1968. Eight Officers will go to Jeddah in November 1968 and operate in the country until February/March 1969.

(c) Insecticides: 2,400 litres of Dieldrin
2,273 litres of Malathion.

(*) Such Officers will continue to receive their usual salaries from their respective governments and FAO will bear the travel cost and pay per-diem.

Assistance from other sources:

On FAO's request, the following Governments supplied:

Pakistan: 4,091 litres of dieldrin
1,700 kg. of BHC 13% dust

Kuwait: 1,818 litres of dieldrin
7 tons of BHC dust.

In addition, under the co-ordination of FAO, self-contained teams of the Governments of Jordan, Kuwait and Sudan operated in Saudi Arabia during the 1967/68 campaign.

Yemen Arab Republic

30. The FAO Locust Officer, Hodeidah, kept the area under constant watch and carried out control operations during the second half of 1967. Unfortunately, due to disturbed conditions in the country, he had to be evacuated in December 1967 along with other UN personnel working in the country. After reporting at Headquarters he was sent to Jeddah to assist the FAO Locust Officer in the anti-locust campaign in Saudi Arabia, where he spent about one month. In February 1968 conditions improved in Yemen and, on request received from the Government, the Locust Officer returned to Hodeidah. The operations in Yemen were mainly assisted by FAO through Trust Fund 1. To supplement the staff as well as the equipment available in that country, the following assistance was provided by FAO:

(a) 4 Locust Officers from U.A.R. to operate for six months in Yemen } two reached Yemen on 15.7.68 and the remaining two went on 28.8.68. Services secured on identical conditions as in the case of Saudi Arabia

(b) 6 light vehicles (4 x 4)

(c) 6 exhaust nozzle sprayers

(d) 2,273 litres of dieldrin

(e) 50 tons of BHC 10% dust

(f) 4,546 litres of BHC 15% oil solution

(g) 100 hand dusters

(h) 5 power dusters

(i) 2 low volume motor sprayers

(j) 12 tents.

31. In addition, FAO made a special appeal to the Government of Kuwait for assisting Yemen. The Government of Kuwait responded with an offer of two light vehicles (4 x 4) and 25 tons of insecticide, the delivery of which was delayed in view of the insufficient number of boats going from Kuwait to Hodeidah.

Southern Yemen

32. The FAO Plant Protection Officer, Mogadiscio, made a number of visits to the Republic to advise the Government on the organization of anti-locust operations. Later on the Government requested FAO for assistance with the provision of insecticide

and equipment. In view of the infestations present in the country and the influx of the swarms which was expected into the Republic from July onwards, FAO provided the following assistance:

(a) 4 Locust Officers from India for six months) who arrived in Aden on 3.7.68. Services secured on identical conditions as in the case of Saudi Arabia

(b) 6 light vehicles (4 x 4)

(c) 6 exhaust nozzle sprayers

(d) 1,818 litres of dieldrin (909 litres airfreighted)

(e) 2,273 litres of malathion LVC

(f) 50 tons of BHC 10% dust

(g) 100 hand dusters

(h) 6 power dusters.

DLCO-EA (Eastern Africa)

33. Among the member countries of the DLCO-EA, Ethiopia and the Somali Republic were the only two countries which were heavily infested by the Desert Locust. FAO provided the following assistance:

FAO:
(a) 15,911 litres of dieldrin
(b) 9,092 litres of malathion
(c) 13,638 litres of BHC in oil

(d) 12 light vehicles (4 x 4)

(e) 3 light vehicles (4 x 4) to the Somali Republic

Assistance from other sources:

France - Assistance worth approximately US$ 60,000

U.K. - (i) 4 technical personnel (Pilot, Aircraft Engineer, Entomologist and Mechanical Engineer)
(ii) 10 light vehicles (4 x 4) with exhaust nozzle
(iii) 10 wireless sets
(iv) miscellaneous, aircraft spares and scientific equipment
) to the value of approx. US$ 180,000

U.S.A. - US$ 275,000 for insecticides, equipment and the services of 1 Entomologist for 2 years

U.S.S.R. - (i) 125 metric tons of insecticides (airlifted)
(ii) 5 heavy duty vehicles
) for Ethiopia

Sudan

34. In the course of the supplementary survey sponsored by FAO under the UNDP(SF) Desert Locust Project during the winter of 1967, the Sudanese team observed infestations along the Red Sea Coast particularly in the area adjoining Eritrea. Subsequently a few swarms appeared and were adequately dealt with by the national control teams. During the summer of 1968, a large number of swarms were observed in Sudan and the Government requested assistance in supplying insecticides. In view of the serious situation which suddenly developed in the country, the following insecticides were ordered:

(a) insecticides: 4,546 litres of dieldrin
2,273 litres of malathion LVC
18,184 litres of gamma BHC 15%
10 tons of BHC dust (5.2% gamma)
31,822 litres of malathion (as a reserve stock at Port Sudan)

(b) 4 sets of micronair spray-gears for aircraft.

Chad (OCLALAV)

35. In view of the serious situation in Eastern Africa and in the Arabian Peninsula, the possibility of swarms invading West Africa through Chad could not be ruled out, and FAO proposed to provide a reserve of insecticides in Chad to meet such an exigency with a view to checking the infiltration of the swarms further to the west. With this in view, FAO provided 18,184 litres of dieldrin and agreed to provide funds for the chartering of additional aircraft. In addition, France provides an annual subsidy to OCLALAV of approximately 400,000 dollars.

Co-ordination and Liaison

36. Under the general guidance of the FAO Headquarters staff, the FAO field locust officers at Jeddah, Yemen and Mogadiscio assisted the various Governments in planning, organization and implementation of anti-locust operations and made extensive tours of the infested areas. The Inter-Regional Locust Officer, Beirut, acted as a co-ordinator of the operations in DLCO-EA, Sudan and the Arabian Peninsula, and he constantly toured in the countries concerned and kept Headquarters well informed about the situation. The Inter-Regional Locust Officer, Dakar, acted as co-ordinator for West and North-West Africa.

Future Action

37. The Committee appreciated the initiative taken by FAO and the generous response of the UNDP in providing for technical and material assistance to the various countries during the time of the upsurge of the Desert Locust plague. The Committee, however, noted that the intervention of FAO was in no way intended to relieve individual governments and regional organizations of their respective responsibility. FAO's efforts were directed towards the overall international strategy of Desert Locust control and provided assistance to the various countries to help check the spread of the plague to the neighbouring areas.

38. The Committee welcomed the proposal of the Director-General of FAO to establish an emergency fund for initial control activities against the Desert Locust in the event of future resurgence of the plague, and strongly urged that such a fund should be established by the FAO Conference at its next Session.

39. In view of the critical situation the Committee appointed an ad-hoc Sub-Committee comprising the representatives of India, France, the United States of America, the League of Arab States as well as the Director of DLCO-EA, the Director-General of OCLALAV, the Director of the ALRC, with the representative of Saudi Arabia as Chairman, to examine

the available information on governmental and regional expenditure and resources, including assistance received from other sources for Desert Locust control, and to assess the needs by way of insecticides, equipment, transport, aircraft, personnel, etc. required to cope with the present threatening Desert Locust situation in their respective countries.

40. The Committee considered that the following areas could be subject to serious crop damage if adequate control operations were not undertaken:

South-West Asia

November 1968 - May 1969	- Southern Iran and Mekran of Pakistan
June - September 1969	- Summer breeding areas of India and Pakistan

Near East

November 1968 - April 1969	- Yemen, Southern Yemen, Saudi Arabia (Red Sea Coast)
January - May 1969	- Saudi Arabia (Taif and Najran)
March - June 1969	- Saudi Arabia (Nafaud and North-West areas)
October - December 1968	- United Arab Republic
June - August 1969	- United Arab Republic
October 1968 - April 1969	- Sudan (Red Sea Coast)
May - September 1969	- Sudan (interior)
December 1968 - May 1969	- Jordan

Eastern Africa

October 1968 - April 1969	- Red Sea Coast of Ethiopia and Northern Somali Republic
October - December 1968	- Ethiopia (Ogaden) and Southern Somali Republic
December 1968 - January 1969	- Northern Kenya
February - May 1969	- Ethiopia (South Danakil)
June - September 1969	- Northern Ethiopia

North-West Africa

October 1968 - June 1969	- Algeria, Morocco and Tunisia

West Africa

June - October 1969	- Chad, Mali, Niger, Mauritania and Senegal.

41. The Committee reviewed the estimates of the additional assistance equivalent to US$ 4,628,400 required by the various governments and regional organizations (Appendix V) to deal with the present locust situation and found that they were fully justified and the assistance was urgently needed. The Committee noted that during the last year the affected countries had incurred from their own resources an expenditure of approximately US$ 12 million for anti-locust operations.

42. The Committee, while recognising that the governments concerned were responsible for the continuation of control operations against the Desert Locust, noted that at present the governments and regional organizations in the affected countries had exhausted most of their own resources and also those received from donor countries and the UNDP. The Committee noted with concern that the plague could be expected to continue for a few years and the various governments and regional organizations could not possibly cope with the situation without additional aid from outside sources.

43. The Committee requested the Director-General of FAO to appeal to the various possible donor governments and the UNDP for assistance to meet the present serious locust situation, and further requested the Director-General of FAO to take appropriate action to strengthen the staff of the Desert Locust Section at FAO Headquarters.

44. It was suggested that the Director-General might consider approaching commercial firms dealing in insecticides and application machinery, with a view to providing assistance in cash or kind to governments and various regional organizations in coping with the present and future locust situation in their respective areas.

45. The Committee requested FAO to prepare proposals on long-term strategy of Desert Locust control and to submit the same at the next Session of the Committee for its consideration. It also requested FAO to keep under continuous review the availability of personnel, supplies and equipment with the various national and regional organizations involved in Desert Locust control as well as to undertake, as a continuing function, the preparation of estimates of assistance required and to identify additional needs and availability on a regional and inter-regional basis. The Committee noted with satisfaction that the FAO had sent a questionnaire (Appendix IV) to various countries and regional organizations to obtain information on expenditures and resources for Desert Locust control and on other inter-governmental assistance.

UNDP(SF) Extended Desert Locust Project - 1 July 1966 to 30 April 1968 - Progress Report

46. The Committee received the progress report on the UNDP(SF) Extended Desert Locust Project from 1 July 1966 to 30 April 1968. A summary of the main activities undertaken during the period under review is given in para. 47 to 68 below:

Reporting and Forecasting

Desert Locust Information Service

47. The Service had continued to issue the usual locust situation and forecast summaries. An agreement was entered on 13 July 1967 between FAO and the Government of the United Kingdom for five years commencing 1 July 1966, with an annual contribution of US$ 20,000 payable by FAO towards the cost of the Service. In accordance with para. 39 of the Plan of Operation for the UNDP(SF) Desert Locust Project, the new agreement was circulated to all the Member Governments concerned for their information.

National Services

48. With a view to installing all the radio sets and putting those into operation, it was decided to spread the workload. Arrangements were made with OCLALAV for the installation in Mauritania, Niger and Chad to be completed by their Radio Communications Officer and a similar arrangement was made with DLCO-EA regarding the radio communications network in Ethiopia and Somali Republic. FAO appointed two Radio Communications Officers, one of whom worked in Afghanistan, India and Iran, while the second visited Afghanistan, Libya, Iraq, Jordan, Morocco, Saudi Arabia, Syrian Arab Republic, Tunisia and the United

Arab Republic. The details of the visits of these experts are given in Appendix II. In Israel and in the People's Republic of Southern Yemen no assistance was requested. In the Yemen Arab Republic, conditions were too disturbed to install the network as originally planned. Thus, by 30 April 1968 all countries but the three last mentioned had been visited, and installation was complete in Ethiopia, India, Israel, Libya, Jordan, Morocco, Pakistan, Sudan, Tunisia and the United Arab Republic. Further visits were needed to Afghanistan, Algeria, Chad, Iran, Iraq, Mauritania, Niger, Saudi Arabia, Somali Republic and Syrian Arab Republic. The latest position of all the wireless sets with regard to installation, operating frequencies, etc. is given in Appendix III.

49. Arrangements for the permanent maintenance in the different countries were less advanced. As will be seen from the attached table (Appendix II) only eleven countries had made satisfactory arrangements. The remaining countries were depending upon visits of FAO or other experts for periodical repair, testing and maintenance. Efforts were, however, being made to establish some sort of arrangements in each country for permanent up-keep of the equipment.

Climatic Studies

50. (a) Rainfall: Report No. UNDP/DL/RFS/7-C1 on monthly mean number of days of 10 mm rainfall or more covered the whole Desert Locust area, divided into 17 sheets with 204 maps. This publication gives an index of breeding probabilities.

(b) Winds: Monthly vector mean winds and concurrent wind speeds and direction frequencies at six stations in India and 15 stations in East Africa were contained in Report No. UNSF/DL/RFS/7-A3 and 4. These are similar to UNSF/DL/RFS/7-A1 and 2 covering West Africa and Chad, but a graphical representation of concurrent wind speeds and direction frequencies had been added.

(c) Convergence: Estimates of convergence in the inter-tropical convergence zone in Africa in August 1954 were contained in Report No. UNSF/DL/RFS/7-D1. Daily convergence at locust mean flying height was computed and averaged. The data analyzed had been collected by the WMO Locust Meteorology Mission which had carried out similar computations for the month of October 1954. The results give an index of the areas where flying locusts are likely to be concentrated by the convergence of winds.

Field Research Stations

51. The Special Conference of the UNDP(SF) Assisted Desert Locust Project, held in Rome from 28 to 30 November 1966, suggested the appointment of consultants who should visit the various field research stations in order to assist and advise in selecting suitable programmes of research, in developing effective co-ordination and in helping with the installation of some of the more sophisticated types of equipment and at the same time to help in verification of the material supplied to the various field stations. FAO arranged to appoint during 1967 the following consultants for the various regions to implement the above recommendation:

F.O. Albrecht	-	South-West Asia
M.H. Abd-el-Hadi	-	Near East
R.D. MacCuaig and G.P. Popov	-	Eastern Africa and Israel
M. Descamps	-	Western Africa.

52. The information gathered by the above consultants was consolidated into a single report and sent to all the countries and organizations concerned for their comments. The report had since been revised in the light of the comments received and would be presented for consideration at the Special Meeting of Desert Locust Field Research Workers, scheduled to be held in early 1969.

Training

Radio Maintenance

53. For the purpose of training radio technicians, it was decided to take advantage of existing training centres established in different countries with assistance from the International Civil Aviation Organization (ICAO) or the International Telecommunications Union (ITU). These training centres were designed mainly for training of post and telecommunication personnel or for civil aviation personnel.

54. In November 1967, discussions were held at ITU Headquarters in Geneva with a view to have closer collaboration between ITU and FAO in training and for future maintenance. It was agreed that the work of installation, which had been so far handled by FAO, OCLALAV and DLCO-EA technicians, was best left in their hands. On the other hand, the various ITU courses and field experts were in a position to provide periodical training and to advise governments on suitable arrangements for operation and maintenance.

55. The provision in the Plan of Expenditure for 10 fellowships in radio maintenance had proved quite inadequate as each of the countries that received equipment needed at least one fellowship each.

Locust Meteorology

56. A training course was held at FAO Headquarters in Rome from 15 January to April 1968. It was attended by four fellows, one each from India, Morocco, Sudan and the United Arab Republic. The fellows brought along with them locust reports and meteorological data connected with the locust developments in their own countries selected for study. Report of the training course was under publication.

Survey Techniques

57. Nine FAO fellows one each from Chad, Mauritania, Morocco, Senegal and Tunisia and two each from Niger and Mali attended from 10 October to 6 November 1967 a field training programme arranged by the Government of Algeria on methods and techniques of locust surveys.

Supplementary Surveys

58. The FAO Desert Locust Control Committee, at its Ninth Session held in Rome in July 1964, welcomed the proposals of the FAO Secretariat for instituting Supplementary Surveys of potentially important breeding areas and which could not be adequately covered by national and regional organizations. The Thirteenth Session of the FAO Technical Advisory Committee on Desert Locust Control reviewed the work done under this survey programme and agreed that such surveys were a most valuable addition to the general surveys conducted by participating governments and organizations, and should be continued. Accordingly, the following Supplementary Surveys were undertaken during the period under report:

1967

South-western Afghanistan	- April/June	- Rep. No. UNDP(SF)DL/SS/8
Southern Iran	- March/May	- Rep. No. UNDP(SF)DL/SS/9
Southern Tihama of Saudi Arabia and Tihama of Yemen	- January/April	- Rep. No. UNDP(SF)DL/SS/7
Red Sea Littoral		
(a) Ethiopia	- October 67/January 68	- report under publication
(b) Sudan	- November/December	- report under publication
Algeria	- October/November	- report still awaited
North-west Niger and Chad	- April/May	- report still awaited

1968

South-western Afghanistan	-	April/June	- report under publication
South-western Iran	-	March/May	- report under publication
Southern Tihama of Saudi Arabia	-	January/April	- report under publication

59. The reports on the Supplementary Surveys contained in addition to locust data extremely valuable information on the type of terrain and vegetation, and on climatic conditions. Such information was very valuable for planning future surveys in these areas. Efforts had been made during these surveys to determine the areas of importance during recession and which would in future reduce the cost of keeping the areas under observation by various national and regional organizations. It was also pertinent to mention here that a dangerous increase of Desert Locust populations along the Red Sea was reported by the Supplementary Surveys organized under the Project in the Red Sea littoral area of Ethiopia and Sudan and in the Tihama of Saudi Arabia.

Equipment

60. The Special Conference of the UNDP(SF) Assisted Desert Locust Project, held in Rome from 28 to 30 November 1966, agreed that the formal transfer of title should preferably be carried out after the research stations had been visited by consultants or in the case of Reporting and Forecasting Services, after the visits of the radio communications officers, since such visits might lead to transfers of equipment from one country to another in consultation with interested governments or even to meet the need of the different projects. The final inventories of expendable as well as non-expendable items to be transferred would require physical checking in collaboration with the UNDP Resident Representatives concerned and the respective Governments. This would be done by Regional Locust Officers wherever possible and in other cases by the Headquarter staff.

61. The situation on 1 July 1966 was that some 200 consignments had not yet been delivered. In some instances delay had occurred through the need to acquire more precise specifications than were originally supplied. In other cases, goods ordered were not immediately available with the suppliers and in yet other instances, delays had occurred enroute. In the case of radio equipment in particular, further orders had to be placed for essential accessories, spares and testing equipment and there was reason to anticipate that a similar situation would be found in the case of equipment supplied to the field research stations when these had been visited by the consultants.

Special Survey Equipment

62. Vehicles and other equipment had been supplied to certain countries for the strengthening of the supplementary survey teams and as this equipment was needed for the annual survey programmes the placing of orders and the shipping arrangements were followed up both from Rome and in the receiving countries. By 31 December 1967 all equipment had been delivered and acknowledged.

Field Research Stations Equipment

63. Visits of consultants to the field research stations commenced in March 1967 and were completed by October 1967. Each consultant made a physical check of the equipment at the field research stations visited, advised on its suitability and, with strict regard for economy, indicated additional items that were essential for the research programmes. When all research stations had been visited the cost of the additional items recommended was reviewed in the light of available resources and orders were placed at the end of 1967 and in the earlier part of 1968. The equipment had been classified, a consolidated list prepared and appended to the report on the field research stations on co-ordination of research.

Reporting and Forecasting Services Equipment

64. Visits of radio communications officers, recommended early in 1967, were still continuing by 30 April 1968. The average period of each visit was about one month and it was only after the reports of these successive visits were received that orders could be placed for essential supplementary items. Consequently, by 30 April 1968, orders still remained to be placed for two countries although in the majority the radio networks had been installed and were in effective operation.

Operational Research Equipment

65. A wide range of equipment was procured for the operational research team which was based in Beirut from January 1963 to April 1964. After the conclusion of operations in April 1964, it was arranged with the concurrence of the UNDP for surplus material to be used to meet requests under other chapters of the Project, i.e. Field Research Stations, Reporting and Forecasting, etc., or failing that to be transferred to other UNDP(SF) Projects, the Desert Locust Project being credited with the used value of the equipment transferred. In the case of reserves of insecticides governments and regional organizations were invited to submit offers. In this way, by 30 April 1968, all equipment under this chapter of the Project had been disposed of with the exception of one 'Alden weather map recorder' which, as a result of constant use and continuous movement from country to country by the operational research team, had become unserviceable and had to be written off.

Transfer of Title to Equipment

66. Formalities for the transfer of title were initiated in March 1968 on the understanding that these need not be delayed merely on account of a few missing items of limited value. By 30 April 1968 the necessary documentation had been prepared and dispatched to the UNDP Resident Representatives of the following countries:

Afghanistan	Libya
Algeria	Morocco
Chad	Saudi Arabia
Ethiopia	Southern Yemen
Iran	Sudan
Iraq	Syrian Arab Republic
Israel	Tunisia
Jordan	Yemen Arab Republic.
Kenya	

67. In the case of the following countries documents had not yet been transmitted as significant consignments were still outstanding:

India Pakistan Somali Republic	research equipment
Mauritania Niger United Arab Republic	radio equipment

68. However, all the outstanding items were in the process of ordering or shipment and it was anticipated that transfer of title to all the Governments would be finalised by 31 December 1968.

Progress Report on UNDP Further Assisted Desert Locust Project (1 May 1968 to 31 August 1968) - Progress Report

69. The Eleventh Session of the FAO Desert Locust Control Committee recommended a further extension of the above Project from 1 May 1968 to 30 June 1970 to complete certain aspects of the work needing further assistance. A total amount of US$ 668,000, financed partly from the UNDP Assisted Desert Locust Project (US$ 435,000) and partly from the FAO International Trust Fund No. 161 (US$ 233,000), was approved by the Committee and subsequently endorsed by the UNDP.

Reporting and Forecasting

Desert Locust Information Service

70. The Desert Locust Information Service (DLIS) had continued to provide regular information and forecasts to participating governments and organizations. The situation in October and November 1967 gave cause for concern. Since then, in addition to the production of the monthly "Summary", 16 "Special Survey Recommendations" and eight special "Forecasts of the Desert Locust Situation" had been prepared and sent out to different countries. These recommendations were designed to indicate areas in which extra surveys were considered necessary in order to discover and control locust populations likely to lead to a plague. In addition, numerous cables indicating likely imminent events, as well as letters discussing likely future developments in detail, have been sent out. At the same time 'special' and 'urgent' warnings were issued directly from FAO Headquarters and sent to all the countries and organizations concerned.

71. With regard to the proposals for modifications in the presentation of future DLIS "Summaries", the Committee suggested that before action was taken to implement these they should be circulated to all governments and regional organizations concerned for study and comment.

72. The Committee emphasized the need for continued improvement in survey and reporting at national and regional level, this being vital for reliable forecasting.

National Reporting and Forecasting

73. At the request of the governments concerned the FAO Radio Communications Officer had visited Algeria, Iraq, Mauritania, Senegal, the United Arab Republic, Syria and Iran. Detailed information on the progress made in installation and maintenance in each country is contained in Appendices II and III.

Radio Communications - Permanent Maintenance

74. In a number of countries which have received assistance in installation of their radio networks by the Radio Communications Officer further visits had been requested to deal with breakdowns in the operation of networks due to inadequate maintenance arrangements. Accordingly, in recent visits - as well as in correspondence with governments - special emphasis is being laid upon the importance of adequate arrangements for permanent maintenance. Actual arrangements vary from country to country. Where there were a large number of radio stations, one or more radio engineers had been permanently assigned to the Locust Control Service. The more usual arrangement was for the Post and Telegraph Department to be made responsible for maintenance and major repairs. At the same time it was important that all locust personnel using the

radios receive training in routine maintenance. The training courses that were being organized in collaboration with ITU aim at ensuring that at least one Locust Officer from each country is able to undertake training of other Locust Officers in routine maintenance after completing the course.

Use of Meteorological Data and its Correlation to Current Locust Activities

75. It seems that the case studies (UAR and Sudan) made at the latest Locust Meteorological Training Course had revealed important links with the present invasion of the countries bordering the Red Sea, and were receiving further attention. This investigation was also part of the preparatory work for the forthcoming meeting of the World Meteorological Organization Working Group on Locust Meteorology, to take place immediately after the FAO Desert Locust Control Committee in October 1968.

76. Early in February 1968 the Director of the Anti-Locust Research Centre (ALRC), London, requested the assistance of the World Meteorological Organization (WMO) in obtaining precipitation information for use in issuing monthly summaries and forecasts of the Desert Locust situation. The Secretary-General of WMO issued a circular letter in February 1968 to the Member Meteorological Services in the countries concerned and monthly reports, by airmail, were subsequently furnished to the ALRC. The Committee expressed its appreciation to the WMO and its Member Meteorological Services concerned.

Survey and Reconnaissance

77. The following surveys had taken place:

(a) Southern Iran (Iranian and Pakistan Government teams participating; March-May 1968);

(b) South-West Afghanistan (Afghan and Indian Government teams participating; April-June 1968);

(c) Southern Algeria (Algerian Government team participating);

(d) North-West Niger (OCLALAV team participating).

78. In view of the changed locust situation it would be necessary to modify the programme of Supplementary Surveys originally decided upon at the Eleventh Session of the Committee.

Inter-Regional Coordination

Inter-Regional Locust Office, Beirut

79. Dr. Khalil Lubani arrived in Beirut early in May 1968 to assume his responsibilities as Co-ordinator for the Near East, Eastern Africa and South-West Asia. Almost immediately he was involved in plans for dealing with the locust emergency, travelling to Jordan, Saudi Arabia, Yemen Arab Republic, Southern Yemen, Ethiopia and Sudan, and finally to FAO Headquarters in Rome for reporting and discussing measures to be taken. In this way he had obtained first-hand information on the situation in the various countries and had been able to keep various regions fully informed of the situation in other countries. In the same way, the FAO Headquarters were receiving personal appraisals of the situation in the areas most threatened and were able to take prompt measures to help or advise.

Inter-Regional Locust Office, Dakar

80. Mr. Pascal Tirot took up his appointment as Co-ordinator for West and North-West Africa in August 1968, his appointment having been delayed by the need to find a suitable replacement for him with OICMA. His immediate programme included:

(a) Installation in Dakar, where OCLALAV had generously offered office accommodation;

(b) Visits to Mauritania, Mali, Niger and Chad;

(c) Attending the Twelfth Session of the FAO Desert Locust Control Committee in Rome.

The visit to Niger was timed to coincide with the experimental work undertaken by Geotechnip on aerial detection of locusts.

Research

Coordination of Field Research

81. The report on the co-ordination of field research was in its final printing stage and would form the basis of discussions at the Special Conference of Field Research Workers to be held early in 1969. Arrangements for further visits to field research stations by consultants would await the outcome of this Special Conference.

Insecticide Trials

82. Arrangements had been made to obtain 250 kg. of "Lignin Extract" from Messrs. A.B. Trimmer of Stockholm, Sweden, for testing this material on locusts in Ethiopia or Somalia under the direction of the FAO Plant Protection Officer, Mr. R.M. Skaf. The trials were scheduled to take place during September/October.

Photographic Detection of Locusts on the Ground

83. Arrangements had been made with the firm Geotechnip, Paris, for experimental work on the detection of locusts (both solitaries and groups) by means of Kodak Ektachrome Infrared Emulsion aerial photography. These experiments were carried out in Niger in October 1968 in collaboration with the OCLALAV survey team and under the direction of Mr. Charles Rossetti, formerly a member of the FAO/UNESCO/WMO Desert Locust Ecological Survey team. After preliminary laboratory trials conducted in Paris in May 1968, it was concluded that the experiment was worth continuing in the field as it could have considerable significance in the future survey and control of locust populations.

Training

Radio Maintenance

84. A training course in radio maintenance for English speaking fellows continued in the UNDP/ICAO Civil Aviation Training Institute, Cairo, (six fellows attending, of whom two have concluded early - one because of ill health and one because recalled by his Government). Two other courses were in process of organization, one for English speaking candidates at the UNDP/ITU Radio Telecommunications Training Centre, Baghdad, from March to May 1969, and one for French speaking candidates at the UNDP/ITU Ecole Nationale d'Etudes de Télécommunications, Algiers, from January to March 1969.

85. One Afghan fellow received training in India from 15 February to 15 August 1968, and one Iranian fellow started training in India from 25 August 1968 for a period of three months.

Advanced Training

86. All countries having field research stations were invited to nominate candidates for high-level training fellowships in research. One fellow was appointed from Saudi Arabia, who had begun his fellowship in October 1968 in London. Nominations had been received from Sudan, U.A.R., Somali Republic, Senegal and Upper Volta and were under consideration.

Status of the Regional Desert Locust Organizations

South-west Asia

87. The Fourth Session of the Commission for Controlling the Desert Locust in the Eastern Region of its Distribution Area in South-west Asia was held in Kabul from 21 to 24 February 1968. Some of the important recommendations are as follows:

(a) The Commission emphasized the need for making all preparations by the member countries to deal promptly with the impending threat of the Desert Locust.

(b) In view of the current locust situation the Commission authorized FAO to incur expenditure on insecticides, supplies, subsistence of aircrew and POL for aircraft provided by member countries for aerial operations as the situation should demand during the coming months up to an amount of US$ 100,000 from the Trust Fund of the Commission.

(c) In consultation with the Executive Committee joint operations were carried out in Pakistan with the assistance of Iranian aircraft.

(d) The Commission also approved a candidate for advanced training in a foreign country.

(e) The Commission prepared a coordinated plan for field research on the locust to be carried out in the various research stations within the member countries of the Commission.

Near East

88. The Commission for Controlling the Desert Locust in the Near East came into being in February 1967 upon receipt of signatures of the Governments of Jordan, Lebanon and Sudan. Since then the Governments of Kuwait and the United Arab Republic had also deposited instruments of acceptance. The Governments of Iraq, Saudi Arabia, the Syrian Arab Republic and Yemen had still to do so. In addition, the Governments of Bahrain and Qatar had applied to the Director-General of FAO for membership of this Commission. FAO had requested the Governments concerned to deposit the formal instruments of acceptance. The Committee requested FAO to convene the First Session of the Commission at the earliest.

Eastern Africa

89. The Desert Locust Control Organization for Eastern Africa (DLCO-EA) continued to operate with the usual efficiency. Since the last Session of the Committee the Council of the DLCO-EA had its Twelfth and Thirteenth Sessions and made specific recommendations for strengthening the DLCO to cope with the resurgence of the plague. Cooperation between FAO and the DLCO-EA was continued in accordance with the Relationship Agreement between the two Organizations.

North-West Africa

90. The Second Session of the FAO North-west African Desert Locust Research and Control Coordination Sub-Committee was held in Algiers from 23 to 26 April 1968. Some of the important recommendations are as follows:

(a) In view of the change in the Desert Locust situation it was considered necessary that all countries of North-west and West Africa should strengthen their existing survey and control potentials in order to cope with the existing populations and to meet any impending threat of Desert Locust infestations from within the region or from any part of the Desert Locust areas.

(b) The Sub-Committee agreed to provide from the Trust Fund one Locust Officer to be assigned to Libya for a period of one year. It was hoped that in future the Government of Libya would give favourable consideration to the maintenance of the post of the Locust Expert at its own cost.

(c) Recognising the importance of anti-locust operations carried out in countries south of Sahara and to keep in touch with the latest developments in that area, the delegates decided to send, on a reciprocal basis, an observer from one of the member countries of the Sub-Committee to attend annual Sessions of the Administrative Council of OCLALAV. Subject to approval of the Administrative Council of OCLALAV of such representation, the Director-General of OCLALAV would invite at each of their future meetings of the Council the Member Governments of the Sub-Committee to send an observer by turn in alphabetical order.

West Africa

91. The Organisation Commune de Lutte Antiacridienne et de Lutte Antiaviaire (OCLALAV) continued to operate as an independent inter-governmental organization and kept FAO closely informed of its activities.

International Anti-Locust Campaign in the Arabian Peninsula during 1967/68 and Plans for the Future

Survey Operations

92. In addition to the surveys undertaken by the national Saudi Arabian teams a Supplementary Survey was arranged from January to May 1968, in which Saudi Arabian and Sudanese Locust Officers participated under the supervision of the FAO Regional Officer, Jeddah.

Control Operations

93. Control operations were carried out mainly by Saudi Arabian national control teams supplemented by missions from Sudan, Kuwait and Jordan. According to the development of the situation in various localities of Saudi Arabia, the Agricultural Officers who were responsible for anti-locust operations employed all the available staff for locust control. In order to cope with the heavier infestations in certain areas further assistance was obtained from the units maintained by the locust research station.

94. During the period September/December 1967 no control operations were carried out except in the Gizan area, because of the very low density of the solitary populations. In the Gizan area, where the heaviest infestation was reported during December, it covered an area of 900 sq. km. and the population was estimated to range from 10 to 100 per metre. Four Saudi control teams worked in this area. During January, February and March 1968 control operations continued along the Red Sea coast. Eight Sudanese units and 11 Saudi teams carried out extensive control operations against heavy infestations in southern Tihama and against scattered but heavy infestations in the Jeddah area northwards to Mastura.

95. After April, when breeding took place in many areas, more than 173 Saudi control units*, together with 8 Sudanese, 2 from Kuwait and 2 from Jordan, carried out control operations all over Saudi Arabia (para. 97). In order to intensify the operations FAO secured the services of four Technical Officers each from Jordan and Pakistan during July and August 1968.

96. The following table shows the summary of infestations and control operations carried out from September 1967 to September 1968:

Area	Period	Area Infested			Type and quantity of insecticides used		
		No.hopper bands	Swarms reported	Area treated sq km	Bait tons	BHC dust tons	Dieldrin litres
S. Tihama	Sept-June	37,189	56	1,824	310	123	2,205
N. Tihama	Jan-July	14,602	45	1,899	390	96	1,932
Taif and Asir	March-June	12,575	42	650	374	86	1,432
Central area	March-June	9,276	17	1,746	324	43	909
W. Dawasir	March-July)	4,125	8	991	378	108	500
Riyadh	April-June)						
Qassiem	March-July	16,588	18	?	318	48	432
Hail	May-July	30,902	6	560	195	44	?
Northern areas	May-July	?	4	88	15	5	?
	over	125,257	196	over 7,758	2,304	553	over 7,410

* A unit includes: 1 Technical Officer, 1 to 2 Field Technicians, 2 vehicles and 3 to 5 Labourers.

Visiting Missions

97. Missions from Jordan, Kuwait and Sudan co-operated with the Saudi anti-locust units in this campaign. In addition, FAO sent eight Locust Officers from Jordan and Pakistan to participate in the control operations. The details of the teams and areas of operation are given below:

Duration and Composition of Visiting Missions

Country	Period	Area of Operation	No. of Personnel	No. of vehicles	Control Material if any
Jordan	March-April, June-July '68	NW S.A., Tebuk area	2 Locust Officers and other	3	-
Kuwait	Dec 67-April 68; June-July 68	Eastern Saudi Arabia - Hail area	2 Technical Locust Off. 10 labourers 3 drivers	3	Exhaust sprayers, power dusters and sprayers
Sudan	Jan-June 68	Lith-Qunfida area of southern Tihama	2 Locust Off. 10 Supervis. 10 Drivers 8 others (total=8+2 teams)	11	4 Exhaust nozzle sprayers
FAO (from Jordan)	June 1968 July 1968	Western Saudi Arabia	4 Locust Officers	Vehicles and control equipment supplied by the Saudi Arabian Government	
FAO (from Pakistan)	July-Aug 1968	Hail-western Saudi Arabia	4 Locust Officers		

The Executive Board

98. The Executive Board, comprising heads of missions operating in western Saudi Arabia, was convened three times during the 1967/68 campaign. The first meeting was convened in Qunfida on 20 November 1967 after visiting some infested areas in the Lith-Qunfida area. The second meeting was convened in Jeddah on 5 February 1968 to study action needed to strengthen control operations in southern Tihama and assistance needed to supplement the work of the Sudan Mission operating in the area. The third meeting was convened on 21 April 1968 to review the current Desert Locust situation and consider the action required to be taken in various localities.

FAO International Desert Locust Control Centre, Jeddah

99. The Centre was engaged in various activities, the main being the running of the 1967/68 campaign. The FAO Regional Locust Officer kept in close contact with the officials of the Ministry of Agriculture with regard to the progress of control operations

and the action required for strengthening such activities, and for this purpose six meetings were held in Riyadh for planning and follow-up operations and also to arrange a daily review of the situation. Many field trips to infested areas were made and reports made to the responsible authorities. The FAO Regional Locust Officer was also in close contact with the missions operating in Saudi Arabia. With the development of the Desert Locust situation in central Arabia during June, missions from Jordan and Kuwait returned to Saudi Arabia on request of the Centre and took part in the control operations carried out in central and northern Arabia.

100. Supplementary survey operations were arranged and conducted under the supervision of the FAO Regional Locust Officer during January/May 1968. He also visited Bahrain and Qatar and advised on the planning and organization of anti-locust services in those countries.

101. In addition to the monthly reports, the Centre kept DLIS and the neighbouring countries informed through reports and cables about the locust developments in Saudi Arabia.

102. Five vehicles were loaned during the season to the Sudan Mission and additional vehicles were later loaned to Saudi teams to assist in control operations.

Future Plans for the 1968/69 Campaign

103. The Committee considered the report submitted by FAO and heard with interest from the delegate of Saudi Arabia the following arrangements to be made in his country for expanding and strengthening Desert Locust control:

(a) It was proposed to have the locust survey and control work under a unified central control, and for this purpose a national Desert Locust Control Committee was to be established in the Ministry of Agriculture for planning, co-ordination and follow-up of locust activities at the highest level. For operational purposes there will be a control section established within the framework of the Extension and Agricultural Service Department of the Ministry of Agriculture. For administrative convenience this section will have three main sub-stations established in Riyadh, Jeddah and Bureida to cover the eastern, western and northern areas respectively of Saudi Arabia. Under the supervision and co-ordination of such sub-stations the control operations will be carried out by the Plant Protection and Locust Officers assigned to various agricultural offices. Each Agricultural Office will establish a number of anti-locust units as may be required according to the areas to be covered.

(b) There will be well-trained field officers in each anti-locust unit, and four to five such units would work under the supervision of a well qualified technical officer. FAO would provide 12 experienced officers from November 1968 onwards for a period of about four months and training courses would be organized at each Agricultural Office for imparting simple instructions on survey and control methods to the junior staff.

(c) In view of the vastness of the area involved and to increase the efficiency of survey and control operations, it would be necessary to establish an aerial unit equipped to deal with both survey and control. FAO had already assisted the Government in this behalf and the details of the requirements for such a unit had been communicated to the Government of Saudi Arabia. Adequate quantities of liquid insecticide for low-volume spraying by air and ground, and also BHC dust and bait for ground operations would be immediately procured.

In addition to the available fleet of vehicles, about 200 vehicles of both light and heavy type were required. It was planned to establish reserves of insecticides and equipment all over the important breeding areas for easy distribution.

(d) Continued participation of missions from Jordan, Kuwait, Pakistan, Sudan and other interested countries was considered desirable.

DATE AND PLACE OF NEXT SESSION

104. The Committee recommended that the Director-General of FAO should convene the next Session of the Committee possibly in October 1969 at a place and date to be determined by him.

APPENDIX I

DATA ON CONTROL OPERATIONS UNDERTAKEN AGAINST THE DESERT LOCUST IN VARIOUS COUNTRIES (AUGUST 1967 - SEPTEMBER 1968)

Country	Period	Type and Quantity of Insecticides	Approximate Total Area Infested	Method of Application
SOUTH-WEST ASIA				
India	July-August 1968	approx. 25.40 tons of BHC dust 10% 6,023 litres of dieldrin 10% and 796 litres of dieldrin 20%	750 sq. km.	dusting exhaust spraying aerial spraying
Iran	April, July-August 1968	dieldrin 20%	10 sq. km.	exhaust spraying
Pakistan	April-May, July 1968	732 tons chlorinated and phosphatic insecticide	4,408 sq. km.	baiting dusting aerial spraying
NEAR EAST				
Jordan	June-July 1968	4 tons BHC 2.6% gamma & 30 tons bait	100 sq. km.	baiting dusting
Saudi Arabia	September 1967-July 1968	553 tons of BHC dust, 1,524 tons of bait and 9,682 litres of dieldrin	236,000 sq. km.	baiting dusting exhaust spraying
Sudan	November 1967 - early August 1968	1.25 tons of BHC dust 2.6% gamma, 2,059 tons of bait, 18,343 litres of dieldrin, 1,696 litres of BHC in oil, 9,000 litres of BHC 10% and 16%	16,887 sq. km.	baiting dusting exhaust spraying aerial spraying
U.A.R.	June 1968	101 tons wheat bran and 15 tons of BHC dust 20%	100,000 sq. km.	baiting dusting
Yemen	January-Feb. 1968, July-September 1968	40 kg. BHC, 300 kg. bran and dieldrin	1,810 sq. km.	baiting dusting exhaust spraying
Southern Yemen	November 1967 - July 1968	125 tons of bait and 546 litres of dieldrin	2,816 sq. km.	baiting exhaust spraying

p.t.o.

Country	Period	Type and Quantity of Insecticides	Approximate Total Area Infested	Method of Application
EASTERN AFRICA				
Ethiopia	October 1967 - September 1968	103,300 litres dieldrin F.1, BHC 20% and BHC in oil 16%, and 6,300 kg of BHC dust	6,878 sq. km.	dusting spraying aerial spraying
Kenya	May 1968	900 litres of dieldrin 20%	3 sq. km.	aerial spraying
French Territory of the Afar and Issa People	January - February 1968	liquid insecticide and 10% BHC dust, 1,000 litres of BHC in oil 15%	399 sq. km.	dusting spraying
Somali Republic	December 1967 September 1968	45,000 litres of dieldrin F.1 20% and BHC in oil 15% and 16%	3,102 sq. km.	spraying
WEST AFRICA				
Chad	November 1967	6,800 litres dieldrin 5%	14 sq. km.	exhaust spraying
Mali	August, October-December 1967, June-August 1968	29,985 litres dieldrin 5%	164 sq. km.	exhaust spraying aerial spraying
Mauritania	July-September 1968	11,060 litres dieldrin 5%, 2,350 litres dieldrin 20% and 895 litres of Fenitrothion	264 sq. km.	exhaust spraying aerial spraying
Niger	October-December 1967, May-August 1968	48,017 litres dieldrin 5%	223 sq. km.	exhaust spraying aerial spraying
NORTH-WEST AFRICA				
Algeria	April-May 1968	bran	58 hopper bands ranging from 20 sq. m. to 25 hectares	baiting
Morocco	June 1968	dieldrin 20%	50 sq. km.	spraying

APPENDIX II

UNDP/SF ASSISTED DESERT LOCUST PROJECT - REPORTING AND FORECASTING

TRAVEL SCHEDULE OF RADIO COMMUNICATIONS OFFICERS

Country	Visits of Radio Communications Officers	Maintenance Arrangements	Visits Needed
AFGHANISTAN	KHATTAR 20.2.65 - 21.3.65 21.10.67 - 7.12.67 LAL 26.5.67 - 19.6.67	1 Plant Protection Technician (received training in India)	2 weeks
ALGERIA	KHATTAR 28.5.68 - 7.6.68	1 Technician - Service Intérieur de transmission (Ministry of Interior)	2 weeks
CHAD	S.E.T.E.R. (local firm) 12 days in September 1966 DUPONT 23.8.67 - 11.9.67	nil	2 weeks
ETHIOPIA	HIGGINGS 13.7.67 - 15.8.67	nil	2 weeks
INDIA	LAL 14.4.67 - 6.5.67	Posts & Telegraphs Tele-Communications	-
IRAN	KHATTAR 5.12.66 - 25.12.66 LAL 7.5.67 - 25.5.67	1 Plant Protection Technician 1 in India for training	-

p.t.o.

IRAQ		KHATTAR		2 Plant Protection Technicians	3 weeks
	5.3.68	-	12.4.68		
ISRAEL		-		MOTOROLA (local firm)	-
LIBYA		KHATTAR			
	19.4.66	-	24.4.66	nil	1 week
	22.7.67	-	25.8.67		
JORDAN		KHATTAR		Civil Aviation	-
	16.3.67	-	7.4.67		
MAURITANIA		KHATTAR			
				Ministry of Communications	1 week
	7.5.66	-	3.6.66		
		DUPONT			
	8.12.67	-	19.12.67		
MOROCCO		KHATTAR		1 Plant Protection Technician	1 week
	12.5.67	-	10.7.67		
NIGER		DUPONT			
	5.8.67	-	23.8.67	nil	3 weeks
	11.9.67	-	18.9.67		
PAKISTAN		KHATTAR		1 Plant Protection Technician	
	22.1.65	-	20.2.65		
SAUDI ARABIA		KHATTAR			
	23.11.64	-	22.12.64	nil	4 weeks
	4.1.68	-	3.3.68		
SOMALI REPUBLIC		-		nil	3 weeks

p.t.o.

SOUTHERN YEMEN		-		nil	2 weeks
SUDAN		KHATTAR		1 Plant Protection Technician and Posts and Telegraphs Telecommunications	2 weeks
SYRIAN ARAB REPUBLIC		KHATTAR		nil	2 weeks
	8.4.67	-	28.4.67		
	7.12.67	-	23.12.67		
	10.3.68	-	30.3.68		
TUNISIA		KHATTAR			
	24.4.66	-	2.5.66	1 Plant Protection Technician	-
	11.7.67	-	21.7.67		
	26.8.67	-	23.9.67		
UNITED ARAB REPUBLIC		KHATTAR		3 Plant Protection Technicians	4 weeks
	6.2.67	-	15.3.67		
YEMEN ARAB REPUBLIC		-		nil	3 weeks

APPENDIX III

UNDP/SF ASSISTED DESERT LOCUST PROJECT - REPORTING AND FORECASTING

Installation Sites of Radio Sets

L O C A T I O N S

Country	No. of sets	Mobile	No.	Fixed Stations Installed	No.	Operating Frequency	Awaiting Installation
Afghanistan	8	Kabul, Kandahar	2	Kandahar, Farah, Herat, Kabul	4	7450 - 7650	2
Algeria	5	Silet, Tindouf, Djanet	3	Silet, Algiers	2	10308	-
Chad	12	Fort-Lamy 1 Souar 1 Fada 1 Abeche 1 Salal 1	5	Fort-Lamy, Souar, Bardai, Fada Abeiche	5	5261-5465-8025-14708	2
Ethiopia	8	Diredawa	1	Asmara, Addis-Ababa, Diredawa, Makale, Condor, Dessie, Awasha	7	7450-7650-9845-12140	-
India	15	Bikaner	2	Jodhpur, Nagour, Shergar, Balotra, Barmer, Bikaner	6	4540-5020-7670-4016	7
Iran	16	Teheran, Marand, Rameshk	3	Teheran, Kazwin, Gorgan, Shiraz, Bushire Isphahan, Kerman, Jask, Chahbanar, Zahedan, Jiroft, Bandar-Abbas	12	5375	1
Iraq	12	Baghdad	2	Baghdad, Basra, Diwaniya, Mosul, Rutba	5	6410-6415	5
Israel	2	-	-	Mount-Kenan, Nizpeh-Ramon	2	VHF	-
Libya	5	Tripoli, Sebha	2	Tripoli, Bengazi, Sebha	3	9082	-
Jordan	5	-	-	Amman, Taffila, Rum Jafer Azraq	5	6846-4197-6978-5631	-
Mauritania	11	Aioun-El-Atrouss	1	Nouakchott, Rosso, Atar, Aioun-El-Atrouss Kaedi, Tidjikja, Nema, Darelbarka	8	5261-8025-12140	2
Marocco	11	Ait-Melloul	2	Rabat, Ait-Melloul, Tiznit, Bouizakarene, Taroudant, Ainchaib	6	5942	3

p.t.o.

APPENDIX III (cont'd)

Country	No. of sets	Mobile	No.	Fixed Stations Installed	No.	Operating Frequency	Awaiting Installation
Niger	13	Zinder, Agades 2 2 In Abangarit 2 Nguimi 1	7	Zinder, Agades, In Abangarit, Termit	4	5261-8025-14708	2
Pakistan	7	-	-	Karachi, Sukhar, Rawalpindi, Pasni, Panjgour	5	6150	2
Saudi Arabia	20	-	-	Riyadh, Jeddah (2), Jisan, Hail, Sakaka	6	6835-7405	14
Somalia	17	Mogadiscio 2 Hargeisa 2	4	Mogadiscio, Chisimar, Hargeisa, Berbera, Bandercassim, Baidoa, Cardo, Burao, Elbur-Beletuen	9	6440-7650-9485-12140	4
South Yemen	12	-	-	Aden, Al-Mukaila, Meifa-Hajr, Heifal, Wahidi, Ahwar, Alked, Meskayras, Diala, Lawdar, Nisab, Naqub, Al-Sawn	12	6440-7650-9845-12140	-
Sudan	10	Red Sea	2	Khartoum, El-Fashir, Elobeid, Sedari, Kasala, El-Damer + 2 stand by	8	4985-5430-5470-5935	-
Syria	5	Damascus	1	Damascus, Palmyra	2	6280-6350	2
Tunisia	5	Tunis	1	Tunis, Gerba-Island, Cafsa	3	5718-7357.5-9295 and 10400	1
U.A.R.	16	Cairo, Abrak Chalatine, Fawakhir, Baramia-Kharit	6	Cairo, Qena, Assouna, Al Ghardaka, Marsalam, Suez	6	5780-6850	4 (2 used for FAO trainees)
Yemen	6	-	-	Not yet installed	-	5700-5800-6500-8000	6
TOTALS	221		44		120		57

NOTE

2 sets were ordered for Afghanistan (not yet included)
3 sets will be ordered for Algeria

APPENDIX IV

Please complete in duplicate and send to: Desert Locust Specialist FAO, Rome, at earliest	Country: Currency Unit:

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

Questionnaire on Expenditure and Resources for Desert Locust Control

ITEM	Expenditure in 1000's of National Currency Unit 19 or 19 /19 (if other than calendar year specify months from to)
I. GOVERNMENTAL EXPENDITURE FOR DESERT LOCUST CONTROL	
A. Funds specifically appropriated for locust control of which expended:	
(i) Personnel:	
No. of Technical staff	
No. of General Services staff	
(ii) Equipment:	
No. of spraying and dusting machines	
No. of vehicles	
- Light	
- Heavy	
No. and type of aircraft	
(iii) Insecticides:	
Type	
Quantity	
(iv) Transportation	
(v) Operational cost	
(vi) Paid labour	
(vii) Unpaid labour (man/days)	
B. Estimated expenditure by other departments called upon to assist in anti-locust campaigns	
(i) Personnel:	
No. of Technical staff	
No. of General Services staff	

p.t.o.

APPENDIX IV (cont'd)

ITEM	Expenditure in 1000's of National Currency Unit 19 or 19 /19 (if other than calendar year specify months from to)
(ii) Equipment: No. of spraying and dusting machines No. of vehicles - Light - Heavy No. and type of aircraft (iii) Insecticides: Type Quantity (iv) Transportation (v) Operational cost (vi) Paid labour (vii) Unpaid labour (man/days)	
II. INTER-GOVERNMENTAL ASSISTANCE A. To foreign governments: 1. Country: (i) Materials and Services (ii) Cash 2. Country: (i) Materials and Services (ii) Cash 3. Country: (i) Materials and Services (ii) Cash B. From foreign governments or agencies: 1. Country or Agency: (i) Materials and Services (ii) Cash 2. Country or Agency: (i) Materials and Services (ii) Cash 3. Country or Agency: (i) Materials and Services (ii) Cash	

APPENDIX V

(p. 44 to 50)

ANTICIPATED ADDITIONAL REQUIREMENTS OF OUTSIDE ASSISTANCE REQUIRED BY GOVERNMENTS AND REGIONAL BODIES FOR 1968/69

(costs expressed in US Dollar Values)

SUMMARY	PERSONNEL		VEHICLES		RADIOS		SPRAYING EQUIPMENT		INSECTICIDES		AIRCRAFT		MISCELLANEOUS SERVICES		TOTAL
	m/mos	Cost	No.	Cost	No.	Cost	No.	Cost	Tons	Cost	Flying hours	Cost	Details	Cost	
SOUTH-WEST ASIA	-	-	125	375,000	10	25,000	50	5,000	175	175,000	spares	60,000		60,000	700,000
NEAR EAST	144	240,000	51	228,000	98	121,000	106	22,000	746	746,000	2,000	200,000		142,000	1,699,000
EASTERN AFRICA (DLCO-EA)	72	156,000	35	105,000	26	65,000	32	6,400	210	210,000	2,100	210,000		210,000	962,400
WESTERN AFRICA (OCLALAV)	-	-	50	150,000	20	60,000	30	6,000	120	120,000	2,000	200,000		75,000	757,000
NORTH-WEST AFRICA	180	171,000	48	148,000	12	35,000	27	11,000	190	190,000	500	50,000		51,000	510,000
	396	567,000	309	1,006,000	166	306,000	245	50,400	1,441	1,441,000	6,600	720,000		538,000	4,628,400

ANTICIPATED ADDITIONAL REQUIREMENTS OF OUTSIDE ASSISTANCE REQUIRED BY GOVERNMENTS AND REGIONAL BODIES FOR 1968/9
(costs expressed in US Dollar Values)

SOUTH-WEST ASIA REGION

	PERSONNEL		VEHICLES		RADIOS		SPRAYING EQUIPMENT		INSECTICIDES		AIRCRAFT		MISCELLANEOUS SERVICES		TOTAL
	m/mos	Cost	No.	Cost	No.	Cost	No.	Cost	Tons	Cost	Flying Hours	Cost	Details	Cost	
AFGHANISTAN	NIL	NIL	5	15,000	NIL	NIL	NIL	NIL	25	25,000	NIL	NIL	-	10,000	50,000
INDIA	NIL	NIL	50	150,000	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	15,000	165,000
IRAN	NIL	NIL	50	150,000	10	25,000	50	5,000	150	150,000	NIL	NIL	NIL	20,000	350,000
PAKISTAN	NIL	NIL	20	60,000	NIL	NIL	NIL	NIL	NIL	NIL	spares	50,000	NIL	15,000	135,000
	NIL	NIL	125	375,000	10	25,000	50	5,000	175	175,000	spares	50,000	NIL	60,000	700,000

ANTICIPATED ADDITIONAL REQUIREMENTS OF OUTSIDE ASSISTANCE REQUIRED BY GOVERNMENTS AND REGIONAL BODIES FOR 1968/9
(costs expressed in US Dollar values)

NEAR EAST REGION	Personnel		Vehicles		Radios		Spraying Equipment		Insecticide		Aircraft		Miscellaneous Services		Total
	Man/ months	Cost	No.	Cost	No.	Cost	No.	Cost		Cost	Flying hours	Cost	Details	Cost	
BAHREIN	6	12,000	2	6,000	2	5,000	2	400	BHC Dield.	20,000				28,000	74,400
IRAQ															
JORDAN			6	18,000			4	1,600	Dield.	25,000				10,000	55,800
KUWAIT															
LEBANON															
QATAR	6	12,000	2	6,000	2	5,000	2	400	BHC Dield.	20,000 3,000				24,000	70,400
OMAN	12	24,000	6	18,000	4	10,000	6	1,200	Dield. Bait	10,000 5,000				10,000	78,200
SAUDI ARABIA	72	144,000			10	25,000	50	10,000	Dield.	300,000	800	80,000		50,000	609,000
SOUTHERN YEMEN	24	48,000	10	30,000	5	12,500	10	2,000		25,000				10,000	127,500
SUDAN			15	120,000	50	1,000	16	3,200	Dield. Acrod.	300,000	800	80,000			504,200
SYRIA															
TURKEY															
UAR					25	62,500			Dield. Acred.	15,000	400	40,000			117,500
YEMEN			10	30,000			10	2,000	Dield. BHC	20,000				10,000	62,000
TOTAL	120	240,000	51	228,000	98	121,000	106	22,000		746,000	2000	200,000		142,000	1,699,000

ANTICIPATED ADDITIONAL REQUIREMENTS OF OUTSIDE ASSISTANCE REQUIRED BY GOVERNMENTS AND REGIONAL BODIES FOR 1968/9
(costs expressed in US Dollar Values)

EASTERN AFRICA (DLCO-EA)

	PERSONNEL		VEHICLES		RADIOS		SPRAYING EQUIPMENT		INSECTICIDES		AIRCRAFT		MISCELLANEOUS SERVICES		TOTAL
	m/mths	Cost	No.	Cost	No.	Cost	No.	Cost	Litres	Cost	Flying Hours	Cost	Details	Cost	
AFAR AND ISA	1x12	24,000	4	12,000	2	5,000	2	400	4,000	20,000	300	30,000		30,000	121,400
ETHIOPIA	1x12	30,000	8	24,000	8	20,000	12	2,400	10,000	50,000	600	60,000		60,000	246,400
KENYA	1x12	30,000	8	24,000	4	10,000	4	800	8,000	40,000	NIL			NIL	104,800
SOMALIA	1x12	24,000	8	24,000	8	20,000	8	1,600	10,000	50,000	600	60,000		60,000	239,600
TANZANIA	1x12	24,000	4	12,000	2	5,000	3	600	5,000	25,000	300	30,000		30,000	126,600
UGANDA	1x12	24,000	3	9,000	2	5,000	3	600	5,000	25,000	300	30,000		30,000	123,600
TOTAL:	6x12	156,000	35	105,000	26	65,000	32	6,400	42,000 (=210tns)	210,000	2100	210,000		210,000	962,400

ANTICIPATED ADDITIONAL REQUIREMENTS OF OUTSIDE ASSISTANCE REQUIRED BY GOVERNMENTS AND REGIONAL BODIES FOR 1968/9
(costs expressed in US Dollar Values)

WEST AFRICA REGION

	PERSONNEL		VEHICLES		RADIOS		SPRAYING EQUIPMENT		INSECTICIDES				MISCELLANEOUS SERVICES		TOTAL
	m/mths	Cost	No.	Cost	No.	Cost	No.	Cost	Tons	Cost	Flying Hours	Cost	Details	Cost	
OCLALAV COUNTRIES: Cameroons, Chad, Ivory Coast, Mali, Mauritania, Niger, Senegal, Upper Volta; OTHER COUNTRIES: Gambia, Ghana, Nigeria, Sierra Leone	NIL	NIL	50	150,000	20	60,000	30	6,000	120	120,000	2,000	200,000	spares	75,000	611,000
Mauritania (see below)	60	51,000	8	28,000	2	5,000	7	7,000	40	40,000	NIL	NIL	Misc.	15,000	146,000
	60	51,000	58	178,000	22	65,000	37	13,000	160	160,000	2,000	200,000		90,000	757,000

NOTE: In addition to the estimates for the whole region presented by OCLALAV, the Government of Mauritania submitted separate estimates as detailed overleaf.

ASSISTANCE REQUESTED BY GOVERNMENT OF MAURITANIA FOR STRENGTHENING LOCUST CONTROL AND ORGANIZATION OF LOCAL SURVEYS

			ANNUAL COST	
1.	PERSONNEL			
	Locust Control Officer	12 months	$ 24,000	
	Local co-ordinator - salary supplement	"	2,400	
	Local Transport Manager (mechanic)	"	2,400	
	4 Drivers	48 months	4,800	
	Casual labour		6,400	40,000
	TRAVEL			
	Daily subsistence		10,000	
	Air travel within Mauritania		1,000	11,000
2.	SUPPLIES AND EQUIPMENT			
	7 land rovers - $21,000: 1 heavy duty vehicle - $7,000		28,000	
	7 exhaust nozzle sprayers - $1,400: Survey equipment - $5,600		7,000	
	2 mobile radios		5,000	
	Insecticides - 40 tons		40,000	80,000
3.	OPERATIONAL COSTS			
	POL for 30,000 k.m.		8,000	
	Maintenance		2,000	
	Incidentals		5,000	15,000
	TOTAL:			$ 146,000

GOVERNMENT WILL PROVIDE

1.	PERSONNEL	
	1 co-ordinator, 6 locust officers, 4 drivers, 1 mechanic, office personnel and other supporting staff	248,000
	SUPPLIES AND EQUIPMENT	
	Use of: 3 land rovers, 9 radios, survey equipment, camping equipment, control equipment	15,000
	ACCOMODATION	
	Office accomodation and utilities; 9 warehouse, garage, workshop, tools and maintenance costs	12,000
	MISCELLANEOUS SERVICES	25,000
	TOTAL:	$ 300,000

NOTE: Above costs calculated on basis of 12 months but assistance required for the years 1969, 1970, 1971, as it will take 3 years to organise surveys on a sound basis.

ANTICIPATED ADDITIONAL REQUIREMENTS OF OUTSIDE ASSISTANCE REQUIRED BY GOVERNMENTS AND REGIONAL BODIES FOR 1968/9
(costs expressed in US Dollar Values)

NORTH WEST AFRICA REGION

	PERSONNEL		VEHICLES		RADIOS		SPRAYING EQUIPMENT		INSECTICIDES		AIRCRAFT		MISCELLANEOUS SERVICES		TOTAL
	m/mths	Cost	No.	Cost	No.	Cost	No.	Cost	Tons	Cost	Flying Hours	Cost	Details	Cost	
ALGERIA, LIBYA, MOROCCO, TUNISIA	120	120,000	40	120,000	10	30,000	20	4,000	150	150,000	500	50,000	POL	36,000	510,000
	120	120,000	40	120,000	10	30,000	20	4,000	150	150,000	500	50,000	POL	36,000	510,000

APPENDIX VI

LIST OF WORKING PAPERS

PL:DLC/12/1	Progress Report on the UNDP(SF) Extended Desert Locust Project, 1.7.66 - 30.4.68
PL:DLC/12/1-Supp. 1	The UNDP-Supported Desert Locust Project Interim Progress Report (1.5.68 to 31.8.68)
PL:DLC/12/2	Measures Taken by FAO in the 1968 Desert Locust Emergency and Considerations for Future Action
PL:DLC/12/3	Annual Report of the Desert Locust Information Service for the Period July 1967 to June 1968 inclusive
PL:DLC/12/4	Some Proposals for the Modification of the Service Offered by the Desert Locust Information Service
PL:DLC/12/5	The Upsurge of the Desert Locust: a Review of the Period January 1967 to May 1968
PL:DLC/12/6	International Anti-Locust Campaign in the Arabian Peninsula During 1967/68 and Plans for Future
PL:DLC/12/7	Review of the Desert Locust Situation for the Period September 1967 to August 1968 Inclusive
PL:DLC/12/8	Data on Control Operations Undertaken Against the Desert Locust in Various Countries