

# Africa

## DISASTERS

### Africa Insect Infestation

Morocco  
Algeria  
Tunisia  
Chad  
Niger  
Mali  
Senegal/Gambia  
Mauritania  
Cape Verde  
Sudan  
Ethiopia

### Benin Epidemic

### Benin Floods

### Burkina Faso Floods

### Burundi Displaced Persons

### Guinea Bissau Epidemic

### Lesotho Floods

### Madagascar Drought

### Malawi Food Shortage

### Mali Epidemic

### Mauritania Epidemic

### Mozambique Civil Strife

### Niger Drought

### Niger Floods

### Nigeria Accident (Toxic Waste Incident)

### Somalia Civil Strife

### South Africa Food Shortage

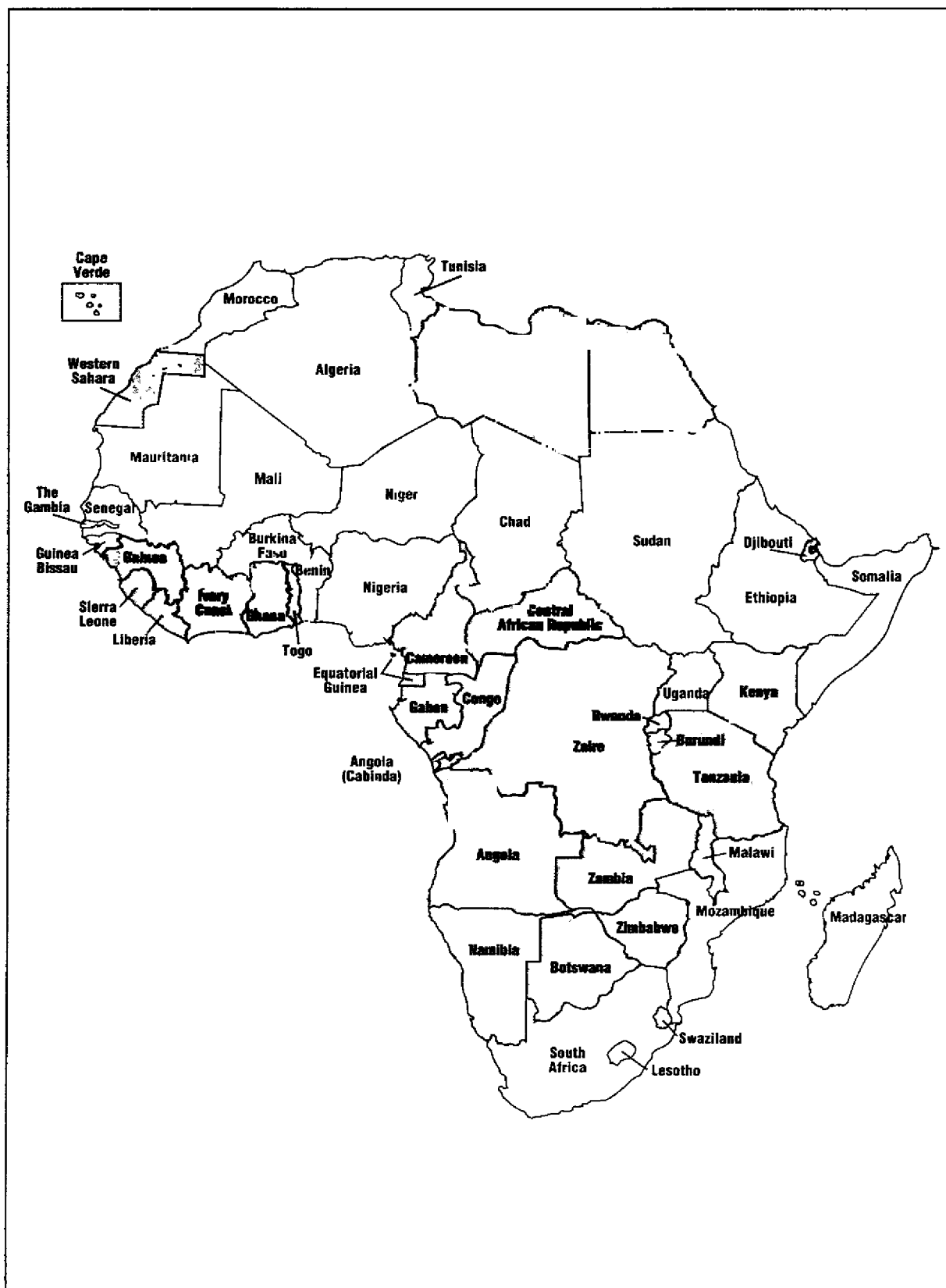
### Sudan Civil Strife

### Sudan Epidemic

### Sudan Floods

### Uganda Displaced Persons

### Uganda Droughts



# Overview of the Desert Locust Plague

*The year 1988 marked a turning point in the fight against desert locusts. As inadequately controlled upsurges gave rise to a generalized plague in northwestern Africa, West Africa, portions of East Africa, and the Arabian peninsula, most experts felt that an additional five to seven years of extensive control campaigns might be necessary to stem the plague.*

*Fortunately, an unprecedented outpouring of human and material resources resulted in a very successful control program. In addition to the timely inputs, weather finally worked in favor of the containment effort. For example, the large-scale movement of locusts into the Atlantic in the fall, the lack of early rains along the Red Sea coast of Sudan, and the absence of winds bringing locusts into the Horn contributed to the success of the campaign.*

*A major reason for the effectiveness of the control program was the establishment by A.I.D. Administrator Alan Woods of an intra-agency Desert Locust Task Force (DLTF) in June 1988. Chaired by OFDA and staffed with representatives from A.I.D.'s Africa and Asia/Near East bureaus, the DLTF was exclusively dedicated to ending the locust plague. The efforts of the DLTF--operating under OFDA emergency procurement authority to purchase and ship pesticides and radio equipment, rent aircraft, and provide other critical inputs--combined with those of the FAO and other donors who provided equally unprecedented levels of human and material assistance, made the critical difference*

## **MOROCCO**

Desert locusts entered Morocco in late 1987 for the first time in 20 years. At the same time, locusts were hatching in northern Mali, southern Algeria, and Mauritania. By October, massive swarms were moving northwest across the Sahara on a broad front entering western and southeastern Algeria and then moving into eastern Morocco. Soon after the first sightings, additional swarms began arriving from northern Mauritania and Western Sahara.

On Nov. 4, 1987, the Government of Morocco (GOM) requested USAID/Rabat help with the effort to control the locusts migrating into Morocco. A disaster declaration was issued on the same date. OFDA worked with USAID/ Rabat to obtain immediate technical assistance, airplanes, and the pesticide malathion. The EC, Portuguese, Spanish, Germans, and French also assisted.



**Immature locusts (hoppers) killed by insecticides**  
*Photos by Carl Castleton DLTF*

About 200,000 ha. were sprayed during the fall 1987 campaign. USAID-supplied Turbo Thrush aircraft, financed by OFDA, covered 15% of the total area sprayed. A three-person logistical ground-support team and, subsequently, three American entomologists assisted. Ground-to-air communications equipment, radios, strobe lights, motor pumps, and other logistical needs also were provided.

Morocco was hit again by an unexpected locust attack of potential plague proportions in March 1988. The invasion from March through June 1988 was approximately five times more severe than the fall 1987 infestation and affected all Maghrebian countries. USAID/Rabat, working with OFDA, procured 100,000 liters of malathion and 183,200 liters of carbaryl and continued spray operations utilizing the two Turbo Thrush aircraft already in country. The fight against locusts in the fall of 1987 and the spring of 1988 successfully prevented migration north of the Atlas Mountains and into important agricultural regions. During the spring, however, locusts were able to lay eggs in southern Morocco, and a subsequent generation developed and escaped to return to the Sahel and to Sudan in June where the rainy season was beginning.

Locust swarms migrating northward were again sighted in the extreme southern regions of Morocco in late September and early October 1988. The situation became extremely critical between Oct. 31 and Nov. 4. With the resumption of hot, southerly winds and the continued lack of vegetation between Senegal and Morocco, even larger swarms continued into December. The locust situation soon outstripped the GOM's spraying capacity of 30,000 to 40,000 ha. per day, and on Nov. 4 the GOM requested two DC-7 aircraft from USAID. The arrival of the two DC-7s on Nov. 10 boosted daily treatment capacity to 80,000 ha, still short of the desired 100,000 ha. per day rate.

Simultaneous with the arrival of the big planes, locust swarms were moving toward the Souss Massa Valley. This was considered a major threat because the Souss Massa Valley is a principal irrigation zone with abundant vegetation and the main producer of high value agricultural exports. If the swarms had managed to settle in the valley, major crop damage would have occurred. Worse yet, temperatures and humidity were favorable for locust development. Breeding and egg-laying in the area would have created a new generation within 45 days. Intensive control efforts prevented this. On Nov. 15, Morocco treated 81,339 ha, which represented the largest single daily treatment.

Given the international dimensions of the potential disaster, His Majesty King Hassan II hosted an international conference on the locust peril in Fes on Oct. 28 to 29, 1988. OFDA Director Julia Taft, USAID Morocco staff, and representatives from 32 countries, the UNDP, and the EC attended. The participants recommended: 1) increased locust control capacity at the national crop protection level, and 2) the creation of an international task force to reduce massive reproduction in recession areas.

#### **Action Taken by the Government of Morocco (GOM)**

The GOM's expenditures for the control campaign totaled \$26.6 million in FY 1988 and about \$50 million in FY 1989.

#### **Summary of USG Assistance**

##### **FY 1988**

##### **First Disaster Declaration (11/04/87)**

Ambassador's authority used for local support . . . . .	\$25,000
Technical assistance (entomologists) . . . . .	\$19,658
Procurement and transport of 40,000 liters of malathion . . . . .	\$301,871
Contract for 2 Turbo Thrush aircraft . . . . .	\$100,157

##### **Second Disaster Declaration (03/15/88)**

Technical assistance (entomologists to assist with assessment and pesticide application; experts to inspect planes, analyze pesticides, and conduct a review of program) . . . . .	\$33,916
Procurement and transport of 100,000 liters of malathion . . . . .	\$616,185
Procurement and transport of 183,270 liters of carbaryl (\$504,203 of the original cost was refunded because some of the pesticide was ineffective) . . . . .	\$398,926

Contract for continued use of 2 Turbo Thrush aircraft . . . . . \$300,000

Pesticide procurement (USAID/Rabat funds) . . . . . \$1,600,000

Aircraft rental (USAID/Rabat funds) . . \$1,400,000

Mission contribution toward technical assistance, equipment, and operating expenses (USAID/Rabat funds) . . . . . \$500,000

*Total OFDA* . . . . . \$1,349,027

*Total Other USG* . . . . . \$3,500,000

**Total FY 1988 . . . . . \$5,295,713**

#### **FY 1989**

##### **Disaster Declaration (11/07/88)**

Contract for 2 DC-7s for aerial spraying . . . . . \$300,000

Aerial operations specialist . . . . . \$13,305

Locust Project Paper amendment (USAID/Rabat funds) . . . . . \$10,000,000

*Total OFDA* . . . . . \$313,305

*Total Other USG* . . . . . \$10,000,000

**Total FY 1989 . . . . . \$10,313,305**

**TOTAL \$15,609,018**

#### **Assistance Provided by the International Community**

##### **International Organizations**

EC - provided aircraft and pesticide.

FAO - supplied pesticide and technical assistance

##### **Governments**

Belgium - supplied 2 Alouette helicopters and 13,400 liters of pesticide

France - provided 9 aircraft and 4,000 liters of pesticide

Germany, Fed. Rep. - furnished 2 Bell helicopters, 100,000 liters of fenitrothion, and 200 knapsack sprayers.

Italy - contributed sprayers and technical assistance.

Portugal - supplied 16,000 liters of pesticide and aircraft.

Saudi Arabia - donated 30 Land Rovers and 136,000 liters of pesticides.

Spain - furnished aircraft and 14,800 liters of fenitrothion.

*The International Community provided an additional \$20,000,000 worth of assistance in FY 1989 (as of 6/20/89)*

**TOTAL \$25,019,305**

#### **ALGERIA**

During the fall of 1987, swarms of desert locusts entered Algeria from Mali, Mauritania, Western Sahara, and Morocco. Accurate estimates of the area infested were lacking, however, because of the rapid dispersal of the locust swarms and the difficulty in surveying the vast areas of remote and inaccessible terrain

An OFDA assessment team traveled to Algeria in December 1987. The entomologists concluded that Algeria faced a serious threat of invasion in the spring of 1988 from the Sahel where large residual populations persisted in Mali, Niger, and Chad, as well as from Mauritania and Western Sahara where locusts could invade across a broad front from the west. Invading swarms not effectively controlled in Algeria could disintegrate into smaller swarms in the Atlas Piedmont and establish a breeding cycle, creating a serious risk to Algeria's northern agricultural regions.

The U.S. Ambassador declared a disaster on Dec. 29, 1987, and OFDA provided radios and aerial spray equipment for the spring campaign. As expected, waves of locusts began to invade Algeria in the spring of 1988. A second disaster declaration was issued by the U.S. Embassy in Algiers on March 27, 1988. An estimated 200,000 to 300,000 ha. were infested over a three-month period.

Assessments by entomologists predicted that Algeria could experience invasions of the same, if not greater, magnitude in the fall of 1988 due to the large potential breeding sites in remote areas of the Sahel near the southern Algerian border. OFDA continued its assistance to Algeria under this expected emergency (disaster declaration Aug. 16, 1988) by providing a technical assistance team to assess the readiness of the crop protection service and to be on-site when the swarms came and by purchasing and shipping 150,000 liters of malathion, protective clothing, and additional radio equipment to improve the sets provided for the spring campaign.

The Government of Algeria (GOA) had prepositioned over 20 aircraft in strategic points around the country. Moreover, the GOA began negotiations for a five-year loan of \$58 million with the World Bank to assist in preparations for what was perceived to be a plague of at least five years' duration. The purpose of the loan is to minimize, if not avert, economic disruption to some 39.7 million ha. of Algeria's productive lands and to protect the livelihood of some 11.9 million people potentially at risk in the invaded areas.

### Summary of USG Assistance

#### FY 1988

##### First Disaster Declaration (12/29/87)

Pre-disaster assessment . . . . .	\$2,724
Radio equipment . . . . .	\$73,942
Spraying equipment for aircraft . . . . .	\$64,007

##### Second Disaster Declaration (03/27/88)

Cost of 6 fuel tank kits and transport . . . . .	\$39,634
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##### Third Disaster Declaration (08/16/88)

Procurement and shipment of 150,000 liters of malathion . . . . .	\$685,852
Radio equipment . . . . .	\$109,386
Protective clothing . . . . .	\$68,904
Technical assistance from USDA/OICD . . . . .	\$25,583

**Total FY 1988 . . . . . \$1,070,032**

#### FY 1989

##### Carry-over for FY 1988 disaster declaration

Technical assistance . . . . .	\$7,155
Travel expenses of technical assistance team . . . . .	\$10,000
Air freight of truck spare parts . . . . .	\$803

**Total FY 1989 . . . . . \$17,958**

**TOTAL \$1,087,990**

### Assistance Provided by the International Community

#### International Organizations

EC - gave 50,000 liters of fenitrothion and 200 backpack sprayers.

World Bank - provided a loan in 1989

#### Governments

France - contributed 10,000 liters of carbaryl and 100 backpack sprayers

Germany, Fed. Rep. - sent 32,900 liters of fenitrothion.

Italy - provided 60,000 liters of carbaryl and helicopters

Saudi Arabia - furnished trucks, sprayers, and pesticide.

Soviet Union - supplied 2 Antonov aircraft, vehicles, and pesticide

*Note: No figure for international assistance for Algeria is available*

## TUNISIA

Like Morocco and Algeria, Tunisia experienced large invasions of desert locusts in the spring of 1988. On March 15, 1988, the Crop Protection Service reported that desert locusts had crossed the Algerian border near Nefta and moved east on the Gafsa-Sfax axis to Maknassy. The Government of Tunisia (GOT) immediately mobilized a National Locust Control Committee under the leadership of the Prime Minister and appealed for international assistance. The fear was that the change of winds from northeasterly to southeasterly in April could blow the locusts into the rich agricultural lands in the Cap region of the north.

A disaster declaration was issued by the U.S. Ambassador on March 19, 1988. OFDA sent George Cavin, a senior American entomologist, to Tunisia on March 20, 1988, to make an assessment of the situation. Waves of locusts continued to arrive from Algeria during the following weeks, and the GOT increased the number of aircraft in service to 17 and ground units to 58. Between March 2 and 24, over 52,687 ha. were treated. By the end of May the area treated had reached 306,000 ha.

OFDA provided important assistance during the spring 1988 campaign: air shipments of 50,000 liters of malathion ULV, a technical assistance team comprising a logistician, an aerial control expert, a radio communications expert, and entomologists; radio equipment; and strobe lights for night treatment of settled swarms.

By the end of May, the worst was over, and

Tunisia began to make early plans for an expected resurgence from Algeria or Libya in the fall. A control effort of at least 300,000 ha. was anticipated, with a maximum of one million ha. as a contingency. Under a disaster declaration issued on July 23, 1988, USAID/Tunis requested OFDA/DLTF assistance to organize for the invasion. In preparation, greenness maps were provided, a technical assistance team reassessed the readiness capability of the GOT and was on-site to consult in case of locust invasions, 150,000 liters of malathion were shipped by sea, and spare parts for spray planes were shipped in by air. In addition, USAID/Tunis concluded a Commodity Import Program (CIP) arrangement with the GOT for the purchase of three spray planes.

*Addendum. Control efforts in Senegal, Mauritania and Morocco were timely and well executed (see separate reports). As a result, Tunisia received few swarms of any significance in the last campaign*



**Breeding area inappropriate for pesticide application due to environmental concerns**

## Action Taken by the Government of Tunisia (GOT)

Under the CIP arrangement, the GOT spent \$10 million on aircraft for the insect control program.

## Summary of USG Assistance

### FY 1988

#### First Disaster Declaration (03/19/88)

Purchase and air shipment of 10,000 liters of malathion . . . . .	\$515,934
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Technical assistance (entomologist, experts  
in spraying operations, communications,  
logistics) . . . . . \$33,185

Radio and communications equipment . . . \$44,253

Spare parts for spray aircraft . . . . . \$36,453

Second Disaster Declaration (07/23/88)

Purchase and air shipment of 150,000 liters  
of malathion . . . . . \$685,852

Technical assistance (USDA/OICD) . . . . \$17,770

Unspecified purchase  
(USAID/Tunis funds) . . . . . \$28,000

Total OFDA . . . . . \$730,622

Total Other USG . . . . . \$28,000

Total FY 1988 . . . . . \$1,361,447

FY 1989

Carry-over for FY 1988 declaration

Technical assistance (entomologists,  
environmental specialist) . . . . . \$36,252

Purchase of 3 air tractors . . . . . \$1,300,000

Total OFDA . . . . . \$36,252

Total Other USG . . . . . \$1,300,000

Total FY 1989 . . . . . \$1,336,252

TOTAL \$2,697,699

Assistance Provided by the International  
Community

International Organizations

EC - donated pesticide and \$111,000 for fuel

Governments

Belgium - provided 10,000 liters of fenitrothion, 80  
vehicle sprayers, and 4,000 exhaust nozzles.

France - furnished 4 Piper aircraft and 10,000 liters  
of fenitrothion.

Germany, Fed. Rep. - provided 32,800 liters of  
fenitrothion and 2 Bell helicopters.

Greece - contributed 15,900 liters of pesticide, 100  
sets of protective gear, and 30 backpack sprayers.

Italy - provided 2 Hughes helicopters.

Saudi Arabia - contributed 10,000 liters of  
fenitrothion, 30 Toyota vehicles, and 10 exhaust  
sprayers.

Spain - gave 6,000 liters of fenitrothion.

TOTAL \$3,550,000

**CHAD**

Responding to the assessment of locust experts  
after the 1987 campaign and as a result of donor  
committee meetings, USAID/Ndjamena submitted a  
proposal for an emergency locust control plan to  
AID/Washington. The proposal was approved on  
July 7, 1988, when the U S Ambassador officially  
declared a disaster. OFDA paid for pesticide,  
technical assistance, and greenness maps. Delivery  
of 30,000 liters of pesticide was made on Aug. 3,  
1988. OFDA also provided aircraft and funds for  
local operations.

OFDA-funded aircraft were requested as locust  
swarms poured into Chad from North Africa.  
However, the aircraft were never used effectively  
because of the difficulty in getting them to Chad  
and the lack of major targets. Village brigades and  
traditional control measures may have had more of  
an impact on reducing the larval bands.  
Approximately 100,000 ha. were sprayed by ground  
teams and aircraft. Fortunately, many of the  
locusts disappeared mysteriously and never  
appreciably damaged food crops in 1988.

Summary of USG Assistance

Amendment to aerial  
spraying program contract . . . . . \$235,957

Local support (fuel, food, equipment)  
for field bases for aerial spraying program \$64,392

Local procurement in support of  
aerial services . . . . . \$650,000

Technical assistance for spraying program \$17,200

Transport of equipment from Morocco . . . \$1,437

Airlift of 4 tents from OFDA stockpile . . . \$2,500

Airlift of pumps and hoses . . . . . \$1,144

Procurement of pesticide and greenness maps  
(USAID/Ndjamena funds) . . . . . \$332,600

*Total OFDA . . . . . \$972,630*  
*Total Other USG . . . . . \$332,600*

**TOTAL \$1,305,230**

**Assistance Provided by the International Community**

International Organizations

African Development Bank - contributed \$39,000 for the Fada field office.

EC - supplied 30,000 liters of fenitrothion.

FAO - assisted with regional air support and operating costs and provided 40,000 liters of fenitrothion, 10,000 liters of ULV, 4 Unimogs, and 63,000 liters of dursban.

OAU - donated \$300,000.

OCCALAV - provided 2 pickups, 3 sprayers, and 2 Unimogs.

Governments

France - provided a fixed-wing airplane, a helicopter, 40,000 liters of lindane, 60,000 liters of fenitrothion, 15,000 liters of gammophene, a truck, and 500 backpack sprayers.

Germany, Fed. Rep. - furnished 6,000 liters of fenitrothion and assisted with operating costs.

Japan - gave 20,000 liters of fenitrothion.

Netherlands - contributed \$280,000 for pesticides.

Switzerland - provided \$67,000, 10 nozzle sprayers, and a helicopter.

United Kingdom - furnished operating costs, a base radio, 10 2-way radios, 13 tents, 2 pick-ups, 10,000 liters of fenitrothion, 8 nozzle sprayers, 8 exhaust sprayers, and 100 ULV sprayers.

**TOTAL \$1,951,598**

**NIGER**

The first locust swarms sighted in Niger in April 1988 were small, traversing the country from west to east in the Air Mountains. In the valleys of these mountains, a large population of immature, transient adults was able to thrive during the winter of 1987/1988 due to abundant perennial vegetation. The U.S. Ambassador to Niger issued a disaster declaration on July 8 in anticipation of a worsening locust situation leading to food shortages. By August, Niger was experiencing severe locust infestations. Approximately 1.9 million ha. reportedly were infested with locust hoppers in a belt extending east to west across the southern portion of the country.

On Aug. 17, the Government of Niger (GON) convoked the diplomatic community to announce that the locust situation in the country had reached crisis proportions and that additional assistance was required. USAID/Niamey believed that action on improving communications, specifically the acquisition and installation of additional HF radios, was the key to increasing the Niger Crop Protection Service's operational capacity. An HF radio specialist and equipment, therefore, were requested from and supplied by OFDA. OFDA also contributed 60,000 liters of malathion and lent a non-directional beacon (NDB) which worked flawlessly and improved operational efficiency of aircraft and the safety of flights.

Since the beginning of the locust control operation in 1988, the GON estimated that 862,000 ha. have