

ORGANISATION DES NATIONS UNIES POUR  
L'ALIMENTATION ET L'AGRICULTURE



ORGANIZACION DE LAS NACIONES UNIDAS  
PARA LA AGRICULTURA Y LA ALIMENTACION

FOOD AND AGRICULTURE ORGANIZATION  
OF THE UNITED NATIONS

Via delle Terme di Caracalla, 00100 - ROME

Cables: FOODAGRI ROME

Telex: 61181 FOODAGRI

Telephone: 5797

Ref.

DESERT LOCUST SITUATION SUMMARY  
AND FORECAST

No. 1      SEPTEMBER - EARLY OCTOBER 1978

SUMMARY

Gregarious breeding was in progress in India, Pakistan, Ethiopia and Sudan. Numerous swarms were produced in India, Pakistan and Ethiopia, and swarms were also present in northern Somalia, Sudan and one reached Saudi Arabia in early October. Control operations were in progress in all these countries but some escapes must be expected. These will move into winter-spring breeding areas and are likely to be on a larger scale than at the beginning of the 1977-78 winter-spring breeding season. The main threats in the continued development of the plague are of breeding in inaccessible areas in the Horn of Africa and northern Ethiopia, of breeding along the coastal plains bordering both sides of the Red Sea and Gulf of Aden and of breeding in coastal areas and interior valleys in the Mekran of Pakistan and southeastern Iran.

In the South West Asia second generation breeding over an area of about 35,000 square kilometres in India and Pakistan was coming to an end. Despite the application of over 210 tons of BHC dust and 125,000 litres of liquid insecticide, large numbers of adults were produced, mainly from border areas difficult of access. Over 170 reports of swarms of the second generation were reported by mid-October.

In the Near East a mature swarm reached the Tihama of Saudi Arabia in early October. Numbers of scattered adults increased on the Tihamas of Saudi Arabia and the Yemen Arab Republic and congregans breeding was in progress on the northern Tihama of Yemen.

In Eastern Africa swarms which had been held up along and to the south of the coastal escarpment in northeastern Somalia, started to move southwest as the northeasterly wind became established. In northern Ethiopia there was widespread breeding, particularly in the valleys of the Tacazze and Blue Nile, and there were smaller infestations east of Makalle and in Dankalia. Despite ground and aerial control operations, numerous swarms were produced, some of which started to move southeast in late September. In Sudan three mature

./.

swarms and high density populations of mature adults were found in widely scattered areas of Kassala, Nile, Northern and Eastern Kordofan Provinces and breeding was in progress in all these areas. Control was in progress.

In West Africa groups of adults were found at three localities in Air and Tamesna of Niger and congregans breeding was in progress at one locality in Tamesna.

No locusts were reported from North West Africa.

DESERT LOCUST SITUATION SEPTEMBER - EARLY OCTOBER 1978

SOUTH WEST ASIA

INDIA

Ecological conditions There was a little rain in west Rajasthan in early September and again in the last week of the month. Conditions had become unfavourable for breeding in the Scheduled Desert Area by the end of September, but on 5 October there was widespread heavy rain north of Jaisalmer.

Hoppers Second generation monsoon breeding was coming to an end. The gross area infested was estimated at between 17,000 and 25,600 square kilometres and was confined to Jaisalmer and Pokaran tehsils of Jaisalmer district, where 133 localities were infested, and to Sheo tehsil of Barmer district, where 51 localities were infested. There were also hopper infestations in the sparsely populated border area. In the second half of September the infestations were mainly of late instar hoppers and fledglings.

Adults The first swarm of the second generation was reported in the Mohan-garh area of Jaisalmer district on 20 September. It measured 2 km x 2 km. By the end of the month swarms, swarmlets and concentrations of immature adults were reported from 30 localities in Jaisalmer district, 12 in Jodhpur district, 14 in Bikaner district and 4 in Barmer district. In early October there were reports of 5 or 6 swarms moving north-east in Jaisalmer district.

Control measures Ground and aerial control operations continued throughout the month. By the end of the month 109 localities in Jaisalmer district and 40 in Barmer district had been cleared of late instar hoppers and fledglings and control operations were continuing in a further 24 localities in Jaisalmer district and 20 localities in Barmer district. Aerial spraying operations were also in progress against the hopper infestations in the sparsely populated desert areas along the Indo-Pakistan border. In the first half of the month 75.2 tonnes of 10% BHC dust were used by ground units and 3,826 litres of 30% Aldrin E.C. and 1,951 kg. of Malathion ULV were applied by aircraft against hoppers. In this second half of September, aerial and ground units applied a further 43 tonnes of 10% BHC dust against hoppers, and over 8,000 litres of 30% Aldrin and Malathion ULV against adults.

PAKISTAN

Ecological conditions No rain was reported in the summer breeding area in the first half of September. On the evening of 5 October there was widespread and heavy rainfall in the Cholistan and Mirpur Mathelo desert areas.

Hoppers Second generation monsoon breeding was in progress over a gross infested area of 17,000 square kilometres in the Tharparkar, Khipro, Nara and Cholistan deserts. Hatching, which had commenced on 21 August, continued up till 23 September. By 23 September, over 18,000 bands had been located.

Adults In the first half of September there were 25 reports of loose mature swarmlets and one mature swarm, measuring 3 km x 1 km, representing remnants of the first generation from the Tharparkar, Khipro and Nara desert areas.

On 25 September the first immature swarms of the second generation reached Pakistan from the east. By 30 September another 24 immature swarms were located in the Rahimyar Khan, Daharki (2802N, 6932E), Khipro and Chor sectors. Most were in areas where hopper control had been undertaken earlier. Although most swarms were less than 5 sq. km. in area, one swarm seen on 29 September was 200 sq. km. in area. From 1-19 October a further 109 swarms and 84 groups (adult concentrations less than 1 square mile in extent) were detected in Cholistan, Daharki, Khipro, Chor and Diplo areas, most of which were seen in western Cholistan. However, on 8 October a swarm measuring 125 sq. km. was seen north of Khipro. This split into at least 7 portions, at least two of which reached cultivated areas in Mirpur Khas, Hyderabad and Thatta districts.

Control measures Intensive ground and aerial control operations were conducted against both hopper infestations and swarms. Ground operations using BHC dust and exhaust nozzle sprayers were conducted against areas of more scattered hoppers, whilst aerial spraying was used against denser and less accessible areas of hoppers, against laying swarms of the first generation and the immature swarms of the second generation. By 23 September some 18,000 hopper bands were reported to have been destroyed, 591 sq. km. of hatchlings were cleared in Tharparkar and two dieldrin barriers, one 80 km. long, the other 15 km. long, were laid down from the air in Cholistan to kill hopper bands marching north across the border. All 25 immature swarms reported in late September were sprayed and control continued in early October. Up to the end of September 91.6 tons of 12.5% BHC dust were used against the thinner density hopper infestations and 112,000 litres of dieldrin and fenitrothion against the denser hoppers and swarms.

No locusts were reported from Afghanistan or Iran.

#### NEAR EAST

##### SAUDI ARABIA

Ecological conditions On the Tihama the areas between Lith and Qunfidah, and around Jizan, conditions were favourable for breeding.

Adults A 3 sq. km. mature swarm was seen at Jeddah on the evening of 7 October, having come from the west, but it dispersed by the 9th.

In September survey teams found adults at densities of 2 - 20 per hectare over a total area of 800 sq. km. between Lith and Shaqqah al Yamaniah. Laying was observed in one area of  $\frac{1}{2}$  sq. km. by late September; large numbers of solitary adults were reported from the Qunfidah area.

Control measures were taken against adults in the Qunfidah area.

YEMEN ARAB REPUBLIC

Ecological conditions - Heavy rain fell on the Tihama, where conditions were favourable for breeding.

Adults - In September scattered adults were reported from seven localities between Al Jarr (1620N, 4254E) and Al Mansuriyah (1441N, 4318E). In October copulating and laying adults were found at densities of up to 500 per square kilometre in Wadis Habil and Hayran.

Hoppers - In September small numbers of hoppers were found with the adults in the Tihama, but in October third-fifth instar green hoppers were found at densities of up to 10 per plant in Wadis Habil and Hayran along with fledglings.

PEOPLE'S DEMOCRATIC REPUBLIC OF YEMEN

Ecological conditions - Conditions were very favourable for breeding in the interior but unfavourable in coastal areas, except in cultivations.

Hoppers - Congregans breeding was in progress over an area of about 80 sq. km. in Wadi Nisab (1435N, 4627E) and some groups were observed. Small numbers of hoppers were also present in the Masip (1335N, 4653E), Ahwar (1330N, 4643E) and Murwan (1330N, 4618E) areas.

Adults - Immature and mature adults were present at densities of 40 - 50 per hectare over an area of 10 sq. km. in the Nisab area. Low density adults were also seen at Dhalla, Dathina, Abeyan and Murwan.

United Arab Emirates were reported clear. No reports were received from Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Oman and Qatar.

EASTERN AFRICA

SOMALIA

Ecological conditions - Southwesterly winds were established over most of the Somali peninsula for most of September, but northeasterly winds developed in the afternoon in the north. In late September and early October the southwesterly wind weakened and the northeasterly started to penetrate further south, on 12 October reaching as far south as 2°N. Afternoon showers fell along the northern escarpment and southwards as far as about 9°N during September and 8°N in early October. Vegetation was green in the Nogal Valley.

Adults On 8 September a thin density immature swarm was reported at Offein (1045N, 4930E). A swarm was seen at Las Dawa (1025N, 4907E) on 18-20 September. There were also unconfirmed reports of swarms from Carin (1058N, 4912E) and Scusciuban (1016N, 5013E) between 10 and 20 September. There was an unconfirmed report of a swarm in the Daror Valley on 23 September said to be moving towards Ururcar (1018N, 4945E). By late September the swarms were beginning to mature for there were three reports of mixed maturity swarms from the Scusciuban area on 24 September, two reports of swarms from Rako (0939N, 4947E) on 25 September and a further three reports from Rako on 26 September. Scattered adults were also reported between Godmo (0935N, 4955E) and Las Aharro (0950N, 4929E) on 30 September.

On 4 October a swarm of mixed maturity measuring 15 x 10 square miles was located 80 kilometres northwest of Gardo. This swarm was tracked as it moved southwest for the next 10 days and its remnants were last reported southwest of Las Anod, about 40 kilometres north of the Ethiopian border. A medium density swarm of mixed maturity measuring 4 x 2 sq. km. was seen 90 km. northeast of Gardo on 4 October. Scattered adults were seen at Dalmadot (0958N, 5005E) and a settled swarm was seen between Buran (1012N, 4847E) and Hadaftimo (1041N, 4905E).

Hoppers No hoppers were reported.

Control measures 4,000 litres of 10% BHC were applied by air against swarms in the Rako area between 25 and 30 September; 8,000 litres of 15% BHC were applied by air and 400 litres of 20% dieldrin by ground against the large swarm first seen on 4 October. Large numbers of dead locusts were reported in sprayed areas but by 14 October the remnants were said to have been controlled north of the Ethiopian border.

## ETHIOPIA

Ecological conditions Low clouds associated with the Intertropical Convergence Zone were reported from the highlands up to mid-October. In late September and early October low level fronts marking the boundary between northeasterly winds, southwesterlies and westerlies were detected on many days over Ethiopia.

Hoppers Widespread breeding was reported from Wollo, Tigre, Gojjam and Showa Provinces in northern Ethiopia during September. Most infestations were in the valleys of the Blue Nile and Tacazze. In addition, there was an infestation of fifth instar hoppers and fledglings over an area of 8 sq. km. east of Makalle in early September; first and second instar hoppers were reported 40 km. south of Tessenei near the Sudan border in Eritrea in mid-September and fledglings were reported from just south of Lake Giulietti on 20 September.

No breeding was reported from Dankalia, the Railway Area or the Ogaden up till mid-October.

Adults In early September there were three reports of swarms of unknown maturity in northern Ethiopia. A thin swarm was reported near Saganeiti (1503N, 3912E) on 4 September, another swarm was reported from Eritrea on 7 September and a third swarm was located on 13 September near Makalle. Later in the month there were several reports of the new summer generation which indicated that a south-easterly movement was in progress.

On 23 September a pink swarm measuring 200 sq. km. was sighted near Avergalle moving southeast. A second was seen on 26 September and a third, thin-medium density, swarm measuring  $2 \times \frac{1}{2}$  km. was present near Saca in the Tacazze Valley on 29 September. On 27-28 September several pink swarms were seen between Makalle and Tendaho and on 30 September further swarmlets were seen in Dankalia. On 4 October an immature swarm measuring  $10 \times 5$  km, was reported in the Bora area (1258N, 3910E) and on 6 October there was a report of a swarm measuring  $10 \times 9$  km. from Nebeg Fej (1250N, 3910E). There were further reports of immature large thin density swarms from the Samre, Fenaroa, Bora and Sokota areas and some damage to sorghum was reported. Aerial surveys from off Tendaho (1142N, 4057E) westwards to Combolcia, southeast to Lake Abbé and south to Gauani on 2 - 5 October failed to locate any adults.

Control measures During September large scale dusting operations against hopper infestations were undertaken by farmers in many localities in Showa and Wollo which could not be sprayed from the air because of low cloud. By 20 September 31,000 kg. of 2.6% BHC had been lifted to the infested areas by helicopter. Aircraft sprayed 3,248 litres of 20% dieldrin against hopper infestations east of Makalle and in the Tacazze Valley and Fenaroa-Avergalle areas between 7 and 18 September. On 20 September 293 litres of dieldrin were aeri ally applied against the fledglings south of Lake Giulietti and insecticides were applied to Tessenei to control the hoppers reported to the south. The swarm seen near Makalle was sprayed on 13 September, that seen in the Tacazze Valley on 26 September was sprayed with 450 litres of fenitrothion and that near Saca with 200 litres of malathion on 29 September. Aerial control was also conducted against several swarmlets in Dankalia on 30 September.

## SUDAN

Ecological conditions Conditions were favourable for breeding in many parts of the summer breeding area.

Adults A laying swarm measuring 6 square miles was reported at Abu Sinoon (1725N, 3425E) on 10 September and a copulating swarm measuring  $10 \times 2$  miles was seen at Siedon (1719N, 3426E) on 19 September. A third mature swarm was reported at Dagain (1600N, 3605E) in Kassala Province on 18 October. Higher density populations of adults and egg fields were discovered on 19 September in the Hassaniya area of Nile Province between latitudes 1640N and 1700N, and longitudes 3230E and 3235E. Large numbers of adults were also reported northwest of EL Dueim between latitudes 1420N and 1440N, and longitudes 3140E and 3150E in late September.

In the first week of October dense populations of mature adults were found within an area estimated at 600 square miles around Hamashkorib (1710N, 3642E). Medium density mature adults were also found over areas totalling 6,900 hectares between latitudes 1705N and 1830N, and longitudes 3143E and 3232E up till 22 October.

Hoppers Large numbers of hoppers were reported with the adults northwest of Ed Dueim in late September. Widespread hopper infestations were discovered in Kassala, Nile and Northern Province during October. In the first week of October hatchings and first to third instar hoppers were found over an area estimated at 600 square miles in the Hamashkorib area of Kassala Province (1710N, 3642E). First to third instar bands were found over areas totalling 2125 ha. between latitudes 1630N and 1807N, and longitudes 3205E and 3340E up till 18 October, and first to fourth instar bands were found over areas totalling 6,900 ha. between latitudes 1705N and 1830N, and longitudes 3143E and 3232E, up till 22 October.

Control measures Control operations were in progress in all the infested areas.

No locusts were reported from Djibouti, Kenya, Tanzania or Uganda.

#### WEST AFRICA

##### NIGER

Ecological conditions Above average rain was reported from Air during September.

Adults In September mature adults were found around Arlit (1855N, 0739E) at densities of 500-1000 per hectare over an area of 2000 hectares, and in areas of green vegetation measuring 30-250 hectares at Tibali (1852N, 0732E) at densities of 400 per hectare. Egg-pods at densities of 1-2 per square metre were discovered over an area of 700 hectares at Akokan (1745N, 0758E). Further laying was reported over an area of 66 hectares by adults at densities of up to 2500 per hectare at Akokan up till 20 October.

Hoppers In Tamesna in September second and third instar hoppers were present at densities of two to three per square metre over an area of 400 hectares at Ekadmalen (1851N, 0550E). By 20 October this infestation comprised second to fifth instar hoppers and fledglings at densities of 3 to 15 per square metre over an area of 1,400 hectares.

Control measures By 20 October control measures had been undertaken over an area of 1,000 hectares at Ekadmalen.



MALI

Ecological conditions Good rainfall was reported in the Adrar des Iforas and the Tilemsi Valley in September.

Locusts Only scattered locusts were seen on surveys, details of which are awaited.

MAURITANIA

Ecological conditions Above average rains were reported in the south and southeast.

Locusts Only scattered locusts were seen on surveys, details of which are awaited.

No locusts were reported from Cameroun, Chad or Senegal.

NORTH WEST AFRICA

No locusts were reported from Algeria, Libya, Morocco or Tunisia.

FORECAST FOR NOVEMBER - DECEMBER 1978

In South West Asia it is possible there could be a third generation of breeding in areas of India and Pakistan which received rainfall in early October. Most escapes from the summer breeding area are likely to move west and reach the Mekran of Pakistan and southeast Iran. The extent of this movement is difficult to predict and some swarms may reach Oman, the United Arab Emirates and even eastern Saudi Arabia. It is possible that some swarms, probably dispersed, may reach the Gulf of Aden and Red Sea areas. Some swarms may remain to overwinter in the Punjab and adjacent areas of India and Pakistan.

In the Near East breeding will occur along the Tihamas of Saudi Arabia and Yemen Arab Republic and in coastal areas of the People's Democratic Republic of Yemen throughout the period. It will almost certainly lead to the production of numerous hopper bands and some swarms unless control operations are mounted in all the infested areas. Further immigration on to the Tihama from the summer breeding areas in Sudan and northern Ethiopia is likely and it is also possible from India and Pakistan.

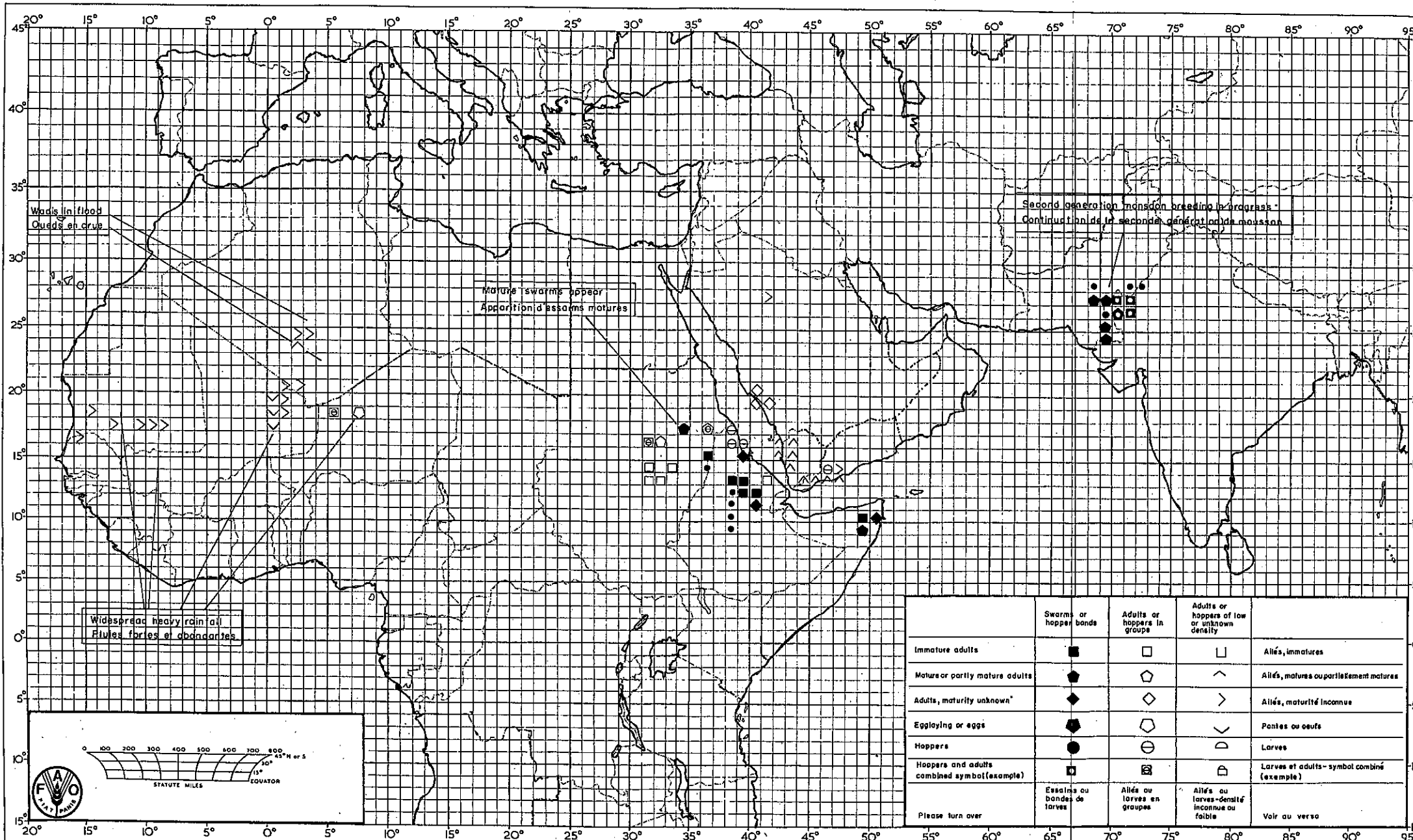
In Eastern Africa any swarms which have escaped control in northern Somalia will move southwest across the Somali peninsula, mature and lay in areas where rain has fallen. As rainfall appears to have been heavy and widespread in the northern part of the 'Short Rains' breeding area, most breeding will occur then but some swarms may reach the Wadi Shebeli and perhaps the Juba before dying. Some of the swarms produced on the summer rains in northern Ethiopia are likely to move southeast across Dankalia, the Railway Area and into the Ogaden and are likely to start to breed in late October or early November. Others are likely to move northeast into the Red Sea coastal areas of northern Ethiopia and Sudan and some may cross the Red Sea to the Tihamas of Saudi Arabia and Yemen Arab Republic. Escapes from the late summer breeding in the Sudan will also move to the Red Sea and some may cross to Arabia.

In West Africa some small hopper bands may form in areas of green vegetation in Air and Tamesna of Niger which may have escaped detection by survey teams. Further west numbers appear to be too low to give rise to gregarious populations. No invasion by swarms from the east is now likely.

In North West Africa numbers of adults are likely to increase in southern Algeria and Libya as they migrate northwards from the breeding areas south of the Sahara. No invasion by swarms from the east is now likely.

It is regretted that the map which was to have accompanied this Summary and Forecast could not be prepared in time as there has been a delay in printing the Base Map.

Rome  
25 October 1978



|  | Swarms or hopper bands      | Adults or hoppers in groups  | Adults or hoppers of low or unknown density    |  |
|--|-----------------------------|------------------------------|--|--|
| Immature adults                              | ■                           | □                            | ◻  | Alliés, immatures                            |
| Mature or partly mature adults               | ●                           | ◐                            | ◑  | Alliés, matures ou partiellement matures     |
| Adults, maturity unknown*                    | ◆                           | ◇                            | ◇  | Alliés, maturité inconnue                    |
| Egglaying or eggs                            | ●                           | ◐                            | ◑  | Paniers ou oeufs                             |
| Hoppers                                      | ●                           | ◐                            | ◑  | Larves                                       |
| Hoppers and adults combined symbol (example) | ◐                           | ◑                            | ◑  | Larves et adultes - symbol combiné (exemple) |
| Please turn over                             | Essaims ou bandes de larves | Alliés ou hoppers en groupes | Alliés ou hoppers - densité inconnue ou faible | Voir au verso                                |