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EFFICACY AND ENVIRONMENTAL EFFECTS
OF
LARGE PLANE AND SMALL PLANE OPERATIONS IN SENEGAL
AND
PROPOSED PLAN FOR GATHERING INFORMATION
FOR
1987 ENVIRONMENTAL ASSESSMENT

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With Notes on
Malathion Contamination of Ocean Water
Large Plane Operations in The Gambia
Crop Losses from Grasshoppers/Locusts in Senegal

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I. EXECUTIVE SUMMARY AND RECOMMENDATIONS

In Senegal ca 994,000 ha were sprayed in the large and small plane operations. The DC-7's sprayed ca 690,000 ha from September 6-12 and October 10-16, 1986 in North Central Senegal. The Canadian small plane operation covered ca 146,000 ha in North Central Senegal and ca 158,000 ha in Ziguinchor Region. These areas were treated from September 9-20 in the North and October 10-19, 1986 in the South. The large and small plane spraying operations were the primary grasshopper control strategies utilized in Senegal in 1986

Malathion ULV provided excellent control of the Senegalese grasshopper, Oedaleus senegalensis (Krauss), ranging from 98% to 100% control (mean=99.5%) in millet and from 88% to 100% control in pasture (mean=97.4%) in the large aircraft insecticide application program. The direct environmental impact of the spraying in North Central Senegal was minimal. Wide-scale spraying of ULV malathion appears to pose no major threat to humans, domestic animals, wildlife, and aquatic organisms in these areas, based on observations made in the field pre and post application. The effect of malathion on non-target invertebrates is of some concern for certain species. However, populations were so low that little impact was observed.

In the small aircraft insecticide application program in the Ziguinchor Region, Senegal, diazinon ULV and fenitrothion ULV were used. This region is characterized as having excellent growing conditions with abundant flora, fauna, and water, some of which is salt water. The environmental impact appears to be somewhat greater for these insecticides in this area than for malathion ULV in the large plane spray area. However, malathion was evaluated primarily in North Central Senegal where the land is more sparsely populated, flora and fauna are less abundant and few to no rivers are present. These factors somewhat reduced the chance for a significant environmental impact.

The primary grasshopper/locust species of concern in the small aircraft program were Cataloipus cymbiferus (Krauss) and Hieroglyphus africanus (Uvarov). Control of these species was somewhat variable ranging from 33% to 100% control (mean=73%) in rice to 80% to 100% control (mean=91%) in pasture. Although no bird or fish kills were observed in or near the plot areas, there

were reports of dead fish and birds in the treated areas. These reports were not confirmed. In one treatment area, a large number of crabs were killed. These crabs were observed by a member of the evaluation team. A high number of ground beetles were also killed in the plots. The most significant beneficial insect killed was honey bees. Dead honey bees were observed in large numbers in one of the fenitrothion plots. It appeared that all died in the field area. Although the impact of diazinon and fenitrothion on the environment in Southwestern Senegal was greater than for malathion in the North Central part of the country, it was still not as great as might be expected for the application of an insecticide over such a wide area. There were no reports of adverse effects on humans or domestic animals for any of the insecticides.

Although the environmental impact was minimal, there is the potential for more significant and long-term effects on the environment if wide-scale spraying is continued for several years. Thorough monitoring of grasshopper populations is a must. A well organized IPM program should be initiated as soon as possible. It will be most effective if developed as a local IPM strategy which utilizes farmers, in conjunction with local PV and extension personnel, to determine the infestation, evaluate the impact and apply controls at the local level based on DPV guidelines. Each village, if properly equipped and trained, could manage most outbreaks in their crops, reserving wide-scale control or establishment of buffer zones to populations too large to handle locally.

To insure proper management of grasshoppers/locusts and to mitigate the adverse impact of the insecticides on the environment, the development of a village based "IPM Strategy" (Appendix F) is in order. Training scouts at the local level to monitor fields and report their results should provide for a nationwide network for grasshopper/locust monitoring. Action could then be taken on the local level to combat the problem, or if the magnitude of the problem is too great, then a national, regional or area management strategy could be enacted prior to extensive buildups, migration and/or losses.

RECOMMENDATIONS AND CONCLUSIONS

1. The large plane spraying operation using ULV malathion was highly effective in North Central Senegal.
2. The environmental impact of the large plane ULV malathion spraying was minimal.
3. The small plane spraying operation using ULV diazinon and fenitrothion was effective in Southwestern Senegal.
4. The environmental impact of the small plane ULV diazinon and fenitrothion spraying was somewhat greater than that for ULV malathion in the large plane spraying operation.
5. Millet losses in the large spray plane operations area averaged 15 to 30% for those areas treated in September. October treatment areas had already suffered 70 to 90% loss prior to treatment. However, October treatment occurred before egg laying, so 1987 populations should be reduced.
6. Approximately 20% of the corn in the small spray plane operations area was lost due to grasshopper and bird feeding prior to treatment. Rice losses averaged about 5%.
7. Based on training received in grasshopper monitoring by Senegalese CP personnel, the CPS should have the capacity to conduct more accurate and timely monitoring programs in the future.
8. The malathion spill in the ocean due to the crash of one of the DC-7's caused no apparent environmental effects.
9. Grasshopper/locust density surveys should begin earlier in 1987, be conducted more frequently and in greater detail. Observers should be trained in more quantitative population estimation by CP personnel. Significantly more personnel and vehicle support is necessary.

10 A grasshopper/locust pilot IPM program has a high probability of success and should be implemented prior to the 1987 growing season.

11. Research on the efficacy of carbaryl, acephate and other alternative chemicals by ground and aerial application should be conducted as early as possible in 1987. Additional control data are needed on ULV malathion in Southwestern Senegal where flora is taller and more dense.

12. All personnel involved in the planning, coordination, supervision and operation of the 1986 USAID grasshopper/locust control program in Senegal performed in a very effective, highly professional manner. They are to be complimented.

II. PURPOSE AND SCOPE

A. GENERAL

The contractor, CIGP, was requested to provide the services of two entomologists to conduct a preliminary assessment of the efficacy and environmental effects of the large spray plane operations in Senegal and to determine the requirements for an environmental monitoring program which will be required in early 1987 to prepare both programmatic and regular EA as required by USAID Reg. 16, for continued USAID funding for pesticides for grasshopper/locust control.

The contractor team was required to collect and analyze posttreatment information, including environmental samples from USAID funded large plane operations using DC7s

According to the contract, the contractor team was to identify possible environmentally sensitive sites where pre- and post-spray monitoring in 1987 might be appropriate. The contractor team was also, with limited assistance from the USAID Mission, to develop a list of individuals and organizations within the country with interest and/or capability of participating in a 1987 environmental monitoring effort related to grasshopper/locust control with chemicals. In addition, time permitting the contractor team was to assist in setting up any monitoring aspects related to 1987 pesticide testing.

This report consists of the required: (1) preliminary assessment of the efficacy and environmental effects caused by large plane spraying, and (2) detailed plan with budget for gathering information for an EA.

In addition to the contract, the contractor team was requested to perform the following tasks by the USAID/Senegal Acting Mission Director, Mr. George Carner:

- Evaluation of massive malathion spill associated with the DC-7 crash. This included an investigation, sampling, a report and assistance with press releases

- Crop loss assessment in the large plane and small plane operations areas in Senegal.

Also, the Acting Mission Director concurred with the evaluation team that the following should be conducted:

- Evaluation of efficacy and environmental effects caused by the small plane operations under the direction of the Canadians

- Preliminary assessment and recommendations for monitoring the large plane operations in The Gambia.

B. EFFICACY AND ENVIRONMENTAL EFFECTS

1. Preliminary Assessment of Efficacy and Environmental Effects of Large Spray Plane Operations

a. Efficacy in North Central Senegal (Louga and Diourbel Regions)

ULV malathion at 0.58 l/ha was found to be highly efficacious against Oedaleus senegalensis (Krauss) when applied by large aircraft in North Central Senegal (Appendix A) More than 98% of the population was O. senegalensis (Krauss) Mean percent mortality at selected study sites was 99.5% in millet and 97.4% in adjacent grass land areas.

b Environmental Effects

(1) September Operations - When evaluated in mid-October 1986, no adverse environmental effects were apparent in the zones treated in September 1986. Beneficial environmental effects were apparent through the lowering of grasshopper populations and reduction in crop losses. Other beneficial environmental effects were reported by the USAID/Senegal and PV personnel as due to the reduction of fly and mosquito populations, as well as reduced aphids and other pests on cowpeas and groundnuts (Appendix A)

(2) October Operations - Pre- and post-spray evaluations in the zone treated only in October 1986 detected no adverse environmental effects. Bird numbers did not appear to be affected by the ULV malathion treatment. No changes in insect populations, except for grasshoppers were detected in groundnuts. Groundnuts at the time of the evaluation were mature and the foliage was beginning to dry. Beneficial effects of fly and mosquito control were reported by every farmer interviewed (Appendix A)

c Evaluation of Pesticide Handling, Storage and Disposal

With the time and personnel constraints of 1986, the large plane operation was the only feasible alternative. The aircraft were properly calibrated and were found to produce an acceptable deposition pattern. The storage and handling of the malathion was a model of organization and supervision. The workmen were well trained and correctly used the protective clothing and equipment. The operations group (USFS and APHIS) is to be complimented for the innovative method of disposing of the empty malathion drums which were given or sold to a Senegal pesticide company for reuse.

2 Preliminary Assessment of Efficacy and Environmental Effects of Small Spray Plane Operations

a. Efficacy in Southwestern Senegal (Ziguinchor Region)

In the Ziguinchor Region of Southwestern Senegal, the efficacy of ULV diazinon and fenitrothion applied at the rate of 0.25 l/ha to ca 158,0000 ha by small aircraft (Thrush S2R's with AU 5000 Micronaire Units) under the direction of CIDA was evaluated for control of Cataloipus cymbiferus (Krauss) and Hieroglyphus africanus (Uvarov). The level of control for diazinon ranged from 44% to 81% (mean=63%) in rice and 82% to 96% (mean=89%) in pasture. For fenitrothion the ranges were 33% to 100% (mean=76%) and 80% to 100% (mean=90%) in rice and pasture respectively (Appendix B).

b. Environmental Effects

The environmental effects from the small plane operations with ULV diazinon and fenitrothion in the Ziguinchor Region of Southwestern Senegal in October 1986 were highly variable (Appendix B). No dead birds, fish or mammals were noted in or next to the efficacy/environmental assessment plot areas. There were unconfirmed reports of dead fish and birds in the treatment area. Large numbers of ground beetles (Carabidae) and to a lesser degree, parasitic hymenoptera, were killed. Also, large numbers of honey bees seen working flowering weeds in and near the plot areas suffered severe mortality.

Additional surveys in the areas around Tendouck which were treated with fenitrothion revealed that large numbers of crabs were killed. It is not known whether these crabs came into contact with fenitrothion in the water or whether they were directly sprayed on shore or a combination of both. No other organisms were noticeably impacted in this area.

c. Evaluation of Pesticide Handling, Storage and Disposal

Based on direct observations made on 2 days during the small spray plane operations it appeared that the aircraft and ground operations were professionally handled. The handling and storage of ULV diazinon and fenitrothion appeared to be adequate. The organization and supervision of the program were excellent. The workmen were well trained and correctly used protective clothing and equipment. A large container of water was used to wash any chemical that came into contact with the workers. All equipment was rinsed thoroughly at the end of the day. However, there was no facilities for the disposal of the rinseate. The empty drums containing the chemicals were turned over to the Senegalese Military for removal and disposal.

3 Crop Loss Assessments

a. Large Spray Plane Operation Areas

In the large plane spray areas in Senegal, crop losses due to Oedaleus senegalensis (Krauss) were estimated in areas treated in September, in October and in both September and October (Appendix C). Millet losses from grasshoppers were less in the areas treated in September, averaging 15 to 30%. In heavily infested areas treated only in October, severe losses had occurred prior to the insecticide treatment (70 to 90%), however, grasshoppers were controlled prior to egg laying which should greatly reduce populations in 1987. Other losses in millet appeared to be due to drought at critical stages, infertility and insect feeding during pollination

b Small Spray Plane Operation Areas

Crop loss due primarily to grasshoppers [Catantopus cymbiferus (Krauss) and Hieroglyphus africanus (Uvarov)] was evaluated in the small plane spray areas of the Ziguinchor Region in mid October 1986 (Appendix D) Evaluations were made in paddy rice, pasture, millet, corn and sorghum Stops were made in fields and small tracts of crops during movement among test plot areas The crop loss assessment was based on the observers' previous experiences with the crops indicated and the insects causing the damage, since no guidelines for accurate crop loss assessment are available in Senegal Rice losses averaged about 5% Pasture feeding resulted in 25% damage, however there was more than adequate grass for livestock so damage was of little importance The greatest losses were noted in corn Approximately 20% of the corn was lost (some probably due to birds) There was no appreciable loss in millet or sorghum production due to grasshoppers

C REQUIREMENTS FOR AN ENVIRONMENTAL MONITORING PROGRAM FOR 1987
GRASSHOPPER/LOCUST CONTROL OPERATIONS

1 Requirements for Various Classes of Insecticides

a Requirements When Using Insecticides Registered by USEPA for Same or Similar Uses

For insecticides registered for rangeland grasshopper control (Table 1, Appendix G) with no restrictions on pre-harvest interval or grazing livestock, the Rangeland Grasshopper Cooperative Management Program - Final Environmental Impact Statement as Supplemented - 1986 (USDA/APHIS FEIS 85-2 as supplemented 1986) should be adequate to meet the needs of 216 3(a)(3)(1) for a Negative Decision Even with this basis for a Negative Decision, it is in the best interests of USAID to provide for monitoring of grasshopper/locust spray programs by pesticide assessment specialists in cooperation with qualified personnel of the host country

Monitoring should include but not be limited to the following

(1) Detailed pest population assessment prior to insecticide application Two things are important, 1) Areas with populations below an established or intuitive economic threshold should not be treated, and 2) contiguous areas with pest populations above the economic threshold should not be omitted from the treatment area

(2) Control efficacy should be evaluated in selected treatment areas where pretreatment density information is available (the 0 10 m² ring technique is strongly recommended)

(3) Simple transect counts of birds and small mammals should be conducted in the locations chosen for control efficacy evaluation

(4) Specialists should be available to investigate reports of adverse environmental problems - bird kills, fish kills, honey bee kills, etc - and to provide expert advice in the advent of insecticide spills and other disasters

It is further in the best interest of USAID and the U S that every effort be made for pilot program evaluation of the selected, registered insecticide against the target pest species in the target environment prior to large-scale spray programs

As of October 1986, only three pesticides - ULV malathion, carbaryl 4-oil and acephate meet registration requirements

b Requirements When Using Insecticides Not Registered by USEPA for Same or Similar Uses

Pesticides not registered for rangeland grasshopper control (Table 1, Appendix G) on rangeland with no pre-harvet interval or livestock grazing restrictions should only be used in extreme emergencies where an acceptable insecticide is not available. In the event that an unregistered pesticide must be used, it is recommended that the advice of USEPA and U S grasshopper control specialists be sought. For these pesticides, requirements of an USEPA Experimental Use Permit should be followed to the extent possible.

Specific requirements would include but not be limited to the following

(1) Residue decline samples from major crops involved. (Note - In LDC's dry ice and insulated shipping containers are usually not available. Provisions must be made to expedite air delivery of dry ice and insulated shipping containers to and from treatment areas.) If at all possible, residue and efficacy studies should be conducted as far in advance of control operations as possible. Selected candidate materials should be evaluated in 1987 for future emergencies.

(2) Control efficiency data should be obtained from pilot program trials against the target pest species in each target environment if possible. Statistically sound, designed experiments should be required.

(3) EA studies should be designed to fill as many data gaps in USEPA data bases as is feasible. Specifically these should include but not be limited to the following

- (a) Honey bees
- (b) Beneficial insects
- (c) Birds and small mammals
- (d) Fish - selected species
- (e) Crustaceans
- (f) Endangered species - where they can be identified

All data collection procedures and data collected should be reviewed by USEPA

c Insecticides Not Acceptable to USAID for Use in Senegal

The following pesticides have been used at one time or another in Senegal. At least two of these chemicals, Lindane and BHC, are still in use

Dieldrin - This chlorinated hydrocarbon should not be used under any circumstances in USAID projects in Senegal, and the Government of Senegal should be encouraged not to recommend the use of this or any other chlorinated hydrocarbon in the country. It is a highly persistent insecticide which multiplies in the food chain. Uses within the U S have been cancelled by USEPA. Products such as malathion ULV, carbaryl 4-oil and fenitrothion ULV can be substituted for dieldrin.

BHC - This product is popular as a dust in some parts of Africa. It has been cancelled by USEPA. It is a chlorinated hydrocarbon like dieldrin. Propoxur dust is an acceptable substitute.

Lindane - This is a pure form of BHC. It is quite toxic and not acceptable for use. It is extremely persistent and has biocumulative properties. Most uses in the U S have been cancelled by USEPA. The alternative products listed under dieldrin are acceptable substitutes for lindane.

Aldrin - A chlorinated hydrocarbon this insecticide, like dieldrin and lindane, is unacceptable and should not be used under any circumstances in Senegal. Aldrin is highly persistent and is bioaccumulative in the environment. Alternative products listed under dieldrin should be substituted for aldrin.

2 Possible Environmentally Sensitive Sites for Monitoring in 1987
Grasshopper/Locust Control Operations

a North Central Senegal - this area appears to have the least number of environmentally sensitive sites among the areas normally infested in Senegal. Important non-target sites include but are not limited to the following:

- (1) Groundnut fields - non-target pests and beneficial insects with special attention to possible pest resurgence,
- (2) Rainfed livestock watering areas,
- (3) Areas of bird concentrations,
- (4) Urban, village and farmstead sites,
- (5) Honey bee colonies if present

b Fleuve-area along the Senegal River and its tributaries. In addition to environmentally sensitive sites in paragraph a (no groundnuts in Fleuve), above, special consideration must be given to fish and other aquatic organisms, small mammals and food crops grown in the area.

c Ziguinchor and Casamance Regions - these areas appear to have the greatest number of environmentally sensitive sites among the areas normally infested in Senegal. The exception might be in the Fleuve area along the Senegal River and its tributaries. Important non-target sites in addition to relevant ones given in a, above, include but are not limited to the following:

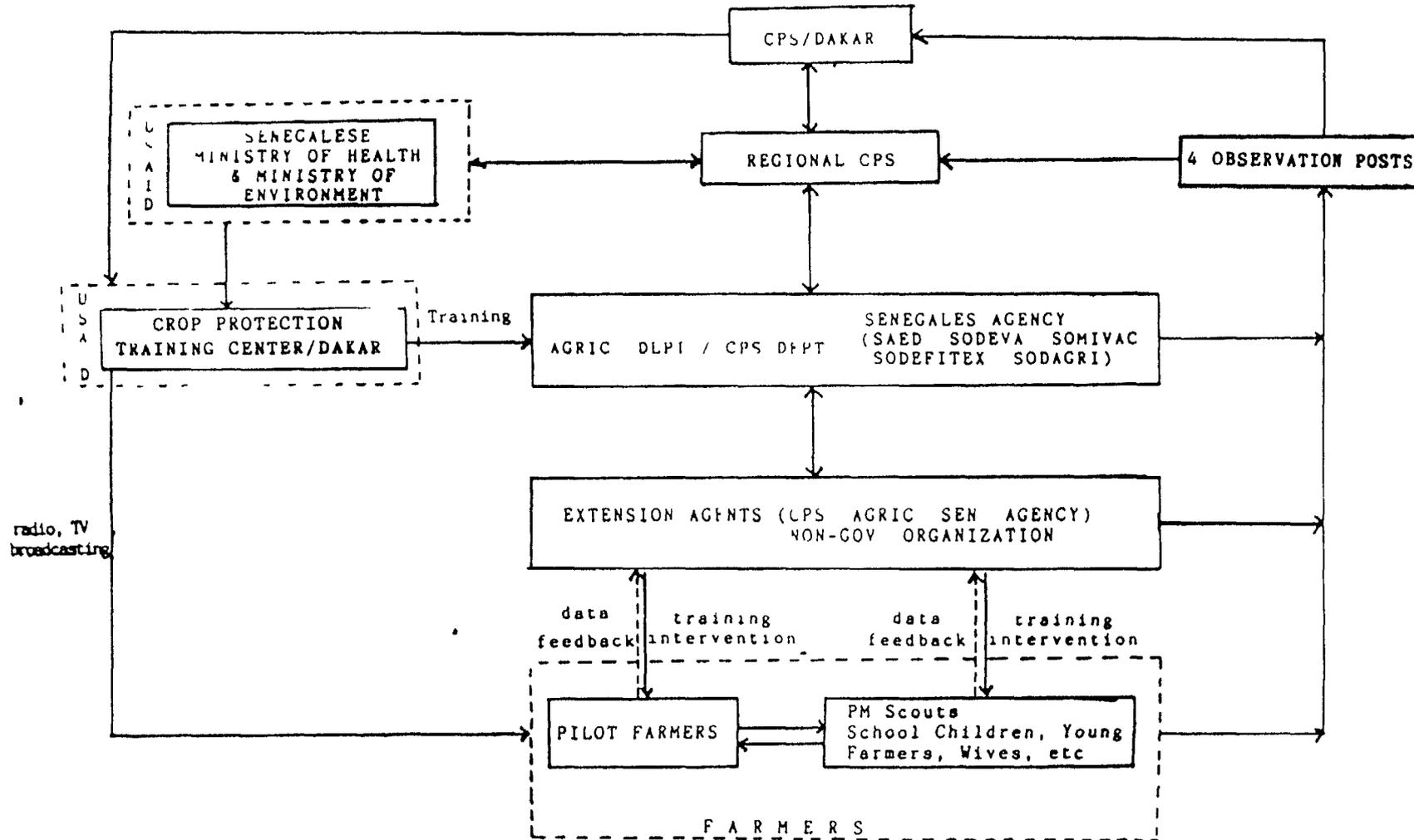
- (1) Vegetable fields and orchards - non-target pests and beneficial insects with special attention to possible pest resurgence,

- (2) Feral and domesticated honey bee colonies,
- (3) Fresh and salt water - fish, crabs and other aquatic organisms Also, livestock watering areas,
- (4) Small mammals in and around treatment areas

D INDIVIDUALS AND ORGANIZATIONS WITH INTEREST AND CAPABILITY OF PARTICIPATING IN 1987 ENVIRONMENTAL MONITORING EFFORT

The following (Chart 1) represents those agencies and individuals that would be involved in an EA, as well as a pilot IPM program Both programs would be coordinated through USAID/Dakar in conjunction with PV Training Center/MDR/Dakar The EA team should work in cooperation with the Senegalese Ministries of Health and Environment on issues of common concern

Chart 1 Environmental Assessment and IPM Flow Chart



E. PRELIMINARY MONITORING ASPECTS ESTABLISHED IN OCTOBER WHICH ARE RELATED TO 1987 INSECTICIDE TESTING

(1) Two Senegalese PV specialists have received preliminary training in the use of the 0.10 m² ring technique for grasshopper/locust population monitoring. They were also involved in spray assessment and pesticide residue sampling. In addition, they participated in visual bird and small mammal population estimations (these individuals are Abdoulaye Niassy and Lamine Ba).

(2) The contractor team studied the major grasshopper/locust infestation areas within the context of design criteria for 1987 monitoring.

(3) Problems associated with handling and shipment of residue and biological samples were analyzed and a solution is recommended. Insulated shipping containers filled with dry ice (poundage based on airline regulations) should be shipped on direct flights from the U.S. as near as possible to the date needed. A freezer for dry ice storage should be stocked and replenished as needed for emergencies.

(4) Candidate pesticides for 1987 evaluation should be shipped in sufficient quantities early enough to insure delivery in Senegal by May 1, 1987. An acceptable agricultural aircraft(s) and experienced pilot(s), preferably U.S., should be contracted for the periods of July 1 through October 15, 1987.

F. PLAN FOR GATHERING INFORMATION FOR BOTH PROGRAMMATIC AND REGULAR ENVIRONMENTAL ASSESSMENTS FOR GRASSHOPPER/LOCUST CONTROL

The proposed plan for gathering information for both programmatic and regular EA should have the concurrence of both USAID and the Senegalese Government. The plan, if adopted, will be completed in two parts. The information required for the regular EA for grasshopper/locust control programs in Senegal will be completed first and the data and concepts developed will provide the framework for defining the additional data needed for the programmatic EA.

The various facets of the program and possible timetable follows

1 Regular EA for Senegal

a Background Orientation - October 1986

The Contractor team conducted preliminary environmental analyses in two key ecological zones in Senegal. They became familiar with the major grasshopper species and the key pest species of millet, rice, corn, sorghum and pasture in Senegal. They developed excellent working relations with personnel of the Senegal DPV and USAID/Senegal. Contacts were also made with the Crop Protection Service of The Gambia and USAID/The Gambia. The pre EA development document has been prepared (Appendix G).

b Background Data Collection - November-December 1986

A Senegal environmental data base will be developed on a personal computer (PC) using Data Base III software to provide compatibility with USAID/W and the Missions. All U.S. and international data bases will be searched to develop a detailed bibliography. All important documents will be obtained for critical analyses.

Concurrently, the Senegalese counterparts will conduct an in-depth search for unpublished reports in the files of the DPV, Agricultural Research Service, OCLALAV and other organizations in Senegal. USAID/Senegal will be asked to provide key documents.

c Data Synthesis - January 1987

All pertinent data will be synthesized into a background document with an executive briefing summary.

d Definition of Significant Issues - February 1987

A preliminary list of significant issues will be developed and circulated to individuals and agencies identified by USAID/W. Detailed definition of issues will occur in meetings in USAID/W in late February.

e Scoping Statement - March 1987

The final scoping statement will be prepared and circulated for comments or directed by USAID/W prior to 1 March 1987 (Outline 1, below)

f Scoping Meetings

Two scoping meetings will be held. The first will be held the first week of April at USAID/W. The second scoping meeting will be held at USAID/Senegal during the second week of April, 1987. An important part of each scoping meeting will be the finalization of the 1987 monitoring program and schedule.

g Development of EA for Senegal - May-June 1987

The draft EA for Senegal will be completed by 1 June, 1987 for circulation, review and comment according to USAID policy (Outline 2, below)

2 Programmatic EA

a Development of Programmatic EA Data - July-October 1987

During the process of the development of the EA for Senegal, the key issues and data gaps for the Programmatic EA will be defined and sharpened. The period July-October 1987 will be used to conduct preliminary studies in the countries or regions to be included in the Programmatic EA.

b Completion of Programmatic EA - November-December 1987

Required steps and procedures will be followed to permit completion of the draft Programmatic EA before 31 December 1987

3 Preliminary Budget Estimates - November 1, 1986 thru December 31, 1987

A Personnel

Huddleston 206 days at \$260	\$ 53,560
Edwards 206 days at \$260	53,560
Part-time technical help - 12 mos at \$2,000	24,000
Secretarial - 12 mos at 1,000	12,000
Part-time interpreters - 12 mos at 1,800	21,600
French tutors - 20 hrs/wk x 40 wks at \$20 00/hr	16,000

B Travel

Air Fare

Senegal 2 RT (Huddleston) + 2 RT (Edwards)	10,000
USAID/W 3 RT (Huddleston) + 3 RT (Edwards)	2,400
Within Africa 4 RT (Huddleston) + 4 RT (Edwards)	7,000
Vehicle Rental 6 mos at \$3,000/month	18,000

C Per Diem

Huddleston 150 days at \$118	17,700
Edwards 150 days at \$118	17,700

D Supplies and Equipment

Supplies	4,000
Equipment	5,000
Miscellaneous	<u>8,000</u>

Direct Costs	\$270,520
Indirect Costs (Direct Costs X 2)	<u>54,104</u>
Direct and Indirect Costs	\$324,624
Purdue University 30,000 + 22% Fringes	36,600
New Mexico State University \$31,000 + 22% Fringes	<u>37,820</u>
	\$ 74,420
TOTAL PROJECT COSTS	\$399,044

OUTLINE 1 - GENERAL OUTLINE TO IDENTIFY SCOPE AND SIGNIFICANCE OF ISSUES TO BE ANALYZED IN THE EA

I To be identified

- a Significant issues
- b Scope of the issues to be addressed

II Scoping process - will result in a written statement

- a A determination of the scope and significance of issues to be analyzed in EA or EIS
 - 1 Includes direct and indirect effects of the project on the environment
- b Identification and elimination from a detailed study of the issues that are not significant or have been covered by earlier environmental review or approved design considerations
 - 1 Brief presentation of why they will not have a significant effect on the environment
- c Description of
 - 1 Timing of the preparation of environmental analyses
 - 2 Variations required on the format of the EA
 - 3 Tentative planning and decision making schedule
- d Description of how analysis will be conducted and disciplines that will participate in the analysis
- e Written statement will be reviewed and approved by the Bureau Environmental Officer

III Circulation of Scoping Statement

- a Selected federal agencies
 - 1 USEPA
 - 2 USDA, APHIS
- b Selected Missions and Host Country Agencies

Note Comments received will be included in the scoping statement

IV Preparation of EA

- a EA should be completed prior to 15 July 1987
- b Draft EA should be reviewed by Mission and Host Country after USAID/W approval

V Monitoring - 216 3 (a)(8)

- a Project should be designed to include measurement of any changes - positive or negative
 - 1 Will require baseline data
 - 2 Formulate systems of collaboration with recipient nations to monitor such impacts during the life of USAID's involvement

VI Pesticide Procedures 216 3 (b)(1)(1)

- a This should be a separate document if it does not exist
- b Provisions to mitigate potential adverse effects of the pesticide

OUTLINE 2 - GENERAL OUTLINE FOR AN EA FOR GRASSHOPPER/LOCUST CONTROL PROGRAMS

Environmental Assessment

- A General Purpose - provide agency and host country decision makers with full discussion of significant environmental effects of a proposed action
- B Collaboration with affected nation(s)
- C Content and Form - Based on scoping statement
 - 1 Summary
 - a Major conclusions
 - b Areas of controversy
 - c Issues to be resolved
 - d Recommendations for program assessment
 - 2 Purpose
 - a Underlying purpose
 - b Need to which agency is responding
 - 3 Alternatives including the proposed action
 - a Environmental impacts and alternatives in a comparative form
 - (1) To sharpen issues and provide a clear basis of choice
 - (2) To explore and evaluate reasonable alternatives
 - (3) Reasons for eliminating alternatives
 - (4) Devote substantial treatment to each alternative
 - (5) Include alternative of no action
 - (6) Include agencies preferred alternative(s)
 - (7) Appropriate mitigation procedures
 - 4 Affected environment
 - a Environment of areas to be affected
 - 5 Environmental consequences
 - a Environmental impacts of the alternatives including the proposed actions
 - b Any adverse effects that cannot be avoided

- c Relationships between short-term uses of the environment and the maintenance and enhancement of long-term productivity
- d Any irreversible or irretrievable commitments of resources which would be involved in the proposal should it be implemented
- e Discussion of direct effects and their significance
- f Indirect effects and their significance
- g Possible conflicts between proposed action and land use plans, policies and controls
- h Energy requirements and conservation potential of various alternatives and mitigation measures
- i Natural and depletable resource requirements and conservation potential of various requirements and mitigation measures
- j Urban quality
- k Historic and cultural resources

D List of Preparers - Curriculum Vitae

E Appendix

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EVALUATION PRELIMINAIRE DU TRAITEMENT AERIEN
DU MALATHION ULV
POUR LE CONTROLE DES SAUTERIAUX
DANS LES REGIONS DE LOUGA-THIES-DIOURBEL-FATICK
DU 6 AU 12 SEPTEMBRE 1986

<u>FRANCIS CAN</u>	Coordinateur Recherche/Développement & Specialiste de la Protection des Vegetaux (USAID)
<u>ABDOULAYE NIASSY</u>	Entomologiste (Lutte Integree, DPV)
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<u>CHEIKH MBOUP</u>	Chef du Secteur Agricole (MBACKE)

INTRODUCTION

Les Acridiens ont toujours été une menace pour les cultures du Sahel. Le mot Acridien englobe à la fois les criquets capables de migrer et les criquets relativement sédentaires. Les grands migrants comprennent le criquet migrant Locusta migratoria migratorioides (Reiche et Farmaire, 1950) et le criquet pèlerin Schistocerca gregaria (Forsk., 1775). Les criquets sédentaires, aussi appelés sauteriaux, comprennent beaucoup d'espèces dont le criquet Sénégalais, Oedaleus senegalensis (Uvarov, 1941). Ce criquet est l'un des plus grands ravageurs des cultures au Sénégal (surtout au Nord du pays). Cet insecte peut se développer en grandes populations quand les conditions lui sont favorables. Cette année, les populations sont exceptionnellement élevées au point de dépasser les efforts de lutte déployés par la Direction de la Protection des Végétaux.

Les opérations de lutte (DPV) en Juillet et Août derniers (1986) dans les régions de Louga (Louga, Linguère, Barkedji) n'ont pas pu éradiquer les foyers de sauteriaux qui ne cessaient de se multiplier dans le reste du bassin arachidier et au Sénégal Oriental. C'est ainsi qu'il a été nécessaire de faire appel à l'assistance étrangère en vue d'enrayer ce fleau.

METHODES ET MATERIELS

À la mi-Août (15-17 Août 1986), l'USAID a d'abord organisé une prospection (par Drs Phillips et Khoi Le) pour se faire une première idée de la situation acridienne dans les régions du Nord (Louga, Linguère, St Louis) et de l'Est (Matam, Bakel) du Sénégal.

Le 31 Août 1986, une prospection conjointe DPV/USAID a été organisée sur toute l'étendue du bassin arachidier Nord (régions de Louga-Diourbel-Thies-Fatick) avec la participation de l'Ambassadeur des Etats-Unis et son épouse. Les zones de pullulation des ailés et nymphes des sauteriaux ont été délimitées et représentées sur les cartes (voir carte). Les contacts ont été pris entre l'USAID, l'Armée de l'Air, la DPV, la FAO et les pilotes pour faire démarrer le programme de pulvérisation aérienne avec, comme produit le Malathion ULV (91%) dose à 0,58 l/ha. Cette dose est optimale et est choisie afin d'éliminer les nymphes à tous les stades ainsi que les imagos.

Elaboration du Programme de Traitement Aérien

L'équipe de coordination se composait de représentants de l'USAID, de l'OFDA, de la DPV, et de la FAO.

L'équipe de traitement se composait principalement de la compagnie Américaine T&G Aviation et des représentants de l'Armée de l'Air du Sénégal.

Enfin, les équipes de terrain composées par les membres de l'équipe de coordination et de l'équipe de traitement comprenaient

* TEAM
EQUIPE I

- FRANCIS CAN (Specialiste de Protection des Vegetaux, USAID)
- ABDOULAYE NIASSY (Entomologiste, Lutte Intégrée, DPV)
- CHEIKH MBOUP (Chef du Secteur Agricole, MBACKE)
- MR SANE (Inspecteur Agriculture, DIOURBEL)

* EQUIPE II

- MAWA DIOP (Lutte Intégrée, USAID)
- M NDOYE (Inspecteur Phytosanitaire Diourbel DPV)
- M SENE (Inspecteur Phytosanitaire Kebemer)

* EQUIPE III

-LAMINE BA (Entomologiste, Centre de Formation, DPV)
-ALAIN PEREIRA (Capitaine, Pilote de l'Armée de l'Air) et son
équipe

* EQUIPE IV

-Officiers de l'Armée de l'Air munis d'une Ambulance

La constitution des équipes est rendue flexible suivant les exigences de la tâche et l'intérêt des membres. Les équipes sont chargées de baliser et de confirmer par radio les positions sur le terrain (situation des bandes à traiter, température, vitesse et direction du vent), les conditions de la zone au passage des avions et avant les traitements.

Il y a eu trois zones à traiter dénommées I, II, III respectivement, d'une étendue totale de 232 200 ha. Le traitement a duré 5 jours à l'issue desquels une évaluation a été faite par nous-mêmes. Chaque zone traitée a été délimitée en 24 blocs où les inspections sur le terrain avaient eu lieu pour évaluer l'efficacité du Malathion sur les sautériaux et les autres insectes (pucerons, chenilles poilues) dans les jachères et les cultures, d'autres possibilités d'effets nocifs sur la population ou le bétail, et, enfin, les opinions de la population pour une telle opération. De même, une évaluation comparée de la densité des sautériaux et de l'efficacité d'autres insecticides (Diméthoate, Fenitrothion) a été également faite dans les champs non traités par le Malathion.

RESULTATS ET DISCUSSION

Les resultats satisfaisants du programme de la lutte anti-acridienne par le traitement aerien dans le bassin arachidier Nord (Louga-Thies-Diourbel-Fatick) sont résumés dans les tableaux I, II, III representant les 3 zones les plus infestées qui avaient été prospectées par une équipe conjointe DPV/USAID/FAO vers la fin du mois d'Août (1986)

Les degres d'efficacite des insecticides (Malathion, Dimethoate, Fenitrothion) sur les sauteriaux et les autres insectes ravageurs ont ete classees de la maniere suivante

<u>Degre d'Efficacite</u>	<u>Pourcentage d'Efficacite</u>
5	98-100%
4	95- 97%
3	85- 94%
2	80- 84%
1	70- 79%

TABLEAU I
EFFICACITE DU MALATHION (91% ULV 0 58 L/HA) SUR LES SAUTERIAUX
AVEC NOTES SUR CERTAINS AUTRES INSECTES RAVAGEURS - ZONE I
TRAITEE LE 6 SEPTEMBRE ET EVALUEE LE 11 SEPTEMBRE 1986

BLOC	VILLAGE	DEGRE D'EFFICACITE DU MALATHION					EFFETS NOCIFS		
		SAUTERIAUX		AUTRES INSECTES			POPULATION	BETAIL	
		Jachère	Cultures Arachide Niébé Mil	Puceron Arachide Niébé	Tenebrinoides Scarabeides Arachide	Cantharide Arachide Jachère			Chenille poilue Amsacta Niébé Jachère
1	Khelere Ndir Diop	4	4	5	5			Néant	Néant
2	Keur Batta Diop	4	5	5				"	"
3	N'Betty Bessine Opal Peul	4	5	5	5		2	"	"
4	Bati Ngoera	4	5	5	5	5	2	"	"
5	Baiti Mbau Beye	5	5	4	5			"	"
6	Bargna	4	5	5	5	5		"	"
7	Darou Marwane	4	5	5				"	"
8	Taufick Mbacké	5	5	5	5	5		"	"
9	Climane	4	5					"	"
10	Darou Fass	5	5	4				"	"
11	Touba Pétégne	5	5	4	5		1	"	"
12	Ndegaloye	5	5	4	5			"	"
13	Boukirlo	5	5	5	5	5		"	"
14	Darou Mousty	4	4		5			"	"
15	Medina	4	4		5			"	"
16	Missira Mbayene	5	5	5	5	5		"	"
17	Darou Rakhane	5	4	5	4			"	"
18	Xewo	5	5	4	5			"	"
19	Keur Macoumba	4	5	5				"	"
20	Thiamene	5	5	4				"	"
21	Mbeguere	5	4	5			2	"	"
22	Kosso	5	5	5	5		2	"	"
							1	"	"

TABLEAU II
EFFICACITE DU MALATHION (91% ULV 0,58 L/HA) SUR LES SAUTERIAUX
AVEC NOTES SUR CERTAINS AUTRES RAVAGEURS DANS LA ZONE II
TRAITEE LE 9 ET EVALUEE LE 10 SEPTEMBRE 1986

BLOC	VILLAGE	DEGRE D'EFFICACITE DU MALATHION					EFFETS NOCIFS		
		SAUTERIAUX		AUTRES INSECTES			POPU- LATION	BETAIL	
		Jachère	Cultures	Puceron	Tenebrinoides	Cantha- ride			Chenille poilue
			Arachide Niébé Mil	Arachide Niébé	Scarabeides Arachide	Arachide Jachère	Amsacta Niébé Jachère		
1	Kelel	4	5	4				Néant	Néant
2	Jachère	4							
3	Jachère								
	Kad Balladji	4							
4	Diembéré	5	5	5	5				
5	Ballodji	5	5						
1	Dealé	4	5						
7	Jachère	4							
8	Dewdikoy	5	5						
9	Darma	5	5						
10	Touba Bogo	5	5	4	5				
11	Touba Bogo Est	5	5	4					
12	Ndiouki	4	5	4					
13	Ndiogou	4	5	4					
14	Darou Minara	5	5	5	5				
15	Dia Sam	5	5	4	5	5			
16	Hdoni Woolof	4	5	5	5				
17	Ndour Woolof	4	5	5	5	5			
18	Sam Fall	5	5	4	5	5	2		
19	Irade	5	5	5	5				
20	Boundo Baki	4	5						
21	Thiondi	5	5						
22	Sadio	5	5	5	5	5			
23	3km Est Sadio	5	5	5	5	5	2		
24	Galde, Failode	5	5	4	5		2		

TABLEAU III
EFFICACITE DU MALATHION (91% ULV 0,58 L/HA) SUR LES SAUTERIAUX
AVEC NOTES SUR CERTAINS AUTRES RAVAGEURS DANS LA ZONE III
TRAITEE LE 10 ET EVALUEE LE 12 SEPTEMBRE 1986

BLOC	VILLAGE	DEGRE D'EFFICACITE DU MALATHION					EFFETS NOCIFS		
		SAUTERIAUX		AUTRES INSECTES			POPULATION	BETAIL	
		Jachère	Cultures	Puceron	Tenebrinoides	Cantharide			Chenille poilue
			Arachide Niébé Mil	Arachide Niébé	Scarabeides Arachide	Arachide Jachère	Amsacta Niébé Jachère		
1	3km Guerle Ouolof	5	5	5	5			Néant	Néant
2	Fallode (Est)	5	5	5			2		
3	Jachère (*)	5							
4	Darou Minam Talf	5	5	3	5				
5	Jachère (*)	5					2		
6	Todel (Jachère)	5					2		
7	Bélé Sene (Oldia)	5			5	5			
8	Jachère (*)	5							
9									
10	Oldou Tan	5							
13	Oldou Boumeg	3					1		
16	Jachère (*)	5				5			

1) Coordination des Operations du Traitement Aerien

a) Le succes de cette operation de traitement aerien a ete dû aux efforts considerables de l'USAID et des differents services senegalais (la DPV, l'Armee de l'Air, la Gendarmerie, la Radio, la Direction de l'Agriculture, le Secteur Agricole, la Presse Nationale et Internationale)

b) La mission americaine Office for Foreign Disaster Assistance (OFDA) a une vaste experience dans le traitement phytosanitaire aerien et respecte minutieusement toutes les normes preconisees dans cette operation (vol a basse altitude, arrêt de pulverisation au niveau de grandes agglomerations, utilisation d'un insecticide tres efficace et moins toxique, bon calibrage permettant ainsi une couverture homogene sur la vegetation, traitement matinal dans de bonnes conditions de temperature et de vent

c) Une tres bonne entente et une excellente collaboration ont ete observees au niveau de l'equipe conjointe de terrain (USAID, DPV, Inspecteurs Agricoles et Phytosanitaires de Louga, Kebemer et Diourbel, Armee de l'Air, Gendarmerie), ce qui permettait un bon suivi et une coordination rapide avec les pilotes au cours des traitements aeriens

d) Suite au communique lance a la radio, les villageois ont pris toutes les precautions necessaires avant, pendant et apres le traitement aerien, même ceux qui n'etaient pas au courant de l'arrivee des avions et qui travaillaient dans les champs. Aucun symptôme d'intoxication n'a ete signale au niveau de la population et du betail au cours de notre evaluation dans ces 3 zones traitees (6-12 Septembre 1986)

2) Efficacite du Malathion ULV

a) Le choix du Malathion a spectre etendu a permis de mener une lutte tres efficace

- non seulement sur l'objectif vise, c'est-a-dire la lutte contre les sauteriaux (95-100%),

- mais aussi contre les autres insectes ravageurs tels que les pucerons noirs (Aphis craccivora), les tenebrinoides (Coleopteres), et dans une certaine mesure les jeunes chenilles poilues (Amsacta moloneyi) qui attaquent le niébe et l'arachide. Il faudrait egalement noter qu'un certain nombre de ces chenilles poilues ont montre une certaine tolerance (ou resistance) au produit, peut-être a cause de leur grande mobilite qui leur permettait de se cacher dans les abris (trous, fentes) au cours de la pulverisation, et de la courte remanence du produit.

b) Le Malathion ULV s'est montre comparable au Dimethoate CE (sur les pucerons noirs) et au Fenitrothion 3% PP (sur les sauteriaux et les chenilles poilues). Cependant, cette formulation du Fenitrothion s'etait montree moins efficace sur les pucerons, ceci serait dû a 3 facteurs principaux suivants

- * couverture non homogene,
- * periode d'application generalement pas appropriée,
- * efficacite seulement sur les jeunes larves

Compte tenu de ces contraintes, il serait souhaitable d'utiliser les formulations CE ou ULV de ce produit pour la lutte contre une population mixte de sauteriaux (individus de differents stades de developpement). En ce qui concerne le Malathion, un taux de mortalite eleve des sauteriaux, voire des pucerons, a ete observe dans les zones traitees

c) Le Malathion est moins coûteux et moins toxique que la plupart des produits actuellement utilisés. Ceci permettrait au Gouvernement Senegalais de reduire les dépenses phytosanitaires et, par conséquent, de couvrir plus de superficies. Il a été rapporté en Iowa (Etats-Unis) en Août dernier, que le Malathion a été très efficace sur les sauteriaux.

d) Les villageois ont aussi signalé l'efficacité de ce produit sur les mouches, les moustiques et les tiques et en ont été très satisfaits.

2) Satisfaction des Villageois

a) Au cours de notre évaluation intensive en milieu rural, toute la population (marabout de Touba, préfet de Diourbel, sous-préfet de Mbacke, paysans, chefs des secteurs agricoles et phytosanitaires, paysans) a exprimé sa satisfaction totale pour l'intervention ponctuelle du Gouvernement Senegalais qui, enfin, est venu sauver les cultures non seulement des invasions des sauteriaux, mais aussi de l'attaque récente des pucerons noirs sur le niébe et l'arachide.

Par contre, d'autres villageois provenant des zones non traitées se ruèrent chaque jour à l'inspection d'Agriculture de Kebemer et de Mbacke pour demander de l'insecticide et de l'assistance phytosanitaire en général.

Ainsi, il serait souhaitable qu'une telle opération soit étendue aux autres zones infectées comme

- Le nord de la zone Centre (Réserve sylvopastorale de Deal) où il existe une forte pillulation des larves de sauteriaux (256-300/m²) qui pourraient reinfester les zones traitées en descendant avec le FIT vers le sud.

- La bande entre Sahadatou, Taif, Baila où les larves de 2^e, 3^e stade d'Oedaleus Senegalensis pillulaient à des densités de près de 300 larves par mètre carré.

- Le Sud des zones Ouest-Centre ou les jacheres et les champs d'arachide et de niébe sont actuellement ravages par les pucerons et les chenilles poilues

b) Les Agents de la Presse (FAO, USIS, France) nous ont également accompagné sur le terrain pour constater les champs gravement infestés, ~~l'efficacité du traitement au Malathion sur les sauteriaux~~ et les pucerons. Ils ont aussi pu constater que le Malathion ne présentait aucun danger pour la population et le bétail.

c) Un documentaire a été également réalisé par les techniciens de l'USAID, lequel documentaire récapitule toute la lutte anti-acridienne menée, à savoir la prospection sur le terrain, la détection des foyers de sauteriaux, les réunions de coordination, l'arrivée des 4 avions américains, le stock de Malathion, la pulvérisation sur les jacheres, les réactions des larves et des adultes des sauteriaux à l'insecticide. Aussi le documentaire relate les interviews des villageois sur les traitements.

d) Une telle opération a permis aux techniciens de la DPV d'acquérir une expérience considérable. Ceux-la pourront à l'avenir participer à des programmes de lutte de ce genre. Cette lutte anti-acridienne a servi non seulement d'expérience, mais aussi de mise en pratique de beaucoup de connaissances étudiées et enseignées au centre de la protection des végétaux (prospection, méthodes de traitement, etc.). D'autre part, la notion de travail en équipes, l'une des exigences de la lutte intégrée a été clairement comprise. La réussite de cette mission est surtout due à la volonté commune de travailler en équipe. Il faudrait cependant noter quelques contraintes à l'usage du Malathion.

Contraintes dans l'Utilisation du Malathion ULV

1) Absence de selectivite pour les insectes le Malathion tue les sauteriaux mais aussi plusieurs autres insectes d'especes differentes Il est possible que des insectes benefiques soient elimines par le produit des etudes ulterieures devraient confirmer ou informer l'existence et l'elimination d'insectes benéfiques au cours de l'operation Cependant, le Malathion reste tres selectif entre les insectes et les mammiferes si les insectes sont tues, les hommes et le betail sont indemnes

2) La courte duree de remanence Compare au Carbaryl, le Malathion n'est pas remanent 4 jours contre 20 jours Le Carbaryl est formule de telle sorte qu'il ne disparait pas avec la pluie ^{However} cependant, c'est l'absence de remanence qui rend ce produit apte au traitement aerien (aucun prejudice sur la sante des hommes et des animaux)

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APPENDIX A

EVALUATION OF EFFICACY AND ENVIRONMENTAL IMPACT OF LARGE SPRAY
PLANE APPLICATION OF ULV MALATHION IN SENEGAL IN 1986

1

by

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During mid-September 1986, in the first large-scale use of ULV malathion in Senegal against Oedaleus senegalensis (Krauss), ca 376,000 ha were treated with ULV malathion with DC-7 aircraft. Late hatches and, perhaps, migration resulted in population densities high enough to induce authorities to retreat parts of the area treated in September, and additional surrounding areas in mid-October 1986. Approximately 314,000 ha were treated in mid-October. This study was conducted to evaluate efficacy and environmental impact of the mid-October treatment.

Materials and Methods

Study plots were selected in the area north of Touba, Senegal in an area that was not treated in mid-September 1986, however, the area was included in the mid-October 1986 treatment. At each of 4 randomly selected areas, 40 rings of 0.10m² were placed ca 3 cm apart in both millet and adjacent grass areas 4 to 5 days pretreatment. A few rings disappeared in almost every plot (Table 3). Grasshopper [almost 100% O. senegalensis (Krauss)] densities were assessed 24 hours prior to treatment and again at 4 days posttreatment. Pretreatment bird and small mammal counts were made by visual examination of a 500 by 20m transect and a count of the birds and small mammals in and around the 10 most prominent trees within 100 meters of the transect. Sweepnet samples of 100 sweeps/plot were taken in groundnut fields adjacent to or near the study plots. Pre and posttreatment samples of grass, millet heads and millet leaves were taken at each of the 4 test sites.

Plots 1 and 2 were located ca 10 km north of Ndindi. These plots were unuseable because of spray drift from the spray block to the north. Plot 3 was established ca 3 km north of Ndindi Abdou and 2 km west of the paved road

to Kad Ndiayene Plot 4 was 2 km west of plot 3 Plot 5 was located 0.5 km east of the highway near the turn-off to Plot 3 Plot 6 was ca 2 km northeast of Plot 5 All plots were located in the semiarid, flat plains which are characterized by broad expanses dotted with thorn trees, Acacia sp, and a few baobab trees The soil is very sandy Small fields of groundnuts, millet and to a lesser extent sorghum, are interspersed with grassland The original perennial grasses appear to have been replaced to a very large extent by grassy annuals of low palatability

The time of this study, October 15-21, 1986, was the start of the dry season and no rain had occurred for ca two weeks. The grass was mostly dry and the millet harvest was beginning

Results and Discussion

ULV malathion applied by large aircraft (DC-7) at 0.58 l/ha was found to be highly efficacious against O. senegalensis (Krauss) in both grass and millet Mean mortality in the four study plots was 99.5% and 97.4% in millet and grass, respectively (Table 1) Table 3 provides the complete counts on a per ring basis The level of control was approximately the same in millet and grass The sparse vegetative cover from the dry grass and greatly reduced millet canopy caused by grasshopper feeding probably helped in achieving this outstanding level of control

Bird populations, based on the assessment technique used, were variable However, total counts along each transect and in 10 trees in each area were almost equal (Table 2) No difference in bird vocalization was obvious to the evaluators No small mammals, dead or alive, were observed pre or posttreatment

The data show that ULV malathion applied by large aircraft is highly efficacious against O. senegalensis (Krauss) in North Central Senegal No adverse environmental effects were observed Insect populations in groundnut were almost exclusively O. senegalensis (Krauss) (no visible damage) prior to treatment and almost non-existent after treatment

Table 1 Efficacy of ULV malathion for control of *O senegalensis* (Krauss)
 Touba, Senegal, October 1986

PLOT *	PRE AND POST TREATMENT DENSITIES** AND PERCENT MORTALITY AT 4 DAYS ***					
	MILLET			GRASS		
	PRE	POST	% MORT	PRE	POST	% MORT
3	21 6	0 26	99 9	7 8	0 59	92 4
4	18 5	0 30	98 4	34 1	0 00	100
5	29 2	0 00	100	13 4	0 60	95 5
6	41 2	0 00	100	2 4	0 30	87 5
X	27 6	0 14	99 5	14 4	0 37	97 4

* Cooperators Plot 3 = ?, Plot 4 = Samba Ko, Plot 5 = El Hadji Samba Goury Ba, Plot 6 = Gallo Goury Ba

** Per square meter

*** Treated Oct 16 - Sampled Oct 20

Table 2 Bird counts and mortality before and after
ULV malathion treatment Touba, Senegal, October 1986

	PLOT 3		PLOT 4		PLOT 5		PLOT 6		TOTAL	
	PRE	POST	PRE	POST	PRE	POST	PRE	POST	PRE	POST
Transect										
Mortality	0	0	0	0	0	0	0	0	0	0
Bird Count										
Tree 1	1B+3T	0	2-G	0	0	1-B	0	0		
2	0+7G*	0	0	3-T	0	1-B	0	0		
3	0	0	0	0	6-B	0	0	1-T		
4	1T	0	0	2T	2B	0	0	0		
5	0	0	1-G	0	3B	0	0	1-T		
6	3T	1-T	0	0	0	0	0	0		
7	6-6*	5-G*	0	0	0	0	1-T	1-B		
8	0	0	0	0	0	0	0			
9	0	0	0	2T	0	2T	0			
10	0	0	0	0	3B+3T	0	0			
Total Bird Count for 10 Trees	5	1	3	7	17	4	1	3	26	15
Observed in Area	3-G 3-B 0-D 1B&W	5-G 2-T	2-G 0-B 3-D	5-G 4-B 0-D	2G 1B 0D	5-G 1-B 0-D	3-G 1-B 0-D	1-G 4-B 40-D		
Total Observed	7	7	5	9	3	6	4	5**	19	27
Total Birds	12	8	8	16	20	10	5	8	45	42

T = Small bird

B = Black bird (size of Robin) with red breast

G = Gull-like

D = Dove or Quail-like

B&W = Black and White

* On ground

** Dove-like birds appeared to be migrating into area Not included in total

Table 3 Counts to determine efficacy of ULV malathion for control of
O Senegalensis (Krauss) Touba, Senegal, October 1986

PLOT 3				PLOT 4				PLOT 5				PLOT 6				
PRE		POST		PRE		POST		PRE		POST		PRE		POST		
M	G	M	G	M	G	M	G	M	G	M	G	M	G	M	G	
0	0	0	0	0	4	0	0	3	1	0	0	3	0	0	0	
0	0	0	0	2	6	0	0	2	1	0	0	1	0	0	0	
0	0	0	0	2	8	0	0	1	1	0	0	3	2	0	0	
0	1	1	1	3	5	0	0	6	0	0	0	4	0	0	0	
0	0	0	1	0	6	0	0	5	0	0	0	12	1	0	0	
3	2	0	0	2	6	0	0	3	0	0	0	4	0	0	0	
6	1	0	0	3	5	0	0	1	0	0	0	9	0	0	1	
5	1	0	0	2	4	0	0	2	2	0	0	6	0	0	0	
7	2	0	0	2	4	0	0	6	1	0	0	7	0	0	0	
1	0	0	0	2	5	1	0	2	1	0	0	3	1	0	0	
4	0	0	0	2	2	0	0	0	1	0	0	5	0	0	0	
3	0	0	0	0	9	0	0	1	1	0	0	7	0	0	0	
2	1	0	0	0	3	0	0	0	0	0	0	4	0	0	0	
4	0	0	0	0	2	0	0	2	0	0	0	8	0	0	0	
2	0	0	0	0	5	0	0	3	2	0	0	3	0	0	0	
1	1	0	0	2	3	0	0	0	3	0	0	4	0	0	0	
4	0	0	0	3	2	0	0	0	3	0	0	5	1	0	0	
1	1	0	0	2	2	0	0	2	2	0	0	7	0	0	0	
0	0	0	0	3	3	0	0	5	2	0	0	2	0	0	0	
0	0	0	0	1	2	0	0	4	1	0	1	3	0	0	0	
2	0	0	0	2	3	0	0	3	1	0	0	0	0	0	0	
0	1	0	0	4	1	0	0	1	1	0	0	2	1	0	0	
1	2	0	0	0	0	0	0	4	2	0	1	3	1	0	0	
1	3	0	0	0	2	0	0	2	2	0	0	4	0	0	0	
2	2	0	0	1	3	0	0	10	1	0	0	2	0	0	0	
3	2	0	0	2	1	0	0	7	3	0	0	3	0	0	0	
3	3	0	0	3	0	0	0	8	4	0	0	0	0	0	0	
4	0	0	0	2	2	0	0	5	0	0	0	7	0	0	0	
1	1	0	0	2	3	0	0	5	1	0	0	6	0	0	0	
4	0	0	0	0	0	0	0	4	0	0	0	3	0	0	0	
0	0	0	0	2	0	0	0	1	2	0	0	4	0	0	0	
3	1	0	0	0	2	0	0	2	0	0	0	5	0	0	0	
4	1	0	0	3	2	0	0	4	1	0	0	7	1	0	0	
2	0	0	0	5	1	0	0	0	2	0	0	0	0	0	0	
3	1	0	0	3	0	0	0	1	1	0	0	1	0	0	0	
5	2	0	0	3	0	0	0	2	1	0	0	2	0	0	0	
1	0	0	0	0	0	0	0	4	4	0	0	1	1	0	0	
0	0	0	0	4	0	0	0	3	3	0	0	4	0	0	0	
				5	0	0	0					5	0	0	0	
												6	0	0	-	
82	29	1		72	116	1	0	111	51	0	2	115	9	0	1	
n38	37	38	34	38	34	37	37	38	38	34	36	40	38	40	38	
21	6	7	8	0	26	0	59	18	5	34	1	0	3	0	2	
								9	2	13	4	0	0	6	41	2
														2	4	0
														0	0	3

APPENDIX B

EVALUATION OF EFFICACY AND ENVIRONMENTAL IMPACT OF SMALL SPRAY
PLANE APPLICATION OF ULV DIAZINON AND FENITROTHION IN
ZIGUINCHOR REGION IN SENEGAL IN 1986

IMPACT OF SMALL SPRAY PLANE APPLICATION OF ULV DIAZINON AND

FENITROTHION IN ZIGUINCHOR REGION IN SENEGAL IN 1986

by

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On October 10 to 19, 1986 the Canadians completed their grasshopper control program in Senegal. The final 35 hours of spraying were conducted in the Ziguinchor Region in Southwestern Senegal against the following species in decending order of importance Cataloipus cymbiferus (Krauss), Hieroglyphus africanus (Uvarov), Zacompsa festa (Karsch), Kraussaria angulifera (Krauss) and Oedaleus nigeriensis (Uvarov). The ca 158,000 ha sprayed included a combination of areas selected approximately 4 weeks prior to treatment by a PV/USAID survey team (Khoi Le, Francis Can Ngo, Bruce Thornley, Abdoulaye Niassy, Lamine Ba and Ni Van Nguyen), and several days prior to and up to treatment by a French entomologist (Dr. Jacques Mestre) working for Aid and Cooperation Fund of the French Republic. Populations of grasshopper reported by the PV/USAID team ranged from 5 to 100/m² in the designated treatment area. No data are available as to the populations noted by the French entomologist. Our observations in selected locations within the treatment area revealed low to moderate populations ranging from 1 to 20/m². Although ca 225,000 ha were identified by the PV/USAID team for potential treatment, subsequent surveys by the French entomologist identified additional areas for treatment. Since the French entomologist's survey provided the latest population data, the Canadians followed his treatment area suggestions. However, a compromise was reached with the Canadians, based on our survey, to modify some of the treatment area to include high grasshopper density areas identified in the Tendouck area. The following is an assessment of the efficacy of the control program and environmental impact. The evaluation covered the period from October 15 to 19, 1986

Materials and Methods

Study plots were located in the Ziguinchor Region of Southwestern Senegal. Plot 1 was located near Diaboudiore. This area was characterized as a multicropping area which included paddy rice, grass pasture, groundnuts, millet and corn around the villages and a combination of trees including boussana, palms, boupok, bele, kad and several types of unidentified brush. Plot 2, near Katinong, was in an area similar to Plot 1, however there were somewhat fewer trees and more concentration of paddy rice and pasture. Plot 2 also had small patches of millet and corn around the perimeter of the villages. Plot 3 was located near Baila. This was near a flood plain (extensive amount of water and fish present) that was approximately 2 kilometers across. A thicket of trees bordered the area, however only a small number of trees, primarily kad and some boupok, were in the test area. Plot 4 was between Baila and Bodiana, but on the opposite side (west) of the flood plain from Baila. The area was primarily paddy rice and pasture with many trees in the pasture area. The trees were primarily palm, kad, boupok and bele. There was a small number of bele trees in the paddy rice. Plot 5 was near Badiana. The area including trees, was similar to the area in Plot 4. Plots 1 and 2 were to be treated ULV with diazinon 95%, while 3, 4 and 5 were to be treated ULV with fenitrothion 96%. The insecticides were applied by the Canadian contractor, AAI, using 4 Thrush S2R's fitted with AU 5000 Micronaire units. The aircraft sprayed at a rate of 0.25 l/ha for both chemicals at from 30 to 45 m above the ground. Airspeed ranged from 100 to 110 mph.

Grasshopper sampling rings were placed in predetermined areas 48 hours before the area was to be sprayed. This allowed for pretreatment grasshopper counts to be made 24 hours after placing the rings in the sample areas. Posttreatment counts were made 48 hours after treatment. The counts to be

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taken included the following (1) the number of grasshoppers in 40, 0 10 m² rings in both crop (rice) and pasture (grass) for a total of 80 rings per site, (2) the kinds and number of harmful and beneficial insects noted in 100 sweeps of the rice with a 30 5 cm diameter sweepnet, (3) the number of living birds in a total of 10 trees in the sample area, (4) the number of dead birds under those 10 trees, (5) the number of live and dead birds and mammals along a 500 X 10 m transect, and (6) whether birds were observed in flight over the treatment area and if birds could be heard singing from within the treatment area Pre and posttreatment crop and pasture residue samples were also taken Standard measurements including temperature, wind speed and direction and sky conditions were recorded Also, test number, crop, location of test, time of day sampled, treatment date and chemical applied were noted

Results and Discussion

Plots 1 and 2 were sprayed prior to pretreatment counts so only post count data are available Plots 3, 4 and 5 were established and evaluated as originally planned However, rainfall after treatment affected grasshopper densities so posttreatment counts (live + dead grasshopper) were lower than totals observed in pretreatment counts Therefore, percentage mortality was figured using live and dead grasshoppers on posttreatment dates (Table 1)

Plot 1 and 2 - The grasshopper population in these plots was in the range of 10 to 20/m² the day the test sites were selected Since these test areas were sprayed prematurely only posttreatment counts could be made The posttreatment counts were made 19 hours after a heavy rain storm No doubt counts were affected by the rain It appears that the more water present in the paddy prior to the rainfall, the greater the likelihood that the

grasshopper numbers observed did not reflect what was actually there prior to rainfall. Grasshopper populations were less affected by the heavy rainfall in the pasture areas. In Plot 1 in the paddy rice, when comparing live grasshoppers to dead ones in the rings, diazinon ULV gave 81% control (Table 1). The paddy was almost dry the day before rainfall. Nearly 100% of Hieroglyphus africanus (Uvarov) adults were killed while only approximately 70% of Cataloipus cymbiferus (Krauss) adults were killed. Almost 100% mortality was noted for the nymphs of the two species. In Plot 2, where water was standing in the paddy rice the day before the rain, the number of live grasshoppers exceeded the number of dead ones by 2 to 1. Only 44% control was recorded in the rice in this test plot (Table 1). It is our opinion that the grasshoppers were washed away in the already flooded paddy. In fact, large numbers were bunched together at the corners of the paddy. Grasshopper control in the pasture areas of Plots 1 and 2 were 82% and 96% respectively. In both Plots 1 and 2 birds were observed in normal flight above the test area (Table 2). Bird chatter was similar to that heard the day the plots were selected. When 10 trees were examined within each plot area a few birds were noted in the trees, but no dead birds were observed on the ground under these trees. Also, no dead birds or mammals were noted along a 500 X 10 m transect in each of the plots. The 100 sweep samples are being counted and data are not available at this time. The primary beneficial insects that were killed in the spray areas were honey bees, parasitic hymenoptera, ground beetles (Carabidae) and two families of Odonata (Coenagrionidae and Corduliidae). There were some reports of dead fish following the application of diazinon, however none were observed by the evaluation team. Based on all observations, it appears that diazinon had minimal impact on the environment, however, bees were severely affected.

Plot 3 - The grasshopper population 12 hours prior to treatment with fenitrothion ULV averaged about $9/m^2$ in the pasture and approximately $14/m^2$ in the paddy rice. As noted above, heavy rainfall following treatment reduced grasshopper numbers. Posttreatment counts (48 hours) were down,

$4/m^2$ pasture and $6/m^2$ in rice, however 100% of the grasshoppers in the pasture and 96% in the paddy rice were killed (Table 1) In Plot 3 birds were observed flying and heard singing within and around the treatment area when both pre and posttreatment were taken (Table 2) Also, a few birds were noted in the trees during both pre-and post-count periods No dead birds were noted on either sample date Also, no dead birds or mammals were observed along a 500 X 10 m transect The 100 sweep sample is being counted and data are not available at this time As with Plots 1 and 2, parasitic hymenoptera and ground beetles (Carabidae) were impacted severely Also, large numbers of honey bees were observed working flowering weeds around the plot area prior to treatment Posttreatment observations indicated that no bees were alive in or near the plot In fact, bees were not observed in any of the plots after treatment There is no doubt that both fenitrothion and diazinon had a tremendous impact on the bee population in the treatment areas

Plot 4 - Approximately 12 hours prior to treatment with fenitrothion ULV the grasshopper population averaged approximately $7/m^2$ in the pasture and $4/m^2$ in the paddy rice Heavy rains following treated reduced numbers to $2.5/m^2$ in the pasture and $1.5/m^2$ in the rice Forty-eight hour posttreatment counts indicated that 80% of the grasshoppers in the pasture were controlled, while 100% in the paddy rice were killed (Table 1) Birds were observed flying above and singing within and nearby the plot area during pre and posttreatment counts (Table 2) A few birds were noted in the trees within the treatment area No dead birds were seen under the trees during pre and post count periods Along the 500 X 10 m transect no dead birds or mammals were observed Data from the 100 sweep sample from the rice have not been analyzed Parasitic hymenoptera and ground beetles (Carabidae) were killed in large numbers

Plot 5 - The grasshopper population in Plot 5 was low. Only 3 grasshoppers were observed /m² in the pasture, while only 1/m² was noted in the paddy rice. At 48 hours posttreatment 275/m² were noted in the pasture and 15/m² in the rice. The 48 hours post counts indicated that 91% of the grasshoppers were killed in the pasture while only 33% were killed in the paddy rice (Table 1). Birds were observed flying and heard singing in and around the plot area at both pre and post count periods (Table 2). Only one bird was noted in the 10 trees within the test area. No dead birds were observed below the trees on either sampling date. As in the previous tests, no dead birds or mammals were observed along the 500 X 10 m transect. One hundred sweep samples were taken in the paddy rice. No data are available at this time. A large number of dead ground beetles (Carabidae) were noted in the plot area when the post counts were made. A few parasitic hymenoptera were also killed.

Outside Plot Area - Additional surveys in the areas around Tendouck revealed that large numbers of crabs were killed by fenitrothion. It is not known whether these crabs came into contact with the chemical in the water or whether they were directly sprayed on shore or a combination of both. No other organisms were noticeably impacted in this area.

ACKNOWLEDGEMENT

We were assisted in sampling the test areas by Moro Cisse (Entomologist, DPV, Ziguinchor), Saliou Djibou (Rice Research Entomologist, ISRA, Djibou) and Malang Diao (Driver, USAID/Dakar)

Table 1 Efficacy of ULV diazinon and fenitrothion for control of Catolopus cymbiferus (Krauss) and Hieroglyphus africanus (Uvarov) Ziguinchor Region, Senegal, October 15-19, 1986

TREATMENT DENSITIES/M2 AND PERCENTAGE MORTALITY AT 2 DAYS POST						
PLOT*/INSECTICIDES	R I C E			P A S T U R E		
	DEAD	LIVE	% MORT	DEAD	LIVE	% MORT
1 - Diazinon	16 00	3 75	81%	3 50	0 75	82%
2 - Diazinon	2 00	4 50	44%	5 75	0 25	96%
3 - Fenitrothion	5 75	0 25	96%	4 00	0 00	100%
4 - Fenitrothion	1 50	0 00	100%	2 00	0 50	80%
5 - Fenitrothion	0 50	1 00	33%	2 50	0 25	91%
X	5 15	1 90	73%	3 55	0 35	91%

* 1= Diaboudiora, 2= Katinong, 3= Baila, 4= Between Baila and Badiana,
5= Badiana

Table 2 Bird and mammal counts and mortality before and after
ULV diazinon and fenitrothion treatment Ziguinchor Region,
Senegal, October 15-19, 1986

	PLOT 3		PLOT 4		PLOT 5		TOTAL	
	PRE	POST	PRE	POST	PRE	POST	PRE	POST
Transect								
Mortality *	0	0	0	0	0	0	0	0
Bird Count								
Tree ** 1	0	0	0	0	1	0		
2	2	5	1	0	0	0		
3	0	0	0	0	0	0		
4	0	0	1	0	0	0		
5	1	0	0	0	0	0		
6	0	0	0	0	0	1		
7	0	0	0	2	0	0		
8	0	0	3	0	0	0		
9	0	0	1	0	0	0		
10	<u>0</u>	<u>0</u>	<u>0</u>	<u>2</u>	<u>0</u>	<u>0</u>		
Total Bird								
Count for	3	5	6	4	1	1	10	10
<u>10 Trees</u>								
Birds flying ***	Y	Y	Y	Y	Y	Y		
Birds singing ***	Y	Y	Y	Y	Y	Y		

* Number of dead birds and mammals along 500 X 10 m transect

** Number represents live birds in trees, no dead birds were noted on ground under trees

*** Y = yes they were noted No apparent difference pre and posttreatment

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APPENDIX C

CROP LOSS ASSESSMENT - LOUGA AND DIOURBEL REGIONS

On October 21, a crop loss assessment was made in the Touba area as a part of the evaluation of the large plane spray operations. Three treatment zones were evaluated: (1) zone treated only in September, (2) zone treated only in October, and (3) zone treated both in September and October. The major food crop in the area was millet with smaller plantings of sorghum. The pasture areas consisted primarily of a weedy annual grass that was dry and senescent.

A systematic random sampling plan was used in the millet. In each field, a random starting point was selected and the number of millet heads in 10 meters of row was counted. At the end of the first ten meters, a second point was selected five rows to the right and the number of heads in 10 meters was counted. This procedure was repeated for a total count of 30 meters of row. Every tenth head was collected for further analysis. Visual examination of pasture and sorghum indicated little or no damage so an assessment was not made.

These data indicate that millet losses to grasshoppers were much less in the zones treated in September where losses ranged from 10 to 30%. Losses in the zone treated only in October ranged from 70 to 90%. Millet production in all three zones appeared also to be affected by drought, infertility, and insect damage during pollination.

Grasshopper populations in the zone treated only in September were very low - from 1 to $3/m^2$. Grasshopper populations in both zones treated in October were almost non-existent, offering the possibility of very low populations in 1987.

APPENDIX D

CROP LOSS ASSESSMENT - ZIGUINCHOR REGION

Between 14-19 October, a crop loss assessment was made in the Ziguinchor Region as part of the small spray plane efficacy evaluation and EA. The area surveyed included farms near Tindieme, Niassarang, Diaboudiore, Suelle, Katinong, Baila, Badiana, and Djinaki. These areas were north and northwest of Bignona. The assessment did not include the areas near Tendouck and Aliniam, which were identified as additional areas of high infestation. The grasshopper species included, in descending order of importance, Cataloipus cymbiferus (Krauss), Hieroglyphus africanus (Uvarov), Zacompsa festa (Karsch), Kraussaria angulifera (Krauss) and Oedaleus nigeriensis (Uvarov).

Observations were made in paddy rice, pasture, millet, corn and sorghum. Crop loss was based on leaf defoliation and head feeding and clipping in the paddy rice, leaf consumption in the pastures, leaf and head feeding in the millet and sorghum and leaf and ear feeding in the corn. Based on conversations with PV personnel no guidelines are available in Senegal for accurate assessment of crop loss based on the damage criteria noted above. The crop loss assessments therefore are based on the observers' previous experiences with the crops indicated and insects causing the damage. The potential error in the figures could be as high as 25%. However, this is still within reason.

Paddy Rice - Generally the paddy rice in all areas surveyed appeared in excellent condition. The greatest grasshopper damage was noted along the edges of the paddy near pasture. The damage was primarily to the leaves with some head feeding in fields where the heads had emerged or were maturing. Only one field surveyed had significant damage, somewhat above 20% crop loss. For all fields surveyed crop loss appeared to be approximately 5%. This number, no doubt, could have increased significantly if it had not been for the spray program.

Pasture - Grasshoppers were primarily observed along the edges of pastures near roads and crops and in patches of dense grass within pastures. Feeding in these areas was noticeable, however, the overall damage was such that losses were minimal. Damage in areas of high grasshopper concentration reached approximately 25%. However, more than adequate grass was available for livestock, even with some damage, so overall damage was of little importance.

Millet - Millet fields within the survey area did not appear to be impacted by the grasshoppers. Leaf feeding was minimal and heads were pollinating so no grain was present for consumption. Based on observations of fields within the area, no appreciable loss of millet by grasshopper feeding was seen.

Corn - The greatest impact of grasshopper feeding appeared to be on corn. Many patches of corn next to or within villages were severely impacted. Although not all patches had significant damage, overall damage was such that approximately 20% of the corn production was lost. Based on previous experiences of the evaluators, it was evident that part of the damage noted above was due to birds feeding on the ears. It is difficult, however, to partition the level of damage between the two pests.

Sorghum - Like the millet, the sorghum in the survey area did not appear to be severely affected by the grasshoppers. Little to no leaf feeding was noted and head feeding was negligible. Observations therefore would indicate that there was no appreciable loss due to grasshoppers.

APPENDIX E
GAMBIA EVALUATION

After conferring with USAID/Gambia and USAID/Senegal Mission Directors, it was decided that Huddleston should go to the Gambia to evaluate the potential for environmental problems from the use of ULV malathion applied by the DC-7 aircraft. On Saturday Oct 18, Huddleston was met by Tom Hobgood, Acting ADO and Sankung Sagnia, Chief Scientific Officer, Gambia Crop Protection Service, B S Entomology Oklahoma State University, M S UC Riverside. After arrival at 12 30 p m, they evaluated grasshopper populations in the area south and west of the airport (Sukuta-Sanyang-Jambanjai) which had been assigned to the EEC small planes. Grasshopper populations ranged from 1 to 3/m² and no serious crop damage was apparent. This area did not appear to need treatment. They conferred with USAID Mission Director Byron Bahl and with Bob Adams and Bruce Thornley, USFS, in Dakar by radio. They were informed that the first DC-7 sorties would be on Sunday, October 19, arriving at 07 30. They alerted Radio Gambia and other officials.

They left Bakav-Fajara at 04 00 on October 19 for Tendaba camp to provide ground support. No planes arrived and they had no way to contact Dakar. Operations were begun in the southern part of the treatment area for technical reasons. They returned via the Kwinella-Kalajo Sibanor-Brikama paved route with a stop at Bulok to inspect maize, sorghum, millet and groundnuts. The most pronounced damage was blister beetle damage to millet spikes which was 100% in one field of early millet. Late millet did not appear damaged and blister beetle populations were almost zero. They were able to locate examples of grasshopper feeding on groundnut leaves and there was some damage to leaves of sorghum in the boot to soft dough stage. The only field of maize inspected was a total loss. The leaves appeared to have been consumed by grasshoppers, and the very small ears contained a few to no seeds. They were not able to positively determine if the damage was due to loss of photosynthetic surface from grasshopper feeding or interference with

pollination from blister beetle feeding Grasshopper populations appeared spotty throughout the proposed treatment area Although a mute point, since spraying did occur, the question is whether to spray at the end of the season to attempt to reduce potential populations in 1987 or to wait until 1987 to determine if populations reach economic thresholds before expending the resources

Huddleston recommended that Gambia Crop Protection personnel establish at least 4 sites in the large spray plane area to monitor efficacy and environmental impact He stressed the necessity of monitoring streams and estuaries for fish and crustacean mortality

According to Bruce Thornley, USDA/APHIS, who conducted pre-and post-spray surveys, control efficacy was about 90% in rice and 50% in pasture ULV malathion was applied at 0 88 l/ha by the large planes because of the very tall and dense foliage

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APPENDIX F

SENEGAL/GAMBIA PILOT GRASSHOPPER/LOCUST IPM PROGRAM STRATEGY

IPM PROGRAM STRATEGY

There are two approaches to grasshopper/locust control, Crisis Pest Management (CPM) and Integrated Pest Management (IPM). The 1986 Senegal/Gambia grasshopper control program is a classic example of CPM. Grasshopper populations, which have been increasing for the last few years, finally reached levels that were dramatic enough that large scale programs costing millions of dollars were deemed necessary. As is usually the case, much of the spraying was done after the crops had already been destroyed. In addition, because of time and personnel constraints, areas seriously affected could not be adequately separated from areas where control was not needed; therefore, considerably more area was treated than was necessary. When total losses in previous years are added to losses which occurred because the treatment was too late and the costs associated with treating areas with sub-economic populations, the cost effectiveness of CPM for grasshoppers/locusts is questionable.

IPM utilizes a systematic approach at the local level using farmers, farm wives, school children, etc., to monitor grasshopper/locust development and population densities in their area. These individuals, termed PM scouts, have the most to gain from careful, accurate monitoring and timely reporting of their data. Edwards et al. (1978) and Huddleston et al (1987) have demonstrated the successes of IPM programs involving local people. A special feature of using local people for scouts is that there is a very strong peer pressure for accurate, reliable scouting. Costs of scouting by local people are a small fraction of the costs of using government employees

In a model program, grasshopper/locust scouting should begin at the start of the rainy season and continue until near harvest when crops are no longer subject to damage. The minimum is one sampling site near the center of each 4 square kilometer block. Many advantages accrue when the sampling grid is

reduced to the individual farm level Grasshopper/locust development and population densities should be monitored at each site at least once per week. A critical component is the involvement of agriculture community leaders as a grasshopper/locust IPM advisory committee. They should be organized prior to the start of the program. Simple report forms should flow from the scouts to the local extension agent who should maintain a status map and expedite the delivery of the reports to an operation center such as the Dakar Training Center (Chart 1, II D). A personal computer should be used to analyze reports and maintain a status map for insecticide and equipment resupply.

Insecticides and simple application equipment should be positioned in several locations (every 20 km, for example) with an involved individual (PM scout, school principal, extension agent, etc.) who has been trained to train farmers in the correct use of the insecticides and equipment. Pesticide application should be the responsibility of the individual farmer in most cases.

The overall goal is to institutionalize grasshopper/locust IPM within the infrastructure of the government. To do this, the cost must be kept to a level that the country can continue to afford in the future. IPM costs and insecticide costs must be shared by the farmers, cooperatives, departmental, regional and national government. A strategy that has proven successful in the U.S. is for farmers to assume 1/4 of the scouting costs in the second year, 1/2 of the scouting costs in the third year, 3/4 in the third year and all of the scouting costs in the fourth year. The same formula could be followed for department, region and national government support of the infrastructure for grasshopper/locust IPM. The initial cost of the IPM scouting should not exceed \$0.04 US/ha, \$0.02 US/ha should be the goal. The ideal strategy is to require each community to provide the scout from the start as their contribution to the program.

The 1986 large plane spray operations in North Central Senegal have provided a unique opportunity to institute a Pilot Grasshopper/Locust IPM Program Strategy. Additional opportunities exist in the treated area in The Gambia and the area treated by the Canadians in the Ziguinchor Region. After a trial period (2-3 years) the Grasshopper/Locust IPM Program Strategy should be expanded to cover all of Senegal and The Gambia. This model, with modifications for local needs and customs should be exportable to other areas of the Sahel and Sub-Sahel.

An applied research component must be funded to support the IPM Program. Mr. Abdoulaye Nyassi will develop economic thresholds for grasshoppers in North Central and South Gambia as a part of a PHD program at Purdue University, Indiana, USA. Mr. Lamine Ba will develop a population dynamics model of O. senegalensis (Krauss) as a MS program at New Mexico State University, New Mexico, USA. Both candidates will conduct their research in Senegal and will attend the U.S. universities during the Spring Semester (January - May) for concentrated course work (3-4 semesters for Mr. Nyassi and 2-3 semesters for Mr. Ba). The Pesticide Application Technology research group at New Mexico State University, with assistance from Dr. Edwards, Purdue University, should be contracted to conduct the required basic research (in NM) and the applied pesticide research in Senegal.

U.S. expertise will be needed in the early stages (2-3 years) of the pilot program and in the extension of the grasshopper/locust IPM strategy to the Sahel and Sub-Sahel (5-7 years).

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Preliminary Budget¹ - 1987 for 3 areas (not adjusted for inflation)

I	<u>Extension IPM Component</u>	<u>GOS</u>	<u>GOG</u>	<u>Farmers</u>	<u>USAID</u>
A	Project Co-Leaders				
	A Lamine Ba 20%	*			
	Abouldaye Nyassi 20%	*			
	San Kung B Sagnia 20%		*		
B	Area Directors				
	North Central Senegal	*			
	The Gambia		*		
	South Senegal	*			
C	Grasshopper/Locust Scouts				
	North Central Senegal				1040
	The Gambia				1040
	South Senegal				1040
D	Operations (travel, per diem, etc)				
	North Central Senegal	500			2000
	The Gambia		500		2000
	South Senegal	500			2000
E	Equipment and Supplies				
	Computer and printer, etc				5000
	Office supplies	200	100		1000
	Sprayers				6000
	Vehicles (Diesel 4 Wheel Drive) 2				32000
F	US Technical Expertise				
	(Fees, travel, per diem)				
	Edwards 42 days				**
	Huddleston 42 days				**
	Pesticide Application Specialist (Sanderson, NMSU) 20 days				**
Totals	Year 1	1200+*	600+*	0	53120+**
	Year 2	1200+*	600+*	780	9340+**
	Year 3	1200+*	600+*	1560	8560+**
	Year 4	1200+*	600+*	2340	7780+**
	Year 5	1200+*	600+*	3120	7000+**
TOTALS		6000+*	3000+*	7800	85800+*

¹ Project to be administered by CICP

* Current salary to be provided by employer

** USAID rates, travel and per diem at CICP negotiated costs

II Grasshopper/Locust IPM Research and Training Component - 1987

	USAID
A Training	
Abdoulaye Niassy, Ph D candidate	22000
Lamine Ba - MS candidate	22000
B Thesis and Dissertation Research	
Economic threshold project	7000
Population dynamics project	7000
C Pesticide Application and Efficacy Research (NMSU contract)	50000
Total Year 1	108000
Year 2	108000
Year 3	58000
TOTAL	274000

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APPENDIX G

PRE EA DEVELOPMENT - ECONOMIC, SOCIAL AND ENVIRONMENTAL
RISK AND BENEFITS OF PLANNED INSECTICIDE USE

The following considerations are presented as a preliminary to final EA development They are outlined as per 216 3(b)(1)(1)

(a) The USEPA Registration Status of the Potential Insecticides

See Table 1 for registration status of potential insecticides for grasshopper control in Senegal

(b) The Basis for Selection of the Requested Insecticides

Selection of insecticides to be used in association with a USAID/Senegal project must conform to both USEPA and Senegalese regulations, be effective for the use intended, be acceptable environmentally with minimum risk to humans, domestic animals, wildlife and aquatic organisms, and be part of an IPM approach

The following sections discuss the insecticides of choice, efficacy and short- and long-term effects on the environment The approach taken is to utilize insecticides which have already proven to be effective, with little effect on the environment, and to evaluate several insecticides as to their acceptability in Senegal The benefits and limitations of alternative insecticides are discussed

Several species of grasshopper are included in the Pre EA They include Oedaleus senegalensis (Krauss), O. nigeriensis (Urarov), Cataloipus cymbiferus (Krauss), Hieroglyphus africanus (Urarov), Zacompsa festa (Karsch) and Kraussaria angulifera (Krauss) These species were observed by the evaluators or were indicated as being important through interviews with PV and USAID personnel The crops of primary concern are millet, rice, corn, sorghum and

pasture grasses. The principle products presently being used to control grasshoppers/locusts include malathion, fenitrothion, diazinon and propoxur. There is some indication that dieldrin and BHC are being used in some areas.

Products suggested for use are somewhat flexible. A product like malathion is inexpensive and provides for quick kill. It is probably the most appropriate product for use in most situations. Carbaryl, which is more expensive, is more appropriately used in areas where residual activity is needed. Fenitrothion and diazinon are somewhat more hazardous than malathion or carbaryl, especially to birds. Diazinon is presently under cancellation review by USEPA for certain uses based on bird toxicity. Acephate and cypermethrin are not presently used in Senegal but should be evaluated for potential inclusion in grasshopper control programs. Propoxur is presently used at the village level. USAID and the Senegalese Government will need to have concurrence on the products to be used. Environmental consideration should play a key role in those decisions. The insecticides to be used should only be applied on crops where tolerances have been set by USEPA, or if others are used, residue testing should occur to establish tolerances.

(c) The Extent to Which the Proposed Insecticide Use is Part of an IPM Program

There is no grasshopper/locust IPM program in Senegal. Malathion, carbaryl, fenitrothion and propoxur are all well adapted to an IPM program. This is especially true if pest control decisions are made based on insecticide use only as needed and with an optimum timing of application. If the above is properly followed, minimum use of insecticides are expected in the project. This situation could change as the result of a major pest outbreak(s) during the project. See "IPM Strategy", Appendix F, for detailed plan.

(d) Proposed Method or Methods of Application, Including Availability of Appropriate Application and Safety Equipment

To a large degree, most of the insecticides can be applied at the local level using knap-sack sprayers, hand-held ULV sprayers or dusters. Training in the proper use and maintenance of application equipment and use of protective clothing will be required at the local level [see (k) below]. Proper safety equipment may not be readily available in Senegal. Provisions may need to be made to obtain proper clothing for the person(s) in charge of insecticide application at the local level. If proper clothing is not available, or will not be used, the list of insecticides available for use at the local level will need to be reevaluated based on hazards to the applicator.

If wide-scale spraying is needed, large or small planes would be appropriate depending upon the area to be sprayed and window of opportunity. All personnel involved in the application or handling of the insecticides will need to be trained in the proper application and safety precautions associated with the insecticide(s) being utilized.

(e) Acute and Long-Term Toxicological Hazards, Either Human or Environmental, Associated With the Proposed Use and Measures Available to Minimize Such Hazards

The acute hazards of the potential insecticides malathion, carbaryl, fenitrothion, diazinon, acephate, cypermethrin and propoxur for grasshopper control are low to medium to humans. Dermal LD 50 values in kg/mg of body weight for rats range from a high of 4,100 for malathion to a low of slightly greater than 1,000 for propoxur (Table 1). Oral LD 50's for rabbits in mg/kg of body weight range from a high of 1375 for malathion to a low of 95 for propoxur (Table 1).

None of the insecticides are expected to be especially persistent. However, continuous use of any of the listed insecticides without proper safety equipment could result in toxicological hazards over the long-term to applicators.

Although acute hazards to humans applying some of these products may be low, safe handling of all products is a must. Even the safest materials present some hazard to applicators. Every precaution should be taken to insure that applicators understand the nature of the product being used and that precautions need to be taken even though some of these products are relatively non-toxic. For suggested training see (k) below.

When treating, precautions as required on the label should be taken to not only insure the health and well being of humans, but also domestic animals, wildlife (vertebrates and non-target invertebrates) and aquatic organisms. People should not be allowed to reenter treated areas until reentry intervals have been satisfied. Domestic animals should be placed in a location away from the target area and should not be allowed to reenter treated areas until pasture, grazing or other feeding restrictions on the label have been satisfied.

It is more difficult to control wildlife than domestic animals. However, certain repellent devices, such as scarecrows, streamers from tall poles and/or objectionable scents or in the case of honey bees, hive removal or closing hives, may help reduce the numbers of wildlife in the treatment area. In aquatic areas great care must be exercised to avoid direct spraying of aquatic systems or spraying areas where run-off or sheet-erosion into aquatic systems may occur.

In areas where it is impossible to keep humans, domestic animals, wildlife and/or aquatic organisms out of the treatment area, as may be the case in wide-scale blanket treatment, then choice of chemical becomes a critical factor. Insecticides such as malathion and carbaryl provide excellent protection of crops from grasshoppers, while being relatively safe to humans, domestic animals and wildlife. Both malathion and carbaryl have been thoroughly tested in the U S and both have been shown to have little impact on the environment when properly used. Direct treatment of water may, however, result in varying levels of mortality of certain aquatic organisms.

If possible local spraying should be utilized to reduce potential short- and long-term effects on the environment. It is important to note that wide-scale spraying over a period of years not only increases the short-term risks but magnifies long-term risks. By adopting the "IPM Strategy", Appendix F, the need for wide-scale spraying should be reduced. If wide-scale spraying continues to be necessary, the integration with local monitoring to pinpoint areas of greatest threat from grasshoppers should greatly reduce the incidence of reactive spraying and limit treatments to areas of real need.

Unavoidable effects of wide-scale insecticide use on the environment include increased risks of exposure to humans, other non-target species and aquatic systems. The negative aspects can somewhat be overcome or minimized through proper training of those involved in the program and notification of people in the target areas as to areas to be sprayed and proper steps to take to protect humans, food and water supplies and domestic animals. The adverse effects can be reduced to an acceptable level in most cases.

(f) The Effectiveness of the Requested Insecticides for the Proposed Use

Malathion, fenitrothion and diazinon have been tested in Senegal for grasshopper control. Greater than 90% control of grasshoppers with malathion was observed in both millet and pasture as part of the large spray plane.

operations in September and October 1986 Fenitrothion and diazinon control figures were somewhat more variable but did provide for 73% grasshopper mortality in rice and 91% in pasture Control studies in other parts of the world have shown that all these products are efficacious Although not evaluated as part of this program, propoxur is used at the local level as a dust for grasshopper control Based on conversations with PV personnel this product appears to provide adequate control, especially of nymphs

The other products suggested for potential use in Senegal have been used in various areas of the world Carbaryl, acephate and cypermethrin should be tested against grasshopper species encountered in Senegal before being recommended for general use

(g) Compatibility of the Proposed Pesticides With Target and Non-Target Organisms and Ecosystems

Malathion ULV - This organophosphorus insecticide has been used on a large scale in the U S for many years When utilized for grasshopper control, it has proven to be an effective, safe and economical insecticide Malathion has been effectively used in countries such as Senegal It has a broad registration in the U S for the control of insects on many food crops

Malathion is relatively non-persistent and generally acceptable for agricultural use if used according to label directions Minimum impact on non-target organisms and areas would be expected to occur The low dosage required to control grasshoppers makes this an attractive product No special protective clothing or respirators are required for applicators, although use precautions are still in order The insecticide at recommended rates poses only a slight hazard to birds, while being moderately hazardous to fish and beneficial insects Great care must be exercised to protect honey bees The product poses little threat to mammals However, like with any insecticide contamination through drift, run-off water and/or ground water could occur Great care should be exercised to insure that this does not happen

Carbaryl 4-Oil - This carbamate insecticide is one of the most extensively used pesticides in the world. In the U S it has been used for grasshopper control for many years. The product is registered on over 100 crops against over 500 insects. The U S Food and Drug Administration has set residue tolerances for this insecticide on many crops.

Carbaryl 4-oil provides extended control for up to 21 days at 6 inches or less rainfall. The 4-oil formulation exhibits good wash-off resistance and resists evaporation when aerially applied in arid conditions. Applicators do not need special protective clothing. Crops can be harvested from 0 to 1 day after application. There are no pre-grazing restrictions. Carbaryl is relatively non-toxic to mammals. It is also noted as having low bird and moderate fish toxicity. When used according to label directions, there will be little impact on non-target organisms. It is, however, quite toxic to honey bees. As with malathion, contamination through drift, run-off water and/or ground water could occur and great care should be exercised to insure that this does not happen.

Fenitrothion ULV - This chemical is an organophosphate and is similar to malathion. Fenitrothion is registered for only 15 uses in the U S. The USEPA registration does not include grasshoppers in rangeland or pasture situations or crops likely to be sprayed in Senegal. World-wide it is used on a variety of insects. It has been used extensively with good results in Africa.

Fenitrothion has limited residual activity and wash-off resistance. Applicators must wear protective clothing when mixing and applying this compound. It is moderately toxic to fish, while it is moderately to highly toxic to birds and honey bees. Its toxicity does not lend itself to wide-scale spraying by aircraft, especially in areas where large populations of birds and aquatic organisms are located. Contamination through drift, run-off water and/or ground water is more likely to occur with this product than with malathion or carbaryl. Applicators should be extremely careful so as to reduce the chance for environmental problems.

Diazinon ULV - Diazinon is an organophosphorus insecticide. It has been widely used throughout the U S and the world. It is registered in the U S by USEPA for grasshopper control on many crops. However, there are grazing restrictions which somewhat limit its use.

Diazinon is relatively non-persistent and generally acceptable for agricultural uses according to label directions. Minimum impact on non-target organisms and areas would be expected to occur. The insecticide poses little threat to mammals, and only a slight hazard to fish, but is moderately hazardous to birds (presently under special review for cancellation due to bird toxicity) and beneficial insects. Honey bees are especially susceptible to diazinon and great care should be exercised when using this product in areas where bees are foraging. Contamination through drift, run-off water and/or ground water could occur. Care should be exercised to insure that this does not happen.

Propoxur Dust - This carbamate insecticide is used extensively in villages for grasshopper control in Senegal. Propoxur is registered in the U S by USEPA, but its use in agriculture is limited. The registration does not include grasshoppers. It is used on a variety of insects, including grasshoppers/locusts in many countries. It has been used with varying results in Africa.

Propoxur exhibits limited residual activity. Care should be taken to avoid, as much as possible, direct contact with propoxur. Exposed areas should be thoroughly washed after use. Contamination through drift, run-off water and/or ground water is more likely to occur with this product than with malathion or carbaryl. Great care should be exercised to insure that this does not happen.

Acephate 75% SP - Acephate is an organophosphorus insecticide. It has been widely used in the U S , however it has not been extensively used in grasshopper control programs.

It exhibits some residue activity. Minimum impact on non-target organisms and areas would be expected to occur. The insecticide poses little threat to mammals and birds, but is moderately hazardous to aquatic organisms. Honey bees are especially susceptible to acephate and great care should be exercised when using this product in areas where bees are foraging. Contamination through drift, run-off water and/or ground water could occur. Care should be exercised to insure that this does not happen.

Cypermethrin 2.5EC - This is a synthetic pyrethroid insecticide. It has been widely used throughout the world. It has only seen limited use in the U S for grasshopper control. Indications are that it may be an effective grasshopper control material.

Cypermethrin exhibits good residual activity. It is generally acceptable if used according to label directions. Minimum impact on non-target organisms and areas would be expected to occur. The insecticide poses little threat to mammals and birds, but is moderately to highly hazardous to aquatic organisms. Honey bees are especially susceptible to cypermethrin and great care should be exercised when using this product in areas where bees are foraging. Contamination through drift, run-off water and/or ground water could occur. Care should be exercised to insure that this does not happen.

(h) The Conditions Under Which the Insecticides Are to be Used,
Including Climate, Flora, Fauna, Geography, Hydrology and Soils

The insecticides will be applied in open fields of one or more of the following millet, pasture, rice, corn and sorghum. Need for application should be based on grasshopper densities or damage as determined by PM scouts as noted in "IPM Strategy", Appendix F. Crop conditions as affected by rainfall, drought, high temperatures, etc., should be taken into consideration when making management decisions. Products scheduled for use are readily biodegraded. In fact, tropical conditions should result in a more rapid breakdown when compared to what is observed in temperate regions. The application of products such as malathion and carbaryl with knap-sack sprayers and/or hand-held ULV sprayers would minimize drift to non-target flora and fauna and bodies of water. If wide-scale spraying is utilized, these products would be expected to pose little threat to the environment if properly used.

(i) The Availability and Effectiveness of Other Pesticides or Non
Chemical Control Methods

Most other insecticides that are effective against grasshoppers are not recommended based on the fact that they have either been cancelled for use in the U.S. by USEPA or they are not registered in the U.S. or not registered for use against grasshoppers on the crops in question.

Non chemical controls have not proven to be effective against large grasshopper populations. However, evaluation of non chemical controls, such as insect pathogens, predators, parasites, cultural techniques, etc., should be evaluated as part of future control considerations.

(j) The Requesting Country's Ability to Regulate or Control the Distribution, Storage, Use and Disposal of the Suggested Insecticides

It appears that Senegal has the ability to regulate the distribution, storage and use, and to a lesser degree, the disposal of pesticides. Although, there are pesticide manufacturers who could clean and dispose of empty containers, disposal of left over pesticides could be a problem.

Where insecticides are to be used, great care in the distribution, handling, storage and use of those products must occur. Insecticides should be kept in their original containers or if repackaged, the new containers must be properly labelled indicating name of product (common name, trade name and chemical formula), warning as to the toxicity level of the insecticide, what use(s) the product is labelled for or effective against in the country, rate(s) of product to be used, mixing instructions if required, application method(s), re-entry information, antidotes or other medical treatment information, as well as safety precautions. The safety precautions should include proper applicator handling information to minimize exposure, including type of clothing, masks, boots, gloves, etc., if required, as well as precautions concerning potential contamination through drift, run-off water, and/or movement into ground water and subsequent exposure to non-target organisms such as humans, domestic animals, wildlife and aquatic organisms. Great care should be exercised to insure that contamination of food, water, clothing and articles used in the preparation, serving or consumption of food does not occur.

Pesticide containers, whether bulk or those used to distribute insecticides to farmers, should be non-corrosive and sealed to insure minimum risk of pesticide escape. It is especially important that they be non-corrosive if stored for any length of time. It is highly desirable that insecticides be distributed in containers sized to insure rapid use with little to none left for storage. Containers that are normally associated with consumable liquids, food or food stuffs should not be used to hold or store

pesticides It is highly desirable that containers be destroyed by crushing and burying after use It is probably unrealistic to assume that this will be done in areas where a container, no matter what it originally held, serves a useful purpose, whether desirable or not However, people utilizing these containers for other uses should be warned that this is highly undesirable Thorough cleaning may or may not be possible and carrying or storing water or other liquids, food or food stuffs, as well as using insecticide containers for cooking could result in severe sickness or death Senegalese PV and extension personnel should inform the public of the dangers associated with the reuse of these containers

(k) Provisions Made for Training Users and Applicators

Since insecticides are the primary management technique to be employed for grasshopper management in Senegal and since the "IPM Strategy", Appendix F, includes greater effort by local villagers to control their grasshopper problem, therefore it is imperative that local officials involved with the mixing and spraying of pesticides receive thorough training in the safe use and application of pesticides

USAID project assistance should contain provisions for the required training in the proper handling and use of pesticides prior to their disbursement One or more short courses should be held at the regional level on a regular basis Each village should designate at least two individuals to receive training, one should be the PM scout

Funding for training should be allocated as part of the project budget Experts in pesticide handling and application should be obtained through USAID, ST/AGR, as short-term TA's to conduct training sessions for Senegalese PV and extension personnel Trained PV and extension personnel in turn will train the people at the local level Course materials should be assembled and utilized as part of the training Manuals such as 'Guidelines for the Safe

and Effective Use of Pesticides," GIFAP, May 1983, provide excellent, understandable information. It is imperative that hands-on training with application equipment must be the same type as those available at the local level or type(s) that will be provided through the project or other sources. Training should include selection and use of proper clothing for application, selection and use of pesticides for the pests to be controlled, instruction on mixing pesticides, utilizing harvest intervals, instruction in proper spraying techniques, maintenance of equipment, calibration, disposal of pesticides and containers, health consideration, information on pesticide contamination of water and food stuffs, etc. An easy to read and understandable application manual, including safety information, should be made available at the village level.

To accomplish the above it is imperative that influential individuals in the Senegalese Government be committed to this training through commitment of personnel and resources.

The PV and extension personnel must work closely to insure the success of this part of the project. Regular follow-up training sessions and regular local visits to the villages during pest outbreaks and spraying are a must to insure proper handling and application of pesticides.

Peace Corps volunteers could be an effective source for continuing instruction and monitoring of IPM activities.

(1) Provisions Made for Monitoring the Use and Effectiveness of the Insecticides

As noted in the "IPM Strategy", Appendix F, it is the job of PV and USAID personnel to monitor the use and effectiveness of the insecticides. Local PV and extension personnel should make spot checks to determine if the

insecticides are being used properly and determine the condition of application equipment and whether protective clothing, where needed, is being utilized. This information will be regularly reported back to the Training Centre, Dakar, according to the proper flow of information (Chart 1, II D)

Efficacy will be determined by local PM scouts and through spot checks by PV and extension personnel. More accurate determinations based on the use of 0 10m² rings for grasshopper counts will be conducted by PV personnel from the Training Centre, Dakar. These data will be analyzed using appropriate statistical techniques. Where new products, or possibly old products with little grasshopper data available, are incorporated into the control program, they should be thoroughly evaluated using the "ring" sampling technique.

Table 1 Insecticides used or considered for use in grasshopper control program in Senegal

INSECTICIDES	EPA REGISTRATION STATUS (1)	EPA REGISTRATION FOR GRASSHOPPER (2)	LD 50 MG/KG ORAL/DERMAL	SIGNAL WORD (3)	WHO TOXICITY CLASSIFICATION (4)	TOXICITY TO BEES	SPECIAL ENVIRONMENTAL HAZARDS	CURRENTLY AVAILABLE IN SENEGAL (5)
Acephate	G	+	945/2000	Caution	II	Hazardous	Water	-
Carbaryl	G	+	500/4000	Caution	II	Hazardous	Aquatic Organisms	-
Cypermethrin	R	-	247/2000	?	?	Hazardous	Aquatic Organisms	?
Diazinon	G (6)	-	300/3600	Caution Warning	II	Hazardous	Birds Other Wildlife	+
Fenitrothion	G	-	570/1300	Warning	II	Hazardous	Birds	+
Malathion	G	+	1375/4100	Caution	III	Hazardous	Aquatic Organisms	+
Propoxur	G	-	95/1000	Caution	II	Hazardous	None	+

- (1) G = general use, not restricted, R = restricted use pesticide, must be certified to use in the U S
- (2) + = no pre-harvest or grazing restrictions on rangeland or pasture, - = restrictions on pre-harvest or grazing on rangeland or pasture
- (3) Probable lethal dose 68 kg person, drops to 1 tsp = high toxicity (Danger), 1 tsp to 1 tblsp = moderate toxicity (Warning), 16 tblsp or 1 lb = low toxicity (Caution), more = slight toxicity (Caution)
- (4) Ia = extremely hazardous, Ib = highly hazardous, II = moderately hazardous, III = slightly hazardous, IV = not likely to cause harm
- (5) + = presently being used, - = not presently used
- (6) Under special review for cancellation due to adverse hazards to birds on golf courses and sod farms

APPENDIX H

ACRONYMS AND ABBREVIATIONS

AAAS	American Association for the Advancement of Science
AAI	Agric Air Inc., St. Cecile de Milton, Quebec, Canada
ADO	Agriculture Development Officer, USAID
AFR	Africa Bureau, USAID
AGR	Agriculture, USAID
APHIS	Animal Plant Health Inspection Service, USDA
APPENDIX A	Evaluation of Efficacy and Environmental Impact of Large Spray Plane Application of ULV Malathion
B	Evaluation of Efficacy and Environmental Impact of Small Spray Plane Application of ULV Diazinon and Fenitrothion
C	Crop Loss Assessment - Louga and Diourbel Regions
D	Crop Loss Assessment - Ziguinchor Region
E	Gambia Evaluation
F	Senegal/Gambia Pilot Grasshopper/Locust IPM Program Strategy
G	Pre EA Development - Economic, Social and Environmental Risk and Benefits of Planned Insecticide Use
H	Acronyms and Abbreviations
I	Persons Contacted
J	Cables and Reports
K	Maps and Miscellaneous Items
L	EA of Malathion Spill from DC-7 Crash
ARD	Agriculture and Rural Development Division, USAID
CFPV	Centre Sahélien de Formation en Protection de Végétaux
CICP	Consortium for International Crop Protection
CIDA	Canadian International Development Agency
CILSS	Comité Permanent Inter-Etats de Lutte contre la Sécheresse
CP	Crop Protection, PV
CPM	Crisis Pest Management
CPS	Crop Protection Service, DPV
CT	Conseiller Technique, DPV
CTH	Conseiller Technique d'Horticulture, DPV
DCA	Douglas County Aviation, 22000 S. Price Rd, Chandler, AZ 85248
DPV	Direction de la Protection des Végétaux (Crop Protection Service)
EA	Environmental Assessment
EEC	European Economic Community
EPA	Environmental Protection Agency, U.S.
FAO	Food and Agriculture Organization, United Nations
GERDAT	Groupement d'Etudes et de Recherche pour le Développement de l'Agriculture Tropical, French
IPM	Integrated Pest Management
ISRA	Institut Sénégalais de Recherches Agricoles
LDC	Lesser Developed Countries
MDR	Ministère du Développement Rural, Sénégal
MS	Master of Science Degree
OCLALAV	Organization Commune de Lutte Antiacridienne et Antiaviaire
OFDA	Office of Foreign Disaster Assistance, USAID
OPP	Office of Pesticide Programs, EPA

PHD Doctor of Philosophy Degree
PM Pest Management
PV Protection des Végétaux (Crop Protection)
SAED Société d'Amenagement et d'Exploitation des Terres du Delta,
Saint-Louis
SDP Special Development Problems Division, USAID
SODAGRI Société de Développement Agricole en Riziculture, Dakar/Velingara
SODEFITEX Société de Développement des Fibres Textiles, Tambacounda/Kolda
SODEVA Société de Développement et de Vulgarisation Agricole, Dakar
SOMIVAC Société de la Mise en Valeur de la Casamance, Ziguinchor
ST Science and Technology, USAID
TR Technical Resources, USAID
ULV Ultra Low Volume
USAID United States Agency for International Development
USDA United States Department of Agriculture
USFS United States Forest Service
W Washington, D C

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APPENDIX I
PERSONS CONTACTED

WASHINGTON, D C

Bob Altman - USAID, ST/AGR
Anthom Benesch - Senegal Country Officer, USAID, AFR/W
Andrea Blumberg - AAAS Fellow, USAID, ST/AGR/W
Bessie Boyd - USAID, AFR/TR/SDP/W
Ans Burgett - Asst Agr Dev Officer, USAID, AFR/TR/ARD/W
George Cavin - Grasshopper/Locust Expert, CICP Consultant
Carroll Collier - USAID, ST/AGR/W
Gudren Huden - OFDA/AFR/W
Flournoy Phillips - Grasshopper/Locust Expert, CICP Consultant
Don Reilly - Deputy Director USAID, AFR/TR/W
David Rybak - Senegal Desk Officer USAID, AFR/SWA/W
Kim Stoner - AAAS Fellow, AGR & Rural Development, AFR/TR/W
Julia Taft - USAID, OFDA/W, Head
Bob Thibeault - USAID OFDA/W, Asst Head
Larry Turner - Hazard Eval & Environ Safety, EPA/OPP/W

SENEGALUSAID Mission

Jim Bonner - ADO, Dakar
Richard Caldwell - Proj Mgr Agr, Dakar
George Carner - Deputy Director, Dakar
Mawa Diop - Admin Asst, Crop Protection Unit, Dakar
Ron Harvey - Sup ADO, Dakar
Khoi Le, - Agronomist, Dakar
Francis Can Ngo - Liaison Specialist, Ag Research/Extension, Dakar

Large Plane Spraying Group

Bob Adams - Operations & Logistics, USFS, Broomall, PA
Dick Dyer - Supervisory Pilot, USDA, APHIS, Mission, TX
Lynn Thomas - Field Operations, USFS, Atlanta, GA
Bruce Thornley - Entomologist, USDA, APHIS, Phoenix, AZ
Sergio Tomassoni - Owner, DCA, Chandler, AZ

Small Plane Spraying Group

Jacques Billard - Logistics for EEC, FAO, France
Jacques Dubois - Head of Operations, CIDA
Gilles Lefebvre - Engineer, AAI
Mr Nadeau - Operations & Logistics, CIDA
Guy Poirier - Owner, AAI
Pierre Rouleau - Head Pilot, AAI

Senegal Crop Protection

Lamine Ba - Director Training Centre, DPV, Dakar
Moro Cisse - Entomologist, DPV, Ziguinchor
Daouda Diagne - CTH/MDR, Dakar
Faustin Diatta - DPV, Dakar
Seni Dieme - DPV, Dakar
Abdou Drame - DPV, Dakar
Jean Yves Durand - CT/DPV, Dakar
Dawda Jong - President Cricket Control Committee, Dakar
Latyr Ndiaye - Director-General of PV, Dakar
Abdoula Niassy - DPV, IPM Project, Dakar

Others In Senegal

Col Lame - Chairman, Joint Chiefs of Staff, Senegal Military, Dakar
V S Bhatnagar - Entomologist, USAID/FAO/CILSS IPM Project, Kaolack, Senegal
Saliou Djibou - Rice Research Entomologist, ISRA, Djibelor, Senegal
Balla Niang - OCLALAV
George Schaefers - Environmental Assessment Expert, CICP Consultant

The Gambia

Byron Bahl - Mission Director, USAID, The Gambia
Tom Hobgood - Acting ADO, USAID, The Gambia
Dodou C A Jagal - Director, CPS, Yundum, The Gambia
Sankung B Sagnia - Chief Scientific Officer, CPS, Yundum Exp Sta , The Gambia
Baboucar Manneh - Extension AIDs Unit, Min of Agric, Yundum, The Gambia

3403A

29

APPENDIX L

EA OF MALATHION SPILL FROM DC-7 CRASH

October 14, 1986

Ellis Huddleston and Richard Edwards

Environmental Assessment of Malathion Spill from DC-7 Crash

ADIR GCarner

We have looked at this problem and have arrived at the following conclusions

- 1 Malathion is a very safe insecticide
- 2 Malathion will not accumulate in fish
- 3 When jettisoned, the 3,100 gal (US) was immediately diluted by the ocean water to a concentration which was non-toxic to fish
- 4 The half-life of malathion in ocean water is about 12 hours (range 10 to 15 hours)
- 5 No effects on fish or birds was detected 24 hours and 48 hours after the accident on October 9, 1986

These conclusions are based on the following data The acute oral LD₅₀ in rats was found to be 1375 mg/kg body weight and the acute dermal LD₅₀ in the rats was 4444 mg/kg (Gaines, 1960) Hayes et al (1960) and Baines et al (1962) showed that malathion has an extremely low degree of toxicity to man Pasarela et al (1960), in their review of residue studies of the blood, liver, kidneys, breast, muscle or fat of cattle fed on high concentrations of malathion, found no reports of any malathion in any of the tissues or fat

In a review of the effect of large-scale aerial application of malathion on rangeland insect control, mosquito control, cereal leaf beetle and the 300,000 acre ball weevil control program in 1964 in Texas, there were no confirmed reports of serious fish kills (U S Dept of Interior, 1964, Fischer, 1965) Dr Huddleston, co-author of this report, conducted the environmental assessment on the large-scale ball weevil control programs which used ULV malathion in Texas in 1964 Huddleston et al (1964) found no adverse effects on non-target organisms following the 1964, 1965, 1966 and 1967 treatments which were fall diapause programs

The half-life of ULV malathion in ocean water at 15°C has been shown to range from 10 to 15 hours (personal communication U S Environmental Protection Agency, 1986)

This is the way we arrived at these conclusions

On October 10, at 0800 hrs, we were requested to evaluate the environmental consequences of the disaster. We left by boat at 1030 hrs from Dakar and traveled to the crash site. About 2 miles southeast of the crash site at 1115 hrs, we observed about ten dead fish and a ribbon (ca 2 feet wide) of a floating yellowish substance which was sampled (Sample I). When disturbed the floating material dispersed in what appeared to be plant debris. The boat captain said that this material was common in the area. A water sample was taken at the approximate crash site (Sample II) about 1200 hrs. A sample (Sample III) was taken within 300 meters of the crash site of the yellowish material like in Sample I, however, at this site, the yellowish material appeared to possibly have an oily substance associated with it. Bottom feeding fish were obtained from a fisherman near the crash site (ca 500 meters). A swimming crab was netted for analysis. Samples I and II were immediately placed on ice. Sample III and the fish were placed on ice as soon as possible (ca one hour). Samples II and III were subdivided and a portion of each and two fish were given to a representative of the Senegalese Ministry of Health who boarded the boat near the crash site. All samples were placed in AID Mission freezer at 1433 hrs. We recommended that Carrol Collier or Robert Altman AID/W/ST/AGR be contacted to arrange for sample analysis.

About 1800 hrs, we were contacted by radio at the home of Jim Bonner, Asst ADO, by Carner with report from Ministry of Health of a potential area of pollution about 3.7 X 12 km spreading toward beach areas southeast of the crash site and harbor. We arrived at Pointe des Almadies about 1830 hrs and met with FAA/US representative and Colonel Lame of the Senegalese Army who had observed the potential pollution. He provided a water sample from the area of suspected pollution. It was in a rather dirty bottle. We obtained a composite sample of sand from the beach (Sample VI). Colonel Lame gave us a small seagull type bird that had been collected in the area. The bird was catamose but exhibited one case of tremors. Additional water and beach sand samples were collected about 4 km south east of Pointe des Almadies at a beach where the Colonel reported the pollution had reached the shore (Sample V A&B) and about 4 km north where no pollution was suspected (Sample IV A&B). Samples IV, V and VI were placed in AID freezer at about 2100 hrs. On October 11 at 0730 hrs, the freezer was checked and all samples, including I, II and III which were partially frozen at 2100 hrs on October 10, were not frozen.

On October 12, from 1800 to 1900 hrs, beach sites previously sampled and two sites south of Sample V area were evaluated for affected fish, crabs and birds. No adverse environmental effects were observed. We had predicted on 10 October, because the specific gravity of Malathion (which is greater than 1.2) was more than sea water (about 1.05), that the Malathion probably would settle to the bottom. This hypothesis appears to be confirmed.

REFERENCES CITED

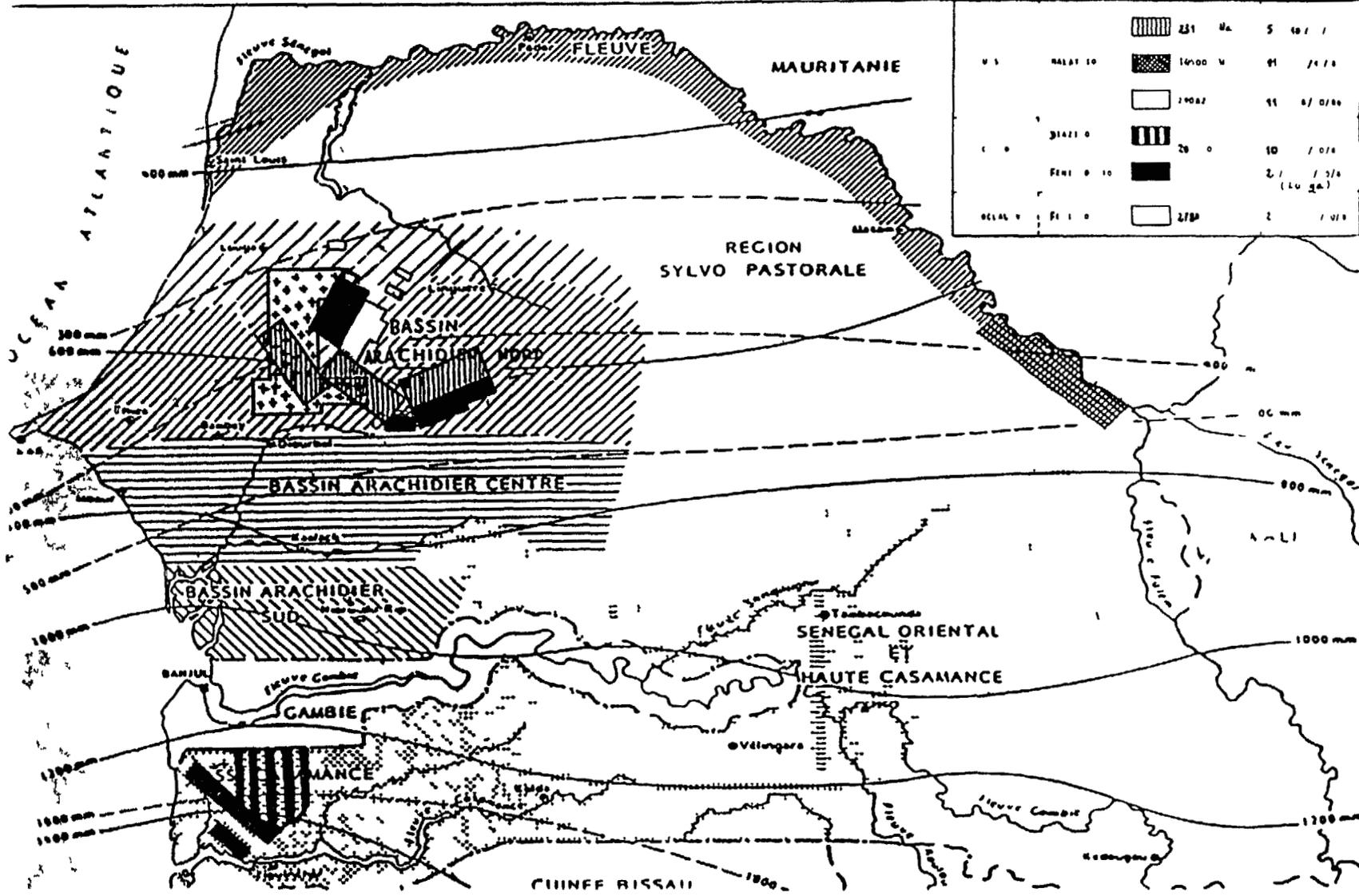
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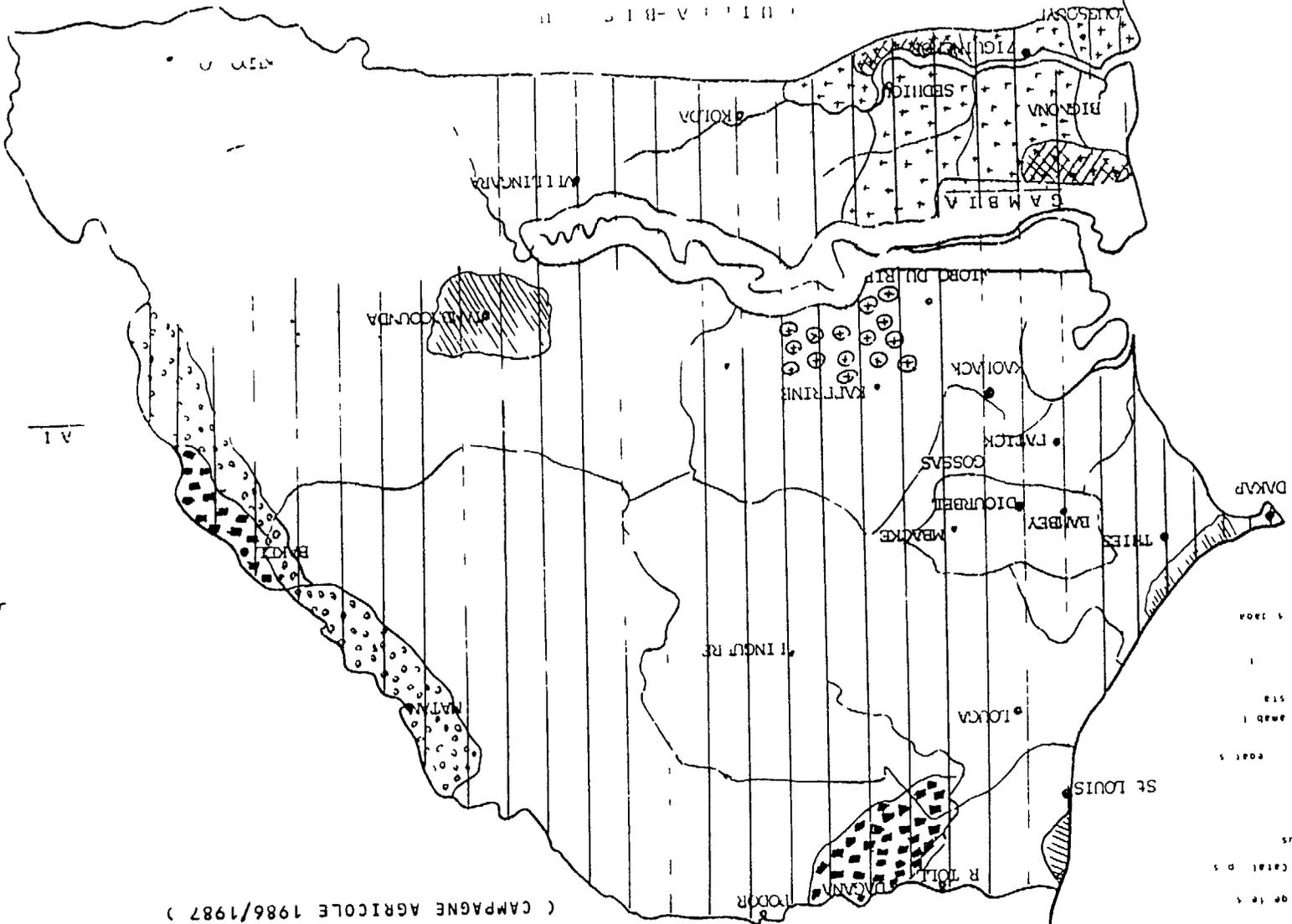
Doc 3381A

APPENDIX K

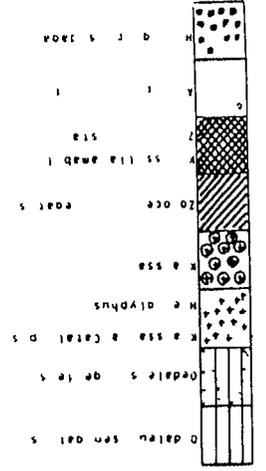
MAPS AND MISCELLANEOUS ITEMS

GRASSHOPPER TREATMENT ZONES (SEPTEMBER-OCTOBER, 1986)





DISTRIBUTION DES PRINCIPALES ESPÈCES DES SAUTERIAUX AU SENEGAL
 (CAMPAGNE AGRICOLE 1986/1987)



A 1

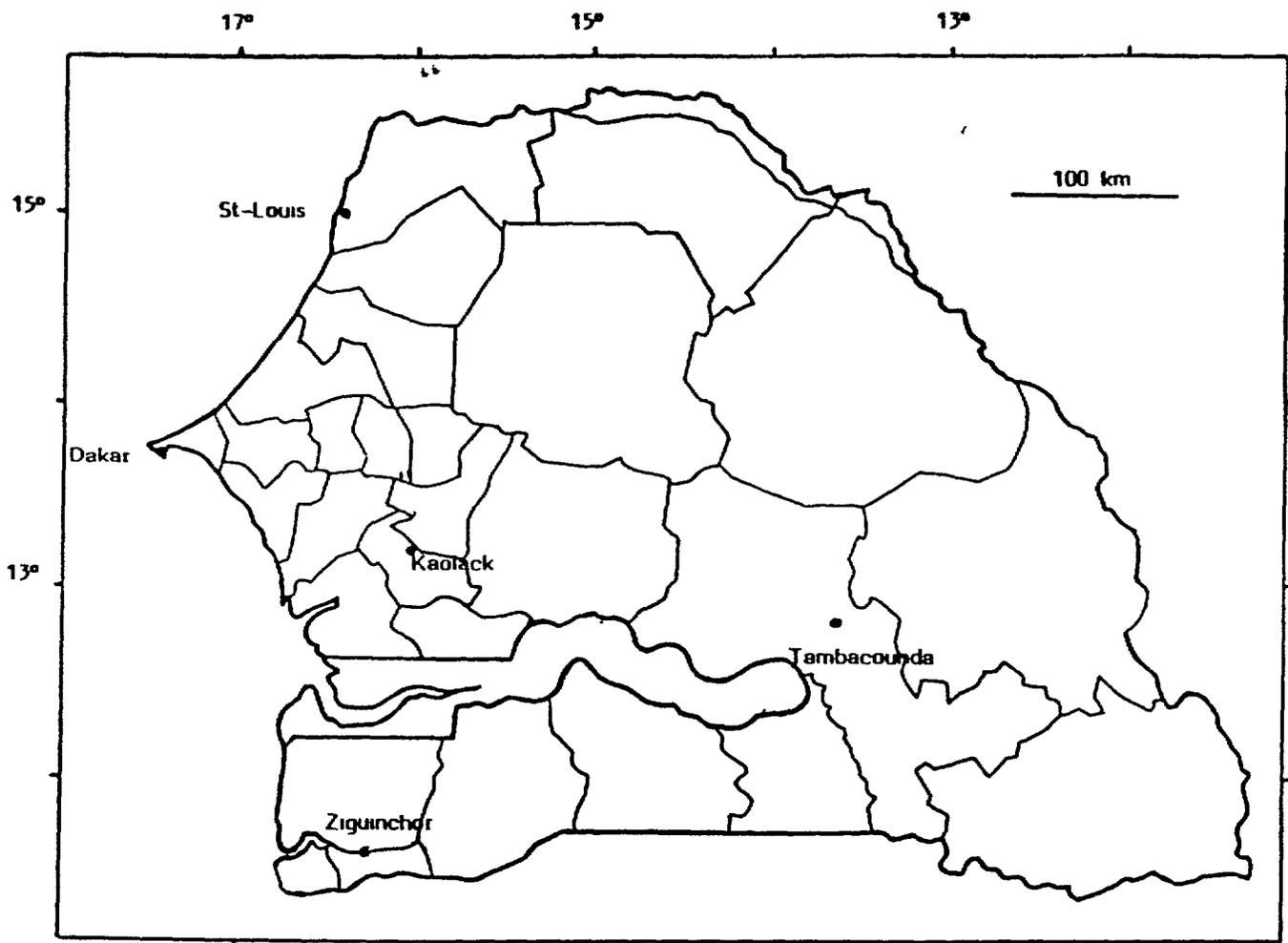


Figure 1 Les départements administratifs du Sénégal

GOVERNEMENT DU SENEGAL

(Décret N° 85 011 du 4 Janvier 1985)

M Médoune FALL	Ministre des Forces Armées
M Doudou MDOYE	Garde des Sceaux, Ministre de la Justice
M Ibrahima FALL	Ministre des Affaires Etrangères
M Ibrahima WONE	Ministre de l'Intérieur
M Mamoudou TOURE	Ministre de l'Economie et des Finances
M Robert SAGNA	Ministre de l'Equipement
M Abdel Kader FALL	Ministre de la Culture
M Iba Der THIAM	Ministre de l'Enseignement Sup , Ministre de l'Education Nationale
M Cheikh Hamidou KANE	Ministre du Plan et de la Coopération
M Amadou Bator DIOP	Ministre du Développement Rural
M Serigne Lamine DIOP	Ministre du Développement Industriel et de l'Artisanat
M Balla Moussa DAFFE	Ministre de la Recherche Scientifique et Technique
M Hamidou SAKHO	Ministre de l'Urbanisme et de l'Habitat
M Abdourahmane TOURE	Ministre du Commerce
M Djibo KA	Ministre de l'Information et des Télécommunications
M André SONKO	Ministre de la Fonction Publique, du Travail et de l'Emploi
M Thierno BA	Ministre de la Santé Publique
Mme Maïmouna KANE	Ministre du Développement Social
M Samba Yella DIOP	Ministre de l'Hydraulique
M Landing SANE	Ministre de la Jeunesse et des Sports
M Cheikh CISSOKO	Ministre de la Protection de la Nature
Mme Fambaye FALL DIOP	Ministre Déléguée chargé des Emigrés
M Momar Talla CISSE	Ministre Délégué chargé du Tourisme
M Moussa NDOYE	Secrétaire d'Etat auprès du Ministre de l'Intérieur, chargé de la Décentralisation
Mme Marie SARR MBODJ	Secrétaire d'Etat auprès du Ministre de l'Education Nationale, chargé de l'Enseignement Technique et de la Formation professionnelle
M Bocar DIALLO	Secrétaire d'Etat auprès du Ministre du Développement Rural, chargé de la pêche Maritime
M Alioune DIAGNE COUMBA AITA	Secrétaire d'Etat auprès du Ministre de la Fonction Publique du Travail et de l'Emploi, chargé de l'Emploi

MESSAGE TO THE POPULATION

I. During an air treatment operation, people should gaze up at the sky.

All

out and

As a matter of fact, such operations in towns, rarities which arouse people flying close to the ground, size

even in
aircraft

Therefore, the first measure is to advise people to come out of their houses during the spray operation which will last more than a few minutes (time for droplets to be deposited)

II This is the rainy season and the villagers get their water supplies from ponds

Thus, people should be asked to secure two (2) days' supplies if possible, on the day before the operations, the dates of which must be announced soon enough for this precaution to be heeded

The product to be used is ULV. Contaminated ponds and rivers normally show one or several oily spots. When or if absolutely needed, water should be recovered free from these oily spots

In addition, children and adults should be forbidden to bathe in these places until the oily spots disappear

If this precaution is not heeded at all, all transgressors should be clean with large quantities of water and soap

III Herds If possible, they should be displaced from treatment areas for a 3-4 day period

In any case, the pilots should avoid spraying straight down on livestock

IV Villages The pilots should avoid spraying the products over villages

V Moreover, the populations should avoid

- preparing meals outdoors during treatment operations,
- leaving foods, water jugs and wells unclosed,
- eating and drinking during treatment operations

VI After treatments, all contaminated or supposedly contaminated objects should be washed clean

VII. In case of intoxication or unusual indisposition, the nearest physician should be immediately contacted

Done by Mr Daouda Diagne
Chairman of the Follow-up Committee
on Locust Infestation Control

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APPENDIX J

CABLES AND REPORTS

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INCOMING
TELEGRAM

PAGE 01 DAKAR 06153 00 OF 02 281113Z 3243 068362 A108727
ACTION AID 00

DAKAR 06153 00 OF 02 281113Z 3243 068362 A108727
VEHICLES HOWEVER NONE OF THIS WILL BE AVAILABLE BEFORE
SEPTEMBER 1986 SO IT WILL NOT BE USED BEFORE OFF-SEASON
1986 CROPPING SEASON

ACTION OFFICE AFFW 04
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AFDA 02 AGRI-01 STFA 01 RELO 01 /077 A4 828

INFO LOG 00 COPY 01 EUR-00 AF-00 CIAE-00 EB-00 DOOE-00
10-17 AGRE 01 /027 W

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AMEMBASSY BAHAKO
AMEMBASSY BANJUL
AMEMBASSY BISSAU
AMEMBASSY NDJAMENA
AMEMBASSY NIAMEY
AMEMBASSY NOUAKCHOTT
AMEMBASSY OUAGADOUGOU
AMEMBASSY PARIS
AMEMBASSY PRAIA
AMEMBASSY ROME
INFO AMEMBASSY ABIDJAN

UNCLAS DAKAR 06153

AIDAC
SECSTATE FOR AFR/SVA PARIS FOR SLOCUM ROME FOR FODAG

E O 12356 N/A
SUBJECT 1986 FOOD CROP PEST PROBLEMS
REF (A) STATE 133680

1 FOLLOWING SUMMARIZES USAID/DAKAR S ASSESSMENT OF
SUBJECT SITUATION IN SENEGAL

2 CROP PROTECTION TEAMS CONDUCTED EGG COUNTS OF
GRASSHOPPER IN FOUR AGRICULTURAL AREAS DURING MARCH AND
APRIL HIGH INFESTATION WAS RECORDED IN THE SINE SALOUM
REGION (AN IMPORTANT ZONE FOR MILLET PEANUT AND CORN
PRODUCTION) INDICATING PROBABLE SEVERE ATTACK OF
DEDALEUS SENEGALENSIS 12-15 DAYS AFTER FIRST SIGNIFICANT
RAINS THEN INCIDENCE WILL SPREAD NORTHWARD COINCIDING
WITH ADVANCEMENT OF INTERTROPICAL CONVERGENCE THE
THIES-DIOURBEL REGION SHOULD BE THE SECOND AREA AFFECTED
FOLLOWED BY IF CONDITIONS REMAIN FAVORABLE TO OUTBREAK
THE LOUGA/SENEGAL RIVER BASIN THEN LATER IN CROPPING
SEASON SINE-SALOUM WILL LIKELY HAVE SECOND OUTBREAK WHEN
CONVERGENCE MOVES SOUTHWARD AS CROP IS MATURING
LATE PLANTED CROPS IN CASAMANCE (MOST SOUTHERN AND
MOISTEST ZONE) ARE THREATENED THIS GROWING SEASON BY
DEDALEUS SENEGALENSIS ZONOCERUS VARIEGATUS AND AIOLOPUS
SIMULATOR (ALL GRASSHOPPER SPECIES)

3 THE SENEGALESE CROP PROTECTION SERVICE (SCPS) AND FAO
EXPERTS IN DAKAR HAVE BOTH EXPRESSED DEEP CONCERN OVER
LACK OF FUNDS FOR ATTACKING 1986 PEST PROBLEMS FEAR IS
OF ANOTHER OUTBREAK SIMILAR TO THE 1974/75 SEASON WHEN
FARMERS HAD TO PLANT 2-3 TIMES OR ABANDON ALTOGETHER
PLANTING THEIR CROPS SCPS HAS ALREADY CONTACTED SEVERAL
DONORS (FRANCE SPAIN DENMARK NETHERLANDS ALGERIA
MOROCCO) IN AN EFFORT TO FIND FUNDING FOR INSECTICIDE AND
EQUIPMENT PURCHASES SO FAR THERE HAS BEEN LITTLE
RESPONSE

4 THE GOVERNMENT OF JAPAN HAS PLEDGED 1450 TONS OF
FENITROTHION 2.5 PERCENT (DUST) 75 000 LITERS OF
FENITROTHION ULV 11 000 LITERS OF FENITROTHION 500 CE
15 000 LITERS OF SUMICOMBI 30 CE (FENITROTHION 250 PLUS
FENVALERATE 50) 10 PICK-UPS AND TWO HEAVY-DUTY

5 FAO/ROME RECENTLY CONTRIBUTED DOLLARS 156 000 FOR
CROP PROTECTION TRAINING AND VEHICLE/EQUIPMENT REPAIR
APPROXIMATELY 120 EXTENSION AGENTS WILL BE RECYCLED AT
THE USAID FINANCED TRAINING CENTER OVER THE NEXT MONTH

6 PREVENTATIVE CONTROL MEASURES THIS SEASON WOULD
INSURE MORE PEST CONTROL OVER POTENTIAL OUTBREAKS THAN
ANY AFTER THE-FACT TREATMENT IN ECTICIDE TREATMENTS
EARLY IN THE RAINY SEASON WOULD PROTECT YOUNG SEEDLINGS
AND KILL GRASSHOPPER INSTARS THU REDUCING THEIR
MIGRATION TO OTHER AREAS SCPS DOES HAVE PLANS TO
DISTRIBUTE DUSTING BAGS AND PROPOXUR TO FARMERS IN
HEAVILY INFESTED AREAS FOR SUCH PREVENTATIVE CONTROL

7 THE FOLLOWING PESTICIDES AND EQUIPMENT ARE IN STOCK
AS OF 25 APRIL 1986

PESTICIDE	FORMULA	QUANTITY	RATE/H	COVERAGE
PROPOXUR	DUST	369 TONS	15 KG	24 600 H
UNDEN 75	WP	1525 TONS	5 KG	305 H
FENITROTHION	ULV	3600 LITS	2 L	1 800 H
SUMITHION 1000	ULV	2000 LITS	3.4 L	700 H
SUMITHION 50	CE	13447 LITS	2 L	6 723 H
SUMICOMBI 30	CE	34352 LITS	1 L	34 352 H

8 SPRAY EQUIPMENT IN STOCK INCLUDES 2000 DUSTING BAGS
120 MOTORIZED HIRUYAMA SPRAYERS 20 MOTORIZED HUDSON
SPRAYERS 30 UNIMOG DUSTERS AND 8 UNIMOG TRUCKS

9 AN ESTIMATED 10.15 PERCENT OF THE 1 191 280 HECTARES
OF FOOD CROPS ARE EXPECTED TO BE ATTACKED THIS COMING
GROWING SEASON THE SCPS HAS URGENTLY REQUESTED FUNDING
FOR ADDITIONAL INSECTICIDES SPRAY EQUIPMENT VEHICLES
FUEL AND OPERATING COSTS FOR THIS YEAR

10 SCPS HAS REQUESTED 600 TONS OF PROPOXUR (OR
FENITROTHION 3 PERCENT) 10 000 LITERS OF FENITROTHION
1000 25 000 LITERS OF SPRAYER FUEL 1.5 000 DUSTING
BAGS MOTORIZED SPRAYERS TWO VEHICLES AND VEHICLE FUEL

11 MISSIONS BEST ESTIMATE OF FUNDED NEEDED FOR THIS
REQUEST IS DOLLARS 910 000 THIS FALLS GENERALLY IN LINE
WITH ESTIMATED FUNDING REQUIREMENTS IN REFTEL WALKER

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TELEGRAM

19

PAGE 01 DAKAR 09111 081702Z 2389 008511 AID1675

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TO SECSTATE WASHDC IMMEDIATE 1834
INFO AMEMBASSY BAMAO
AMEMBASSY NOUAKHOTT
AMEMBASSY NOJAMENA

Handwritten initials/signature

UNCLAS DAKAR 09111

AIDAC
SECSTATE FOR AFR/TR D REILLY AFR/SWA R FRIEDLINE

E O 12356 N/A
SUBJECT LOCUST/GRASSHOPPER ASSESSMENT - SENEGAL

REF STATE 247040

1 CURRENT SITUATION IN SENEGAL AS REPORTED TODAY BY THE CROP PROTECTION SERVICE SEEMS TO BE WORSENING AFTER SIGNIFICANT COUNTRY-WIDE RAINFALL DURING THE WEEK GRASSHOPPER DENSITIES HAVE DRAMATICALLY INCREASED FROM CENTRAL SENEGAL NORTHWARD FULL DETAILS WILL BE PROVIDED IN SEPTEL ON MONDAY AFTER WE RECEIVE THE WRITTEN ASSESSMENT

2 CHAIRMAN OF THE TECHNICAL COMMITTEE ESTABLISHED FOR MONITORING THE CONTROL PROGRAM MR DAUDA DIAGNE INFORMS US THAT HATCHING HAS PROLIFERATED IN AREAS ALONG SENEGAL RIVER WITH INFESTATIONS OF UP TO 300 PER SQUARE METER USAID PERSONNEL RETURNING FROM RIVER REGION OVER THE WEEKEND WILL ENABLE US SOME VERIFICATION OF THE REPORTS COMING OUT OF THE COMMITTEE

3 AT THIS POINT THE GOS IS PLANNING AN AERIAL ATTACK PROGRAM FOR 300 000 HECTARES THEY HAVE ESTIMATED A TOTAL OF 450 HOURS OF FLIGHT TIME NEEDED FOR THIS OPERATION

4 IN RESPONSE TO PARA 6 OF REFTEL MISSION BELIEVES SITUATION WARRANTS ASSISTANCE OF PLANNING TEAM FOR AERIAL ACTIVITIES GIVEN THE LIMITED EXPERIENCE THE GOS HAS IN MOUNTING SUCH A WIDESPREAD AERIAL SPRAY PROGRAM THE TEAMS TIMELY ASSISTANCE SHOULD BE VERY HELPFUL IN FORMULATING A PLAN OF ACTION WITH RESOURCES FOR SPRAYING AT A PREMIUM IT IS ALL THE MORE CRITICAL THAT PLANNING IS DONE CAREFULLY AND WITH ASSISTANCE OF EXPERIENCED PERSONNEL

5 REQUEST AID/W ARRANGE FOR ARRIVAL OF TEAM IN SENEGAL NO LATER THAN AUGUST 18 WALKER

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DAKAR 09339

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 OO RUEHC RUEHAB RUTABM RUEHLD RUTANK RUFHFR
 RUFHRO
 DE RUTADS #9339 227 **
 ZNR UUUUU ZZH
 O 150913Z AUG 86
 FM AMEMBASSY DAKAR
 TO RUEHC / SECSTATE WASHDC IMMEDIATE 1935
 INFO RUEHAB / AMEMBASSY ABIDJAN IMMEDIATE 1047
 RUTABM / AMEMBASSY BAMAKO IMMEDIATE 4673
 RUEHLD / AMEMBASSY LONDON IMMEDIATE 1357
 RUTANK / AMEMBASSY NOUAKHOTT IMMEDIATE 4314
 RUFHFR / AMEMBASSY PARIS IMMEDIATE 2563
 RUFHRO / AMEMBASSY ROME IMMEDIATE 2036
 BT
 UNCLAS DAKAR 09339

CLASS UNCLASSIFIED
 CHRG AID 08/14/86
 APPRV AMB LWALKER
 DRFTD ADO RCALD+ELL
 CLEAR 1 ADO REAPVEY
 2 DIR SCARNER
 5 DIR SJLITTEFI .D
 DISTR AID A49 DC
 CHRON

AIDAC

STATE FOR OFDA, AID/M/PM/PAFD
 ABIDJAN FOR REDSO
 LONDON FOR ADM/AID MCPHERSON
 PARIS FOR OECD/SLOCUM
 ROME FOR FODAG

E O 12356 N/A
 SUBJECT DECLARATION OF DISASTER - SENEGAL

REF DAKAR 9111

1 THE CURRENT GRASSHOPPER/LOCUST SITUATION IN SENEGAL HAS BECOME MORE CLEARLY DEFINED AFTER OUR SYNTHESIS OF INFORMATION FROM MISSION TECHNICIANS AND OTHER REPORTING MECHANISMS THE SITUATION IS QUITE DYNAMIC AND WE HAVE BEEN CAUTIOUS IN ASSESSING THE IMPACT OF THE CRISIS TO THE BEST OF OUR ABILITY BEFORE PREDICTING THE SERIOUSNESS OF THE GRASSHOPPER/LOCUST THREAT INFORMATION TO DATE INDICATES THAT APPROXIMATELY ONE MILLION HECTARES OF CROPLAND ARE CURRENTLY INFECTED OR RISK IMMINENT INFESTATION THIS REPRESENTS FORTY TWO PERCENT OF SENEGALS ESTIMATED 2.5 MILLION HECTARES OF ARABLE LAND IN ADDITION, THERE IS AN UNKNOWN HECTARAGE OF RANGELAND CURRENTLY AT RISK - COUPLING THE PEST PROBLEM WITH THE CURRENT UNFAVORABLE WEATHER CONDITIONS (GENERAL BELOW NORMAL RAINFALL) CROP LOSSES FOR PEANUT AND THE MAJOR CEREALS MAY AMOUNT TO AS MUCH AS 400,000 MT ON AUGUST 13, 1986, THE GOS CALLED A DONOR COORDINATION MEETING WHICH WAS ATTENDED BY ALL MAJOR HEADS OF MISSION FAO, EEC, AND AID REPRESENTATIVES A REQUEST FROM SENEGAL PRESIDENT ABDOU DIOUF IN HIS CAPACITY AS CHAIRMAN OF CILSS, TO DONORS FOR MOBILIZATION OF SUPPORT IN COMBATING THIS PROBLEM MADE EVIDENT THAT THE SITUATION HAS OUTSTRIPPED THE ABILITY OF SENEGAL TO RESPOND

2 I, THEREFORE, DECLARE THAT A STATE OF DISASTER EXISTS IN THE REPUBLIC OF SENEGAL, IN ACCORDANCE WITH CHAPTER 3, PARA 3F, AID HANDBOOK 8

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3 FOR OFDA REQUEST US DOLLARS 25,000 BE MADE AVAILABLE TO USAID/SENEGAL AS AUTHORIZED IN CHAPTER 3 PARA 3G, AID HANDBOOK 8 PLEASE FORWARD FISCAL DATA. EMERGENCY FUNDS WILL BE USED TO PURCHASE DESPERATELY NEEDED CHEMICALS FOR AERIAL AND GROUND SPRAY PROGRAMS WALKER
 BT
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TO SECSTATE WASHDC IMMEDIATE 1935
INFO AMEMBASSY ABIDJAN IMMEDIATE
AMEMBASSY BAMAKO IMMEDIATE
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AMEMBASSY NOUAKHOTT IMMEDIATE
AMEMBASSY PARIS IMMEDIATE
AMEMBASSY ROME IMMEDIATE

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AIDAC

STATE FOR OFDA AID/M/FM/PAFD
ABIDJAN FOR REDSO
LONDON FOR ADI/AID MCPHERSON
PARIS FOR OECD/SLOCUM
ROME FOR FODAG

E O 12356 N/A
SUBJECT DECLARATION OF DISASTER - SENEGAL

REF DAKAR 9111

1 THE CURRENT GRASSHOPPER/LOCUST SITUATION IN SENEGAL HAS BECOME MORE CLEARLY DEFINED AFTER OUR SYNTHESIS OF INFORMATION FROM MISSION TECHNICIANS AND OTHER REPORTING MECHANISMS. THE SITUATION IS QUITE DYNAMIC AND WE HAVE BEEN CAUTIOUS IN ASSESSING THE IMPACT OF THE CRISIS TO THE BEST OF OUR ABILITY BEFORE PREDICTING THE SERIOUSNESS OF THE GRASSHOPPER/LOCUST PROBLEM. THE INFORMATION TO DATE INDICATES THAT APPROXIMATELY ONE MILLION HECTARES OF CROPLAND ARE CURRENTLY INFECTED OR AT RISK OF IMMINENT INFESTATION. THIS REPRESENTS FORTY TWO PERCENT OF SENEGAL'S ESTIMATED 2.5 MILLION HECTARES OF ARABLE LAND. IN ADDITION, THERE IS AN UNKNOWN HECTAREAGE OF RANGELAND CURRENTLY AT RISK. COUPLING THE PEST PROBLEM WITH THE CURRENT UNFAVORABLE WEATHER CONDITIONS (GENERAL BELOW NORMAL RAINFALL) CROP LOSSES FOR PEANUT AND THE MAJOR CEREALS MAY AMOUNT TO AS MUCH AS 400,000 MT. ON AUGUST 13, 1986, THE GCS CALLED A DONOR COORDINATION MEETING WHICH WAS ATTENDED BY ALL MAJOR HEADS OF MISSION, FAO, EEC, AND AID REPRESENTATIVES. A REQUEST FROM SENEGAL PRESIDENT ABDOU DIOUF IN HIS CAPACITY AS CHAIRMAN OF CILSS TO DONORS FOR MOBILIZATION OF SUPPORT IN COMBATING THIS PROBLEM MADE EVIDENT THAT THE SITUATION HAS OUTSTRIPPED THE ABILITY OF SENEGAL TO RESPOND.

2 I THEREFORE DECLARE THAT A STATE OF DISASTER EXISTS IN THE REPUBLIC OF SENEGAL IN ACCORDANCE WITH CHAPTER 3, PARA 3F, AID HANDBOOK 8.

3 FOR OFDA, REQUEST US DOLLARS 25,000 BE MADE AVAILABLE TO USAID/SENEGAL AS AUTHORIZED IN CHAPTER 3, PARA 3G, AID HANDBOOK 8. PLEASE FORWARD FISCAL DATA. EMERGENCY FUNDS WILL BE USED TO PURCHASE DESPERATELY NEEDED CHEMICALS FOR AERIAL AND GROUND SPRAY PROGRAMS. WALKER.

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TELEGRAM

PAGE 01 OF 02 DAKAR 09511 08 OF 03 211025Z 7796 015611 AID1498
ACTION AID 08

DAKAR 09511 08 OF 03 211025Z 7796 015611 AID1498

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RP-10 /058 W

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0 21020Z AUG 86
FM AMEMBASSY DAKAR
TO SECSTATE WASHDC IMMEDIATE 2025
AMEMBASSY BAKAKO IMMEDIATE
AMEMBASSY MOUAFCHCTT IMMEDIATE
INFO AMEMBASSY BAHJUL IMMEDIATE
AMEMBASSY NDJAMENA IMMEDIATE
AMEMBASSY NIAMEY IMMEDIATE
AMEMBASSY GUAGADOUGU IMMEDIATE
AMEMBASSY PARIS IMMEDIATE
AMEMBASSY POME IMMEDIATE

UNCLAS DAKAR 09511

AIDAC

LOCUST
STATE FOR DAA/AFR, AFR/SWA AFR/TR OREILLY) OFDA (TAFT)
ROME FOR FODAG

E O 17356 N/A
SUBJECT SENEGAL GRASSHOPPER ASSESSMENT - UPDATE NO 2

REF A1 DAKAR 9111 B1 DAKAR 9339

1 SUMMARY BASED ON LIMITED FIELD SURVEYS CONDUCTED BY
USDA ENTOMOLOGIST PHILLIPS AND AFTER DISCUSSIONS WITH
OFDA TEAM MISSION HAS WHAT IT BELIEVES TO BE AN ACCURATE
ASSESSMENT OF GRASSHOPPER/LOCUST SITUATION IN NORTH AND
NORTHEAST SENEGAL. A SUBSTANTIAL AMOUNT OF
THIS INFORMATION HAS BEEN RECEIVED AT MISSION FROM VARIOUS
SOURCES UPDEFINING THE BENEFIT OF ON SITE TECHNICAL
ASSISTANCE. POPULATIONS OF OEDALEUS MIGRATORIA
SENEGALENSIS, THE MIGRATORY LOCUST ARE SERIOUSLY HIGH IN
PARTS OF THE SENEGAL RIVER BASIN (MATAM TO BAKEL) OTHER
AREAS NOT YET ADEQUATELY ASSESSED WILL BE REPORTED ON AS
SOON AS MISSION RECEIVES INFORMATION

DONOR COORDINATION IS IMPROVING FOLLOWING SEVERAL
ORGANIZATIONAL MEETINGS LAST WEEK AT THE MINISTRY OF
RURAL DEVELOPMENT SEVERAL DONORS PROMISED ASSISTANCE
BUT THERE WILL PROBABLY STILL BE A SHORTAGE OF PESTICIDE
AND DELIVERY UNITS IN THE SHORT TERM. OFDA ASSESSMENT
TEAM ARRIVED TUESDAY 19 AUGUST SPARE PARTS FOR DCALAV
PLANES AND PILOT/INSTRUCTOR SCHEDULED TO ARRIVE ON
FRIDAY 22 AUGUST. END SUMMARY

2 SITUATION UPDATE

A USDA ENTOMOLOGIST FLOURNOY PHILLIPS ARRIVED DAKAR 14
AUGUST AFTER BEING BRIEFED BY MISSION STAFF HE
TRAVELED ACCOMPANIED BY MISSION TECHNICIAN THROUGHOUT
NORTHERN SENEGAL TO CONDUCT COUNTS AND ASSESS SITUATION.
AREAS VISITED INCLUDED LINGUERE/LOUGA REGION AND THE
SENEGAL RIVER BASIN BETWEEN ST LOUIS AND BAKEL.

B THE REGION FROM LOUGA TO LINGUERE IS CHARACTERIZED BY
SCATTERED AREAS OF HIGH POPULATIONS OF OEDALEUS.

MIGRATORIA SENEGALENSIS INTERSPERSED WITH AREAS OF FEW
IF ANY INDIVIDUALS NEAR LOUGA. ADULTS WERE FOUND AT 70
PER SQUARE METER AND NYMPHS (IMMATURE FORM) WERE AT 100
PER SQUARE METER. MOST WERE SIGHTED ALONG ROADSIDES AND
WERE NOT INVADING MILLET FIELDS. FYI - MILLET IS NOT A
PREFERRED FOOD ITEM FOR THIS SPECIES AS LONG AS
ALTERNATIVE VEGETATION IS AVAILABLE. MILLET SEEMS TO BE
AVOIDED LATER IN THE SEASON. HOWEVER, WHEN OTHER FOOD
ITEMS BECOME MORE SCARCER ONE CAN EXPECT AN INVASION INTO
MILLET FIELDS, ESPECIALLY BY ADULTS. END FYI

FURTHER EAST AT DANRA, BETWEEN LOUGA AND LINGUERE
DENSITIES RANGED FROM 1/M² TO APPROXIMATELY 100/M². IN
LINGUERE POPULATIONS ARE MIXED (RANGING FROM FIFTH
INSTAR TO ADULTS) WITH DENSITIES RANGING FROM 3-15/M².

THE GENERAL MOVEMENT APPEARS TO BE WEST TO SOUTHWEST.
THIS IS CONTRARY TO GENERAL ASSUMPTION THAT POPULATIONS
WILL MOVE SOUTH TO NORTH WITH FRONT.

C LAST REPORT ON SITUATION FROM CROP PROTECTION SERVICE
AND FAO SOURCES INDICATED SERIOUS PROBLEMS ALONG SENEGAL
RIVER BETWEEN ROSS-BETHIO AND DAGAMA WITH ESTIMATED
COUNTS OF UP TO 300 PER SQUARE METER. PHILLIPS TRAVELED
THIS AREA MAKING FREQUENT COUNTS BUT FOUND NO REPEAT NO
LARGE NUMBERS IN THIS AREA. IN FACT MOST COUNTS IN THIS
REGION INCLUDING LAC DE GUIERS WERE ZERO. FURTHER
EAST BETWEEN PICHARD-TOLL AND NATAM COUNTS UP TO 15/M²
WERE NOTED.

D BETWEEN MATAM AND BAKEL EXTREMELY HIGH COUNTS BEGAN
TO APPEAR. DENSITIES RANGED FROM 15/M² TO OVER 200/M².
POPULATIONS WERE MIXED RANGING FROM FOURTH AND FIFTH
INSTAR STAGE THROUGH FLEDGLING STAGE TO ADULTS. SOME
EGGLAYING ADULTS WERE NOTED NEAR THE BAKEL AKFA. AT ONE
POINT THE TEAM DROVE FOR 25 KILOMETERS THROUGH A SWARM
MOVING WEST TO SOUTHWEST NEAR BAKEL A 2.5 KILOMETER
BAND OF JUVENILES IN THE THIRD INSTAR STAGE WAS SIGHTED.

IN GENERAL NUMEROUS SMALL SWARMS WERE SIGHTED AT THIS
POINT HOWEVER THEIR MOVEMENT APPEARS TO BE OVER SHORT
DISTANCES. TEAM WILL BE RETURNING TO THE FIELD 21 AUGUST
TO COVER ADDITIONAL AREAS.

E TO CLEAR UP ONE POINT OF CONFUSION THE PRIMARY
SPECIES IN SENEGAL IS OEDALEUS MIGRATORIA SENEGALENSIS
WHICH IS A SUBSPECIES OF THE AFRICAN MIGRATORY LOCUST
THEREFORE WE HAVE A LOCUST AS WELL AS A GRASSHOPPER
PROBLEM IN SENEGAL.

3 DONOR COORDINATION

A LAST WEEK THE GOS CALLED A DONOR COORDINATION MEETING
WHICH WAS ATTENDED BY ALL MAJOR HEADS OF MISSION ALONG
WITH FAO EEC AND MISSION REPRESENTATIVES. WHAT
MANIFESTED WAS ESSENTIALLY A PLEDGING SESSION WITH EACH
REPRESENTATIVE ACKNOWLEDGING THE SERIOUSNESS OF THE
SITUATION. MISSION WHILE HOPING FOR A MORE SUBSTANTIVE
POPULATIONS WAS PLEASED TO SEE A FIRST EFFORT AT DONOR
COORDINATION. HOWEVER WHAT WAS LACKING AT THIS TIME WAS
AN ACCURATE AND UP TO DATE ASSESSMENT OF LOCUST
INFESTATION IN SENEGAL. GIVEN THE SCARCITY OF RELIABLE
INFORMATION MANY DONORS REQUESTED BETTER PLANNING ON
THE PART OF THE GO AND NOTED THAT REFS SHOULD BE BETTER
DEFINED BEFORE SPECIFIC PLEDGES COULD BE MADE.

B A PLANNING COMMITTEE COMPOSED OF ONE REPRESENTATIVE
FROM EACH DONOR WAS FORMED AT THE REQUEST OF THE GO.
AT A MEETING THE FOLLOWING DAY, THE GOS PRESENTED A LIST

A.P. Oly

Phillips

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OF NEEDS ALONG WITH AN ASSESSMENT OF CURRENT AND AVAILABLE STOCKS THIS LIST THOUGH WAS COMPILED IN THE ABSENCE OF NEEDED UP TO DATE AND ACCURATE INFORMATION DONOR REPS WERE THEN ASKED WHAT PORTION OF THIS LIST THEY COULD FULFILL THE OVERALL STOCK OF PESTICIDES CITED BY THE GOVERNMENT IS VERY LOW FOR AERIAL TREATMENT THEY ESTIMATE A NEED OF 150 000 LITERS OF FENITROTHION WITH A STOCK ON HAND OF ONLY 18 000 LITERS FOR THE GROUND TREATMENT THEY ARE ASKING FOR A TOTAL OF 200 000 LITERS OF FENITROTHION WITH ONLY 20 000 IN STOCK (THIS APPEARS TO US TO BE UNREALISTICALLY LOW) USAID REPRESENTATIVES QUESTIONED THE OBSESSION WITH USE OF FENITROTHION AS OPPOSED TO OTHER ALTERNATIVES SUCH AS CARBARYL WHICH SHOULD BE AVAILABLE IN LARGE QUANTITIES FROM U S SOURCES CONCERN WAS ALSO EXPRESSED WHEN THE GOS NOTED THAT OLD STOCKS OF DIELDRINE (308 000 LITERS OF 5 AND 51,000 LITERS OF 20) WHICH IS HIGHLY TOXIC AND NOT ON THE EPA APPROVED LIST WERE AVAILABLE

THIS APPEARS TO US TO BE THE ONLY WAY FEASIBLE OF ATTACKING THE PROBLEM WITHIN THE CRITICAL TIMEFRAME WALKER

C SEVERAL DONORS PLEDGED SMALL AIRCRAFT AND PILOTS ITALY AGAIN SAID TWO OR THREE WOULD BE MADE AVAILABLE ON A REGIONAL BASIS FRANCE COMMITTED ONE WITH PILOT AND MECHANIC NOTE (1) THESE COMMITMENTS NEED TO BE VERIFIED (2) SEPTEL FOLLOWS ON MISSION'S AERIAL REQUIREMENTS, INCLUDING LARGE AIRCRAFT)

D A REVISED LIST IS DUE OUT THIS WEEK COMPARING NEEDS WITH DONOR PLEDGES THERE WILL STILL BE A SHORTAGE OF AVAILABLE PESTICIDES MISSION IS CONCERNED THAT MANY OF THE PLEDGES MAY NOT ARRIVE IN TIME TO BE OF SIGNIFICANT HELP IN THIS YEAR'S CAMPAIGN

4 USAID STRATEGY

A PER REFTEL B AMBASSADOR DECLARED A DISASTER SITUATION EXISTS IN SENEGAL MISSION PLANS TO USE THE DOLLARS 25,000 MADE AVAILABLE BY OFDA TO PURCHASE PESTICIDES FROM THE U S

B AN OFDA TEAM COMPOSED OF AVIATION OPERATIONS AND

LOGISTICS SPECIALISTS AND AN ENTOMOLOGIST ARRIVED DAKAR 19 AUGUST THEY WILL WORK WITH THE GOS AND OTHER DONORS TO DEVELOP A PLAN FOR STRATEGIC INTERVENTION AND LOCUST CONTROL AT PRESENT THINGS SEEM TO BE HIT AND MISS WITH UNIFORMS (SELF CONTAINED SPRAYING TRUCKS) AND OTHER GROUND EQUIPMENT SCATTERED OVER THE ENTIRE COUNTRY AND NO HEAVY CONCERTED EFFORT ON HIGH PRIORITY AREAS

C AIRCRAFT PARTS AND SAFETY EQUIPMENT ARRIVING FRIDAY 22 AUGUST ALONG WITH PILOT INSTRUCTOR DYER THIS SHOULD ENABLE US TO POSITION IMMEDIATELY ONE OCLALAV AIRCRAFT FOR AVAILABILITY IN AN AERIAL PROGRAM

D AT THIS TIME MISSION PLACES THE MATAM/BAKEL AREA AS THE TOP PRIORITY AND THE LOUGA LIIGUEPE AREA AS SECOND PRIORITY ENTOMOLOGIST ADVISES TIMEFRAME FOR AN EFFECTIVE AERIAL ATTACK APPEARS TO BE NEXT 2-3 WEEKS THIS MEANS A/L SPRAYING SHOULD BE COMPLETED NO LATER THAN 15 SEPTEMBER AFTER THAT TIME SIGNIFICANT NUMBERS OF ADULTS WILL PROBABLY BE MOVING SOUTHWARD WITH THE RETREAT OF THE INTER TROPICAL FRONT LAYING EGGS THE ENTIRE WAY AN ESTIMATED 315 000 HECTARES SHOULD BE TREATED IN THIS AREA AS SOON AS POSSIBLE

BEST AVAILABLE COPY

E MISSION IS NOW INVESTIGATING THE POSSIBLE USE OF LARGER AIRCRAFT MISSION WORKING WITH U.S.A AND OFDA TEAM TO DETERMINE AERIAL SPRAYING AIRCRAFT NEEDS FOR ESTIMATED 2 000 SQUARE KILOMETERS (SEE PARA. 2 (D) ABOVE)

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3 ACTION PLAN FOR USG PROPOSED HEREIN MUST CONTAIN A CERTAIN DEGREE OF FLEXIBILITY FOR RESPONSE TO HAVE ANY GUARANTEE OF SUCCESS GIVEN THE DYNAMIC SITUATION.

4 MISSION AGRICULTURAL PERSONNEL CURRENTLY MAKING FIELD ASSESSMENTS OF REPORTED OUTBREAKS OF LOCUSTS/GRASSHOPPERS IN SINE SALOUM AND CASAMANCE AREAS OF SENEGAL (SOUTH OF DAKAR) AND OFDA AND USDA ENTOMOLOGISTS ARE INVESTIGATING CONDITIONS IN EASTERN SENEGAL. THEIR FINDINGS WILL BE REPORTED SEPTFL. MISSION SPONSORING SITE TRIP TO THE CRITICAL AREAS AUGUST 24 FOR GDS OFFICIALS FROM LOCUST CRISIS COMMITTEE OF MINISTRY OF RURAL DEVELOPMENT FAO CANADA FRANCE USAID AND OFDA TEAM. END SUMMARY.

5 PRESENTLY KNOWN AREAS OF INFESTATION

A USDA ENTOMOLOGIST PHILIPS NOTED HEAVY INFESTATION IN ESTIMATED 200 000 HA. AREA IN NORTHEASTERN SENEGAL BOUNDED ROUGHLY BY MATAM EASTWARD TO BAKEL IN A BAND APPROXIMATELY 10 KMS WIDE WHERE FINDINGS OF AFRICAN MIGRATORY LOCUST AVERAGED 70/SQ METERS M2 WITH INDICATIONS REACHING 200/M2 IN SPOTS. SPOT CHECKS SEEM INDICATE THAT INFESTED AREAS ARE CONTIGUOUS AND THEREFORE BEST SUITED TO LARGE-SCALE SPRAYING.

B HE HAS ALSO ASSESSED MODERATE INFESTATION GRASSES FROM 5 TO 170/M2 IN 150 000 HA AREA BETWEEN LOUGA AND LINGUERE IN NORTHERN SENEGAL.

C OTHER DONORS AND FAO REPORT FINDINGS IN EASTERN SENEGAL SINE-SALOUM AND CASAMANCE REGIONS BUT SURFACE AREAS AND DENSITY FIGURES NOT YET ASCERTAINED OR VERIFIED. OFDA AND USDA ENTOMOLOGISTS RETURNING FROM AGRICULTURAL OFFICE PERSONNEL ASSESSING SITUATIONS IN THE OTHER REPORTED AREAS AND WE WILL REPORT THEIR FINDINGS ASAP.

D AFTER REVIEWING REF (D) AND BASED UPON DISCUSSIONS WITH TIM KNIGHT AND JIM JAC-SOH OF MALI/MAURITANIA OFDA MISSION IT IS APPARENT THAT MAURITANIAN GOVERNMENT

(GIRM) HAS CONCERN AND HAS DEVELOPED PLANS TO PROTECT CROP PRODUCTION IN THE SENEGAL RIVER AREA NOT FAR FROM CRITICAL AREAS IDENTIFIED BY PHILIPS ON SENEGAL SIDE OF RIVER. MALI GOVERNMENT (GRT) HELICOPTER WILL SURVEY KIFFA TO SELIBABY TO KAYES AREA BEGINNING 29 AUGUST CONTINUING EASTWARD TOWARDS GAO AND ENDING ABOUT 7 SEPTEMBER. RESULTS OF THIS HELICOPTER SURVEY COULD INDICATE A POTENTIAL AND JUSTIFIABLE REQUIREMENT FOR LARGE AIRCRAFT USAGE IN SOME OF THESE AREAS AS WELL AS THOSE IN NORTH AND NORTHEAST SENEGAL BEING PROPOSED IN THIS MESSAGE. USAID/MALI WILL ALERT ADDRESSEES TO DEVELOPMENTS.

6 PESTICIDE TREATMENT

OFDA TEAM HAS PROVIDED COMPARATIVE ANALYSIS OF THREE APPROVED CHEMICALS - MALATHION FENITROTHION AND CARBARYL - APPLIED TO THE COMBINED 300 000 HA. CRITICAL AREAS BETWEEN SMALL AND LARGE (CATEGORY A) AIRCRAFT. MALATHION WOULD REQUIRE LESS VOLUME (ABOUT 120 000 LITERS) BUT IS NOT APPROPRIATE BECAUSE OF HIGH TOXICITY TO AQUATIC LIFE. THE FENITROTHION (50) REQUIREMENT WOULD BE ABOUT 180 000 LITERS. CARBARYL'S REQUIREMENT WOULD BE AT LEAST TWO AND ONE HALF TIMES GREATER. RECOMMENDED USE IS FENITROTHION (50) BECAUSE OF ITS EFFECTIVENESS/APPROPRIATENESS TO SENEGAL'S SITUATION BECAUSE OF LOWER TOXICITY TO AQUATIC LIFE AND BECAUSE OTHER DONORS CAN SUPPLY IT. JUNE 20079 INDICATES FAO CAN PROVIDE 70 000 L FROM FFRENH AND EEC SOURCES AND BRADER HAS INDICATED BY TELEPHONE HE CAN ACTUALLY GET

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LOCUST

SECSTATE DELIVER AT OPENING OF BUSINESS TO DAA/AFR
OFDA AFR/SWA AFR/TR (REILLY) ROM FOR PDWG PASS
FAO BRADER PARIS FOR EMBA SY EP (EROWN PASS MI HAUX
FAC) AND OFCD (SLOCUM) OTTAWA FOR CIDA (BARCHUCHAT)
BRUSSELS FOR EEC (SMIDA) THE HAGUE FOR MFA (VAN TOGREN)

E O 12356 N/A

SUBJECT SENEGAL GRASSHOPPER/LOCUST ASSESSMENT - UPDATE
NO 3

REF A) DAKAR 0511 B) ROME 0005 20058 20079 C) STATE
259666 D) NAKHCHOTV 3512 E) BANJUL 2610

1 SUMMARY INITIAL FINDINGS OF OFDA TEAM AND USDA
ENTOMOLOGIST PHILIPS THAT AT LEAST TWO MAJOR AREAS OF
INFESTATION EXIST IN NORTH AND NORTHEAST PARTS OF
SENEGAL WITH REPORTS OF SCATTERED POCKET AREAS ELSEWHERE
IN SENEGAL HAVE BEEN SHARED WITH GDS LOCUST CRISIS
COMMITTEE AND MOST MAJOR DONOR REPS IN DAKAR (CIDA
FRANCE FAO ITALY)

2 MISSION AND OFDA TEAM PROPOSE ACTION PLAN TO ATTACK
THE MOST CRITICAL CONTIGUOUS AREAS (200 000 HECTARES IN
MATAM BAKEL AREA AND 150 000 HA IN LOUGA LINGUERE AREA
OF NORTHERN SENEGAL) BY USING FOUR (4) FOUR ENGINE PROP
PLANES (DC-7) WITH 3 000 GALLON-TANK PESTICIDE CAPACITY
(FOR BUDGET ESTIMATE SEE PARA 7 B BELOW) WITH
ASSURANCES FROM OTHER DONORS (FAO EEC FRANCE CANADA)
TO PROVIDE COMPLEMENTARY SUPPORTING ASSISTANCE
(PESTICIDE AND GROUND SUPPORT) TO EFFECTIVELY TREAT
LOCUSTS BEFORE THEY LAY EGGS AND MIGRATE. CAMPAIGN MUST
BE INITIATED FIRST WEEK SEPTEMBER AND COMPLETED BY
SEPTEMBER 15. THIS MISSION WILL BE INITIATED (OFDA) INITIATE
CONTRACTING PROCEDURES IMMEDIATELY TO ENSURE TIMELY
APPROVAL DAKAR OF REQUESTED AIRCRAFT.

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100 000 L - CIDA REPS DAKAR HAVE TO T US THEY PLAN TO
PROVIDE 85 000 L TO ARRIVE DAKAR WITHIN 10 DAYS)
7 METHOD OF APPLICATION

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AND CREW AND FUEL COSTS FOR FERRYING AND IN-COUNTRY
SPRAYING OPERATIONS FAC WITH CONTRIBUTIONS FROM FRANCE
AND THE EEC) AND CANADA AGREE TO SUPPLY 185 000 LITERS OF
FENITROTHION ADVANTAGES OF THIS PROPOSAL ARE NUMEROUS.

A GROUND SPRAYING IS CLEARLY INADEQUATE FOR SIZE OF
AREA

B SMALL AIRCRAFT MISSION REJECTS THIS OPTION AS
UNWORKABLE FOR FOLLOWING REASONS FIRST IS QUESTION OF
AVAILABILITY OF SUFFICIENT NUMBER OF CRAFT GIVEN (1)
NEED FOR THEIR USE TO TREAT POCKET AREAS OF
INFESTATION (2) COMPETING DEMANDS FOR THEIR USE IN
SEVERAL COUNTRIES (3) SUITABILITY OF CRAFT TO OUTFIT FOR
SPRAYING USAID/MALI CANVASSED WEST AFRICA POS S AND
RESPONSES INDICATED INSUFFICIENT QUANTITY AMEMBASSY
DAKAR FAA REGIONAL REP FAA HEADQUARTERS REP TO DA TEAM
MEMBER) AND DAO CONIRM THIS ASSES MENT WHAT PLANE S
ARE AVAILABLE APPEAR TO HAVE BEEN IDENTIFIED BY OTHER
DONORS FOR USES IN POLYET AREA "A OTHER COUNTRY" (SEE
REFTELS) DUTCH CHARGE DAKAR SAYS HE KNOWS OF NO PLANS
HIS GOVERNMENT CAN SUPPLY SMALL AIRCRAFT FOR THIS PURPOSE
TO SENEGAL MOREOVER A NUMBER OF OTHER CRITICAL
PROBLEMS MAKE THIS CHOICE COMPLETELY UNTEMBLE GIVEN
UNMOVABLE WINDOW OF OPPORTUNITY ALL EXPERTS AGREE THAT
SPRAYING MUST BE TERMINATED NO LATER THAN 15 SEPTEMBER
MEANING THAT SPRAYING MUST GET UNDERWAY IDEALLY BY 1
SEPTEMBER AND NO LATER THAN 7 SEPTMBER) SOURCE S OF
SUPPLY FOR THE SMALL PLANES WOULD HAVE TO BE IDENTIFIED
CONTRACTED FOR AND MOBILIZED AND TRANSPORTED TO SENEGAL
WITHIN ONE WEEK CIDA (CANADA) AND ITALY HAVE PLANES
AVAILABLE BUT THEY WOULD HAVE TO BE FITTED FOR SPRAYING
PURPOSES AND FERRIED AND ARE NOT LIKELY TO BE AVAILABLE
IN TIME HOWEVER WE ARE ENCOURAGING THEIR POSSIBLE USE
FOR LATER CLEAN UP ACTION IN POCKET AREAS AFTER
SEPTEMBER 15 THE SOURCE IN FRANCE CITED IN REF (D) MAY

BE APPROPRIATE FOR POCKET AREAS THROUGHOUT THE SAHEL AS
THEY ARE IDENTIFIED WE WILL ADVISE FRANCE AND FAO ON
THIS IF FIELD TRIPS IDENTIFY SMALL AREAS OF INFESTATIONS
ELSEWHERE IN SENEGAL AN ADDITIONAL PROBLEM WOULD BE THE
COMPLICATED AND COSTLY GROUND LOGISTICAL SUPPORT THAT
WOULD HAVE TO BE MOUN ED TRAINING OF PILOTS FOR
LOW LEVEL AERIAL APPLICATION TECHNIQUES IN FORMATION
FUEL AND PESTICIDES PRE-POSITIONED STAGING AREAS SET UP
VEHICLES AND MAINTENANCE PROVIDED NOT TO MENTION THE
ENORMOUS PERSONNEL AND MANAGEMENT EFFORT REQUIRED PLUS
TENTS AND FOOD ETC TEAM S ANALYSIS IS THAT FOR
APPLICATION OF FENITROTHION IN A 14-DAY PERIOD 6
AIRCRAFT WOULD BE REQUIRED TO UNDERTAKE 548 SORTIES
COMPARED TO 57 SORTIES OF 4 FOUR ENGINE AIRCRAFT
(CATEGORY A) THESE CALCULATIONS ARE BASED ON ASSUMPTION
OF PERFECT WEATHER (THIS IS RAINY SEASON IN WEST AFRICA)
AND LOW ENOUGH TEMPERATURES FOR SPRAY TO DESCEND SPRAY
EXPERTS ADVISE HOWEVER THAT WHEN TEMPERATURES RISE
BEYOND 85 DEGREES F SPRAY BECOMES INEFFICIENT (WON T
SETTLE) THIS MEANS THAT PLANES IN GOOD WEATHER MAY BE
ABLE TO WORK ONLY ONE SORTIE DAILY EARLY IN THE
MORNING IN SUMMARY, OFDA TEAM AND MISSION DO NOT RPT
NOT HAVE CONFIDENCE IN ABILITY OF NUMEROUS SMALL PLANES
EVEN IF AVAILABLE IN ADEQUATE NUMBERS TO SPRAY 360 000
HA BUT DO FEEL THAT SMALL PLANES SHOULD BE USED TO SPRAY
POCKETS OF INFESTATION AND NEW OUTBREAK AREAS OTHER
DONORS AS DESCRIBED IN VARIOUS REFTELS WILLING PROVIDE
THIS ASSISTANCE

C CATEGORY A AIRCRAFT (FOUR ENGINE PROPELLOR PLANES)
MISSION PROPOSES USE OF FOUR CATEGORY A AIRCRAFT WITH
3 000-GALLON TANK PESTICIDE CARRYING CAPACITY ESTIMATED
COST OF THIS OPERATION WOULD BE ABOUT DOLLAR 1 365 172,
BASED ON COST OF CONTRACTING FOR 14 DAYS OF FOUR CRAFT

(1) OPERATION WOULD BE SELF-CONTAINED BUT USING MATERIALS
SUPPLIED BY OTHER DONORS PLANES COULD BE RUN DAILY OUT
OF DAKAR AIRPORT ELIMINATING NEED FOR AN IMPOSSIBLY
COMPLICATED AND COSTLY LOGISTICS SET-UP IN THE FIELD
WHICH THE SMALL CRAFT OPERATION WOULD REQUIRE
(2) ESTIMATED BUDGET

CATEGORY A AIRCRAFT FERRYING COST TO DAKAR AND RETURN TO U S 100 000 EACH	400 000
FLIGHT TIME 6 HOURS X 4 CRAFT X 14 DAYS	584 000
FUEL COST - 85 500 GALLONS AT 1.44 PER GALLON	224 172
DAILY AVAILABILITY 2 000 X 4 X 14	112 000
SUPPORT AIRCRAFT (BALLPARK ESTIMATE)	25 000
SUPPORT AND GROUND TRANSPORTATION INCLUDING DISPOSAL OF CONTAINERS PERSONNEL PROTECTIVE	
EQUIPMENT FOR GROUND CREW AND RADIOS (BALLPARK)	100 000
TOTAL ESTIMATED COST	1 365 172

(3) LARGE-PLANE OPERATION HAS VERY HIGH PROBABILITY OF
SUCCESS THIS IS NOT TRUE FOR THE SMALL PLANES

MOREOVER COST SAVINGS OF FOOD AID FOR NEXT YEAR SHOULD
A MORE LIMITED SPRAY OPERATION NOT SUCCEED AND MASSIVE
CROP DEVASTATION TAKE PLACE WOULD BE VERY HIGH PROBABLY
RUNNING INTO MILLIONS OF DOLLARS

B PLAN OF ACTION

A IN SENEGAL THIS PROPOSAL (RPT PROPOSAL) HAS BEEN
DISCUSSED INFORMALLY WITH GOS AND OTHER DONORS AND THE
PLAN IS SUPPORTED WE ARE ALSO IN CONTACT WITH
FAO/ECLA S BRADER TO OBTAIN HIS SUPPORT WE EXPECT GOS
TO CONVENE A DONORS MEETING AUGUST 25 MISSION
SPONSORING TRIP AUGUST 24 TO VISIT AFFECTED AREAS AND GET
UPDATE ON SITUATION

B AID/W REQUEST OFDA CONTRACT FOR FOUR AIRCRAFT AS
DESCRIBED PARA 6 (C) ABOVE FOR ARRIVAL DAKAR 1 SEPTEMBER
WALKER

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AMEMBASSY BAHAKO IMMEDIATE

AMEMBASSY NOUAKCOTT IMMEDIATE

INFO AMEMBASSY BANJUL IMMEDIATE

AMEMBASSY BONN IMMEDIATE

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AMEMBASSY LONDON IMMEDIATE

AMEMBASSY NDJAMENA IMMEDIATE

AMEMBASSY OTTAWA IMMEDIATE

AMEMBASSY OUGADDOUGOJ IMMEDIATE

AMEMBASSY PARIS IMMEDIATE

AMEMBASSY THE HAGUE IMMEDIATE

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AIDAC

LOCUST

SECSTATE DELIVER AT OPENING OF BUSINESS TO OFDA DAA/AFR AFR/TR (REILLY), AFR/SWA ROME FOR FODAG PASS FAO BRADER PARIS FOR EMBASSY GEP (BROWN) PASS MICHAUX MINCOOP AND OECD (SLOCUM) OTTAWA FOR CIDA (BARCHECHAT) BRUSSELS FOR EEC (SMIDA) THE HAGUE FOR MFA (VAN TOOREN) BONN FOR MINDEVCOOP LONDON FOR ODA FAA/AIA

E O 12356 N/A

SUBJECT SENEGAL GRASSHOPPER/LOCUST ASSESSMENT - UPDATE NO 4

REF DAKAR 9604 (NOTAL)

1 SUMMARY DURING WEEKEND USAID AND OFDA TEAM PRESENTED PROPOSED PLAN FOR TREATMENT OF IDENTIFIED LARGE AREAS OF INFESTATION TO SECRETARY GENERAL MINISTRY OF RURAL DEVELOPMENT HEADS OF CROP PROTECTION SERVICE OCLAVAV AND LOCUST CRISIS COMMITTEE REPRESENTATIVES OF THESE SAME SERVICES AND ITALY CANADA FAO AND USAID CONDUCTED FIELD TRIP TO BAKEL MATAM AREA AUGUST 24 GOS MINISTER OF RURAL DEVELOPMENT CONVENED MEETING OF HIS STAFF CROP PROTECTION SERVICE OCLAVAV ARMY LOGISTICS EXPERT FAO AND DONOR REPRESENTATIVES AUGUST 25 TO PRESENT PROPOSED ACTION PLAN (OUTLINED REFTEL) PARTICIPANTS AGREED ON THREE PRONGED STRATEGY OF FOUR TO SIX WEEKS DURATION CONSISTING OF (1) LARGE-SCALE AERIAL SPRAYING OF LARGE AREAS OF INFESTATION IN NORTHERN SENEGAL WITH MALATHION SEPTEMBER 1-15 (2) USE OF SMALLER AIRCRAFT TO SPRAY POCKET INFESTATION AREAS WITH FENITROTHION MID-SEPTEMBER TO MID OCTOBER AND (3) USE OF GROUND SPRAYING AROUND VILLAGES WHERE NEEDED DURING SAME PERIOD U S PROPOSAL TO SUPPLY CATEGORY A AIRCRAFT WAS ACCEPTED AND LOCAL

DONOR REPRESENTATIVES EITHER PLEDGED SPECIFIC AMOUNT OF SUPPORT FOR US OPERATION (ALL 11 COUNTRIES FUEL AND ABOUT HALF OF PESTICIDE) OR PESTICIDE. SMALL AIRCRAFT FUEL AND SUPPORT EQUIPMENT FOR THE SMALLER OPERATIONS SOME DONOR REPS FORWARDED ADDITIONAL REQUESTS FOR INJECTICIDE AND FUEL CONTRIBUTIONS TO THEIR RESPECTIVE CAPITALS AUGUST 26 USAID/SEN GAI ALSO RECEIVED OFDA CONFIRMATION OF CONTRACT ARRANGEMENTS FOR THE FOUR CATEGORY A AIRCRAFT AND COMMUNICATED THIS TO GOVERNMENT AND DONORS FAO/ROME IN AUGUST 26 AM TELEPHON WITH BRADFR ACCEPTED STRATEGY AND WAS GOING TO SHIFT TENDERS FROM FENITROTHION TO MALATHION TO ASSURE DELIVERY OF 21 000 LITERS OF MALATHION DAKAR MLT 1 SEPTEMBER THIS MESSAGE ALSO PROVIDES DETAILS OF OFDA SENEGAL TEAM S LIST OF ACTION ITEMS FOR THE LARGE SCALE COMPONENT WE LEARNED LATE AUGUST 27 AT DONOR COORDINATION MEETING THAT FRANCE AND EEC WERE OPPOSING SHIFT IN STRATEGY FROM SMALL PLANES TO THREE PRONGED ATTACKED FYI VERY LATEST REPORT FROM FIELD NOW INDICATES GRASS HOPPERS ATTACKING RICE FIELDS IN CASAMANCE AROUND ZEGUINCHOR IN ESTIMATED 6000 HA AREA END SUMMARY

2 WISH TO UNDERSCORE ALL LOCAL DONOR REPRESENTATIVES CONSIDER THAT EACH OF THE THREE ELEMENTS OF THE PEST CONTROL ACTION PLAN ARE ESSENTIAL TO EFFECTIVE CONTROL OF GRASSHOPPER/LOCUST INFESTATION THIS YEAR AND TO AVOID EVEN MORE SERIOUS PROBLEM NEXT YEAR

3 GOS AND DONORS HAVE AGREED UPON A COORDINATED PROGRAM TO ELIMINATE OUTBREAKS OF GRASSHOPPERS AND LOCUSTS IDENTIFIED AND EXPECTED IN THE COMING WEEKS U S ENTOMOLOGISTS HAD PREDICTED THAT IMMEDIATE ERADICATION CAMPAIGN OF LARGE AREAS OF INFESTATION MUST GET UNDERWAY BY FIRST WEEK OF SEPTEMBER AND COMPLETED BY SEPTEMBER 15 TO BE EFFECTIVE I E BEFORE THEY REACH EGG LAYING STAGE HOWEVER SMALLER SO CALLED POCKET AREAS OF PRESENTLY INDETERMINATE NUMBERS AND SIZES MUST ALSO BE IDENTIFIED AND TREATED WITH SMALLER AIRCRAFT DURING MID TO LATE SEPTEMBER AND EARLY OCTOBER FINALLY GROUND SPRAYING WILL BE NEEDED IN THE SMALLEST AREAS OF INFESTATION NORMALLY CLOSE TO FARMING VILLAGES IN AREAS BEYOND THOSE TREATED BY THE FIRST TWO ATTACKS MAINLY TO PROTECT CROPS AT HARVEST

3 LARGE-SCALE CAMPAIGN

A BASED ON ENTOMOLOGIST PHILIPS FIELD TRIP AUGUST 15-17 AND AS RE-CONFIRMED BY MATAM-BAPEL GOS AND DONORS FIELD TRIP AUGUST 24 WE HAVE DETERMINED THAT FOUR FOUR-ENGINE AIRCRAFT (KNOWN AS CATEGORY A) WILL BE REQUIRED TO ERADICATE THE ESTIMATED 360 000 HA AREAS BETWEEN MATAM AND BAKEL AND BETWEEN LOUGA AND LINGUERE AND TO BE AVAILABLE FOR USE IN POSSIBLE SIMILAR LARGE-SCALE OUTBREAKS IN THE AREA

B AT GOS DONORS MEETING AUGUST 25 USE OF SAFER MALATHION INSTEAD OF FENITROTHION FOR THE LARGE AIRCRAFT WAS ADOPTED BECAUSE OF TECHNICAL EXPERTS RECOMMENDATION THAT MORE TOXIC FENITROTHION REQUIRE MORE PRECISE APPLICATION THAN THAT WHICH COULD BE ACHIEVED FROM BLANKET SPRAYING FROM LARGE AIRCRAFT FAO REP (VAN WINDERICKX) AGREED TO NOTIFY ECLD HEAD BRADER OF THIS DECISION SO THAT DONOR PLEDGES OF FENITROTHION COULD BE TRANSFERRED TO MALATHION (WHICH HE WAS ABLE TO DO IN THE EVENING) OFDA TEAMS ASSESSMENT IS THAT THE TWO PRIORITY AREAS WILL REQUIRE 212 500 LITERS OF MALATHION PRELIMINARY INDICATIONS ARE THAT THIS AMOUNT IS NOT AVAILABLE IN AFRICA BUT MAY BE AVAILABLE IN EUROPE AND THAT U S MANUFACTURER AMERICAN CYANAMID (AMCY) CAN SUPPLY NEEDED AMOUNTS BY AUGUST 31 IF FIRST OF THREE

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747 S NEEDED TO DELIVER PESTICIDE CAN ARRIVE BY AUGUST 31 SPRAYING CAN TAKE PLACE SEPT 1 AND 2
C AID/OFDA INDICATE THAT FOUR DC 7 AIRCRAFT HAVE BEEN CONTACTED FOR ARRIVAL DAKAR AUGUST 31 TO BE READY TO BEGIN SPRAYING NORTHERN SENEGAL SEPTEMBER 1
USAID/DAKAR, FAO/DAKAR AND ECLO/ROME WERE WORKING OUT

AGREE THAT SMALL PLANE OPERATION ALONE HAS LITTLE CHANCE OF SUCCESS SINCE NOTHING FLYING HERE BUT GRASSHOPPERS
ONE DCLALAV PLANE IS TECHNICALLY READY TO FLY BUT NO EXPERIENCED PILOT AVAILABLE SECOND PLANE WON'T BE OPERATIONAL NOW BEFORE SEPT 21 AS FOR RENTAL OF LOCAL AIRCRAFT EQUIPPED TO SPRAY THAT IS DEADEND WALKER

ARRANGEMENTS AUGUST 26 TO ASSURE TIMELY ARRIVAL OF MALATHION DAKAR BY AUGUST 31 BEFORE SHIFT TO MALATHION WAS BLOCKED UNDER BEST OF CIRCUMSTANCES LINING UP NECESSARY PESTICIDE IS NO EASY TASK AND WILL REQUIRE GARGANTUAN EFFORT BY ALL PARTIES CONCERNED ONCE FINAL DECISION TO GO FORWARD WITH LARGE PLANES IS MADE HERE IS WHAT HAS TO BE DONE

(1) ALREADY-PROMISED DONATIONS TO FAO OF SOME FENITROTHION MUST BE CONVERTED TO MALATHION HOWEVER SOME FENITROTHION WILL STILL BE NEEDED FOR PHASE II OPERATION OF SMALLER AIRCRAFT AND IN PHASE III OF GROUND ATTACK THE CONVERSION FROM FENITROTHION TO MALATHION IS NOT A STRAIGHT ONE-FOR-ONE EQUATION BECAUSE UNIT COST OF MALATHION IS CHEAPER THAN FENITROTHION, WHICH OFDA QUOTED AT DOLS 16/LITER DELIVERED DAKAR WHILE AMCY QUOTES PRICE OF DOLS 3.33/LITER AT FACTORY PRESENT PLEDGES OF FENITROTHION AS REPORTED FROM FAO ARE 70 000 LITERS, OF WHICH 55 000 FROM EEC AND 15 000 FROM FRANCE THROUGH BRADER INFORMED US HE WAS PREPARED TO EXTEND NEW TENDERS FOR TOTAL OF 100 000 LITERS OF MALATHION INSTEAD FOR SENEGAL DUTCH MAY BE ABLE TO CONTRIBUTE ADDITIONAL 32 000 LITERS OF MALATHION TO FAO ADDITIONALLY JAPAN HAS 75 000 LITERS OF FENITROTHION EN ROUTE AND ARRIVING SHORTLY WHICH WILL BE USED FOR SMALL PLANE OPERATION BUT THE ULTIMATE-IMMEDIATE NEED TODAY IS FOR COMMITMENT OF

212 500 LITERS OF MALATHION TO ARRIVE DAKAR IN TIME FOR AERIAL SPRAYING CAMPAIGN SEPTEMBER 1 WHILE BRADER HAS RESPONSIBILITY FOR COORDINATING THIS PROCUREMENT HIS MESSAGE URGES DONORS TO BE FORTHCOMING ON PLEDGES JUST AS SOON AS AGREEMENT IS REACHED ON LARGE PLANE/THREE PRONG STRATEGY SO THAT ORDER CAN BE PLACED AND AIRSHIPMENT ARRANGED ON MOST URGENT BASIS WITHOUT ARRIVAL OF AT LEAST FIRST PLANE LOAD OF MALATHION DAKAR BY THIS WEEKEND PHASE I ON PROGRAM WILL BE JEOPARDIZED

(2) AIRCRAFT FUEL FOR SPRAYING OPERATIONS FOLLOWING PLEDGES WERE MADE AT AUGUST 25 MEETING (ESTIMATED NEED IS FOR 66 043 GALLONS VALUED LOCALLY AT .15 MILLION CFA) CANADA - 25 MILLION CFA FRANCE - 15 MILLION CFA EEC - 9 MILLION CFA AND GREAT BRITAIN - 5 MILLION (AID ON AUGUST 26) NETHERLANDS MAY BE ABLE TO SUPPLY ADDITIONAL 5 MILLION AND POSSIBLY MORE ITALIAN LOCAL REP ALSO CHECKING ON POSSIBLE CONTRIBUTION USAID PROPOSING TO SET UP CFA ACCOUNT WITH LOCAL DONOR DEPOSITS AND TO ADMINISTER PAYMENTS TO LOCAL GASOLINE SUPPLIERS

(3) GCS COORDINATION MDR COORDINATING LOGISTICS WITH GOs MILITARY AT AUGUST 27 EARLY MORNING MEETING WITH CHIEFS OF STAFF FULL ARMY AND AIRFORCE COOPERATION PLEDGED WILL ADVISE DETAILS SEPT 1

4 NEWS OF EUROPEAN OPPOSITION TO LARGE PLANES AND MALATHION CAME THROUGH JUST AS LOCAL DONOR REPRESENTATIVES WERE MEETING AFTERNOON OF AUGUST 26 TO BLOCK OUT SUPPORT FOR FIRST PHASE OPERATIONS UNIVERSAL REACTION WAS SHOCK AT UNREALISTIC AND INFORMED AND RIGID ADHERENCE TO EARLIER AGREEMENTS WHICH CLEARLY OVERTAKEN BY LOCAL REALITIES ALL REPS PERSENT (INCLUDING EEC AND FRENCH ALONG WITH CANADIAN ITALIAN AND FAO REPS) PLEDGED FULL AND CONTINUED SUPPORT TO THREE PRONG STRATEGY AND CABLED OR CALLED THEIR RESPECTIVE CAPITALS WITH THIS POSITION RECOMMENDING THAT FAO AND DONORS ACCEPT THREE PRONG ATTACK DUTCH REPRESENTATIVE WHO INFORMED TODAY WAS ALSO SHOCKED AND SUPPORTIVE ALL CONCERNED HERE

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GC-01 GCAF-01 GCFL-01 AAZA 01 SIAG-02 STFM-07 SACT-01
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AMEMBASSY BANGKOK IMMEDIATE

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INFO AMEMBASSY BANJUL IMMEDIATE

AMEMBASSY BAHIA IMMEDIATE

AMEMBASSY BR FLS IMMEDIATE

AMEMBASSY LONDON IMMEDIATE

AMEMBASSY NOURMENA IMMEDIATE

AMEMBASSY OTTAWA IMMEDIATE

AMEMBASSY QUAGADOUGOU IMMEDIATE

AMEMBASSY PARIS IMMEDIATE

AMEMBASSY THE HAGUE IMMEDIATE

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AIDAC

SECSTATE FOR OFDA DA R AFR TR (REILLY) AFR/SVA
ROME FOR FODAG FAO BRADER PARIS FOR EMBASSY GEP
(BROWN) PASS NICHAS INCOOP AND DECD LOCUM OTTAWA
FOR CIDA (BACHCHAT) BRUNSELS FOR EFC MIDA THE
HAGUE FOR MFA (JA TOGHEM) BAHN OR MINDECOOP LONDON
FOR ODA FAA/AIA

E O 12356 N/A

SUBJECT GRASSHOPPER/LOCUST CAMPAIGN UPDATE NO 5

REF DAKAR 9727

1 FOR THE RECORD THE PRESIDENT OF THE REPUBLIC OF
SENEGAL WHEN APPRISED OF FAO/ECLO DECISION TO REJECT
LARGE PLANE OPERATION DECIDED TO PICK UP COSTS OF
INSECTICIDE (MALATHION) FROM THEIR OWN SCARCE RESOURCES
IF U S STILL WILLING TO COMMIT PLANES IN ORDER TO
PROCEED WITH THREE-PRONGED STRATEGY FOR ATTACKING GRASS-
HOPPERS REPORTED REFTEL THIS DECISION WAS BASED ON
GOS CONCERN OVER THE SERIOUSNESS OF THE INFESTATION
AND THEIR CONVICTION THAT THE THREE-PRONGED STRATEGY
AGREED TO AT GOS/DONORS MTG OF AUGUST 25 IS THE MOST
EFFECTIVE WAY TO ADDRESS THE PROBLEM

2 ADMINISTRATOR MCPHERSON'S DECISION TO GO FORWARD
WITH FOUR LARGE PLANES WAS VERY WELL RECEIVED BY
GOVERNMENT AT FAO SPONSORED DONORS WORKING GROUP
MEETING AFTERNOON AUGUST 24 U AID REPRESENTATIVE
APPRISED DONORS OF GOS DECISION LOCAL DONORS REACTION
WAS RECOGNITION DECISION MADE AT HIGH LEVEL AND
THAT BACK AHEAD WAS TO PROCEED WITH NECESSARY ARRANGE-
MENTS TO CARRY OUT THREE PRONGED APPROACH EXCEPTION
WAS ONLY/EEC REP WHO DELIVER OFFICIAL EEC/BRUSSELS
POSITION ON INAPPROPRIATENESS OF LARGE PLANE OPERATION
FRENCH REPRESENTATIVE WAS NOT PRESENT MAJOR QUESTION
WAS WHAT TO DO ABOUT SPECIAL EFFORT FAO MAKING TO
GET SMALL PLANE TO DAKAR BY SEPTEMBER 1 SINCE THIS
NO LONGER SEEMED NECESSARY CANADIAN PLANES SCHEDULED

TO ARRIVE ON OR ABOUT SEPTEMBER 15 AND WILL BE
ASSIGNED TO OCLALAV CANADA PLANS TO SUPPORT ALL
OCLALAV OPERATING COSTS FOR THE NEXT TWO MONTHS
IN ADDITION THEY ARE SENDING A LOGISTICS EXPERT TO
HELP WITH OPERATIONS CANADA WILL ALSO PAY FOR ONE-
HALF (25 MILLION CFA) FUEL BILL FOR FOUR U S PLANES
THE ITALIANS MAY BE IN POSITION TO PROVIDE 100 MILLION
CFA SUPPORT TO LOCAL OPERATIONS INCLUDING CONTRIBU-
TION TO U S FUEL NEEDS THE BRITISH ARE PROVIDING
10 000 POUNDS (4 9 MILLION CFA) TODAY TO CITIBANK
ACCOUNT WHICH USA D HAS ESTABLISHED FOR THIS PURPOSE

THE MINISTER OF RURAL DEVELOPMENT IS CALLING A MEETING
OF ALL THE DONORS TODAY TO EXPLAIN THE GOVERNMENT'S
DECISION AND ORGANIZE OPERATIONS

3 CFA TEAM IN CLOSE COLLABORATION WITH GOS
MINISTRIES OF RURAL DEVELOPMENT ARMED FORCES AND
AIRPORT AUTHORITIES PROCEEDING FULL FORCE TO MAKE
ARRANGEMENTS FOR PLANES TO BE OPERATIONAL BY SEPTEMBER
1

4 WE ARE DISCUSSING FINANCIAL ARRANGEMENTS WITH
MINISTRY OF FINANCE AND CITIBANK IN ORDER TO EFFECT
PAYMENT FOR U S INSECTICIDE

5 MINISTER OF RURAL DEVELOPMENT HAS SIGNED LETTER
DRAFTED BY RLA WHICH ESTABLISHES GOVERNMENT OF
SENEGAL'S LEGAL RESPONSIBILITY FOR ANY DAMAGES OR
INJURIES TO PERSONS OR PROPERTY RESULTING FROM SPRAY-
ING OPERATIONS AND EXONERATES THE U S G AND U S
CONTRACTOR FROM ANY CLAIMS

6 DETAILS OF ARRANGEMENTS MADE TO SUPPORT OPERATION
OF BIG PLANES AND DETAILED BUDGET FOR OPERATIONS
FOLLOWS SEPTEL WALKER

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ULV 1000 EQUIVLS 70 000 LITERS FROM

FAO (EEC FRANCE)

FAO SUPPORT FOR 4 PUMPING TANKS N/A

CANADIAN LOGISTIC EXPERT N/A

- FAO LOGISTICS EXPERT N/A

PHASE THREE

12 LARGE SCALE SPRAYERS (FAO)

- 9 JACTO SPRAYER (FAO ITALY?)

- 27 FULLY EQUIPPED VEHICLES (JOW)

4 SSB RADIOS (GFC HD 10 70 HD) FAO

4 VHF RADIO (GFC HD 10 70 HD) FAO

6 COMPARISON OF FAO/GOVERNMENT INPUT AND UN AID INPUT
SUGGESTS FULL COMPLEMENTARITY RATHER THAN DUPLICATION
FAO AND UN AID HELPS ARE THERE - L C F ICA 101 & D O BE
AVOIDED EVEN IF THE NUMBER CAPABILITY OF SOME ITEMS
AS FOR RADIOS US PROVIDING INITIAL RADIO FOR
BA EL/M-744 - LOJ A L I S - REF - ILL F O PFCJIDING
RADIOS FOR OTHER AREAS

7 PLEASE PROVIDE FISCAL DATA ASAP WALKER

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INFO AFCD 0 AFFI 02 AFPA 02 AFFW 04 AFPA 02 AFPO 04 AFTR 05
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AMEMB 01 Y KUALA LUMPUR IMMEDIATE
AMEMB 01 Y MANILA IMMEDIATE
AMEMB 01 Y MUMBAI IMMEDIATE
AMEMB 01 Y NEW DELHI IMMEDIATE
AMEMB 01 Y SINGAPORE IMMEDIATE
AMEMB 01 Y THAI BANGKOK IMMEDIATE
AMEMB 01 Y TOKYO IMMEDIATE
AMEMB 01 Y WASHINGTON IMMEDIATE
AMEMB 01 Y ZURICH IMMEDIATE

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AIDAC

LOCUST

ECSTATE FOR OFDA 01 (47) DAA/A R AFR/TR (REILLY)
BROWN) PARS MICHAUX MINGCOOP AND OECD (WLOCCUM) OTTAWA
FOR CIDA (BAPCHECHAT) BRUSSELS FOR EEC (SHIDA) THE
THE HAGUE FOR MFA (VAN TOGREN) BONN FOR MINDEVCOOP LONDON
FOR ODA FAA/AIA

E O 12356 N/A
SUBJECT SENEGAL GRA HOPPERS SITUATION REPORT NO 7

1 SUMMARY

THREE DC 7 S ARRIVED 9/1/85 AFTER REFUELING DELAYS
FOURTH STILL DELAYED IN LAS PALMAS FIRST TWO PLANE
LOAD OF MALATHION ALSO ARRIVED 9/1/85 BASED ON GROUND
SURVEYS IN LOUGA LINGUIERE REGION CONDUCTED 8/31 BY
USAID/GOS/FAO TEAM INFESTED AREAS IN THIS REGION COVER
MUCH GREATER AREA THAN 160 000 ORIGINALLY ESTIMATED
BASED ON CAREFUL TARGETING BY GOS/OFDA/FAO CRISIS
COMMITTEE PLAN OF OPERATIONS FOR DC 7 S IS TO BEGIN
SPRAYING THURSDAY (SEPTEMBER 4)
THREE DENSEST BLOCKS IN LOUGA LINGUIERE REGION TOTAL
731 000 HA AND CONTAIN MOST OF THE FLYING ADULT
POPULATION GROUND SURVEY TEAM BEING DISPATCHED TODAY
TO SURVEY MATAM BAKEL REGION ID OF PRIME TARGET AREA
FOR TREATMENT TARGET AREA 9/2/85 HAS BEEN WHICH DC 7
CAN SPRAY IN MATAM BAKEL REGION IS 15 000 HA GIVEN THE
INCREASED NEED AND PRIORITY OF LOU LINGUIERE WHERE
INFESTATION NOW THREE TO FIVE TIMES MORE PRODUCTIVE CROP LAND
REMAINING INFESTED AND TREATED BY DC 7 S WILL BE
TREATED BY SMALL PLANE DURING PHASE II THIS CABLE
PROVIDES DETAILS OF THE SURVEY METHODOLOGY HEALTH
SURVEY FLIGHT PLAN GROUND SURVEY METHODOLOGY HEALTH
AT AIRPORT AND INFESTATION TARGET AREA

ON SEPTEMBER 1 1985 THE FIRST TWO DC 7 PLANE ARRIVED IN
DAKAR AT APPROXIMATELY 9 00 AM THE THIRD PLANE LANDED
AT 2 00 PM THE CREW IS TAKING AT THE DIAPYRMI HOTEL
NEAR THE AIRPORT (COUNTRY CODE NO 2 1 TEL 23 10 05)
FOURTH DC 7 PLANE IS DELAYED IN LAS PALMAS
AWAITING TRAVELERS CHECKS/OR CASH WHICH IS BEING CABLED
FOR PAYMENT OF FUEL AND LANDING FEES CREDIT CARD AND
CHECKS ARE NOT ACCEPTED ADDITIONALLY DIO SYMATIC
ON THE PLANE BEING DELAYED IN LAS PALMAS THE DEPARTURE
OF THE DC 7 PLANE IS BEING DEFERRED UNTIL THE FOURTH
PLANE'S ARRIVAL IN DAKAR WE JUST INFORMED THAT THE
FOURTH PLANE LEAVES GAMBAY ISLAND ABOUT 11 10 DAKAR
TIME

TWO AIR FRANCE 747 CARGO PLANES CARRYING MALATHION
ARRIVED IN DAKAR 10 00 AM AND 11 00 AM
RESPECTIVELY CHEMICALS WERE LOADED AND
TRANSPORTED TO TARGET AREA

3 LOUGA LINGUIERE GROUND SURVEY
THREE TEAMS OF USAID/GOS/FAO REPRESENTATIVES ACCOMPANIED
BY US AMBASSADOR ID USAID DEPUTY DIRECTOR
CRISS ROSSER LOUGA-LINGUIERE 2 31 TEAMS FOUND AREA OF
GRASSHOPPER/LOCUST INFESTATION TO BE MUCH LARGER THAN
160 000 HA ORIGINALLY ESTIMATED
HEAVY COUNTS OF MATUR ADULT FLYING ALONG SOUTHERN RIM OF
INFESTED AREA TRAVELING HEART OF PEANUT BASIN AT
MEETING ON 9/1 GOS DONORS CRICKET CRISIS COMMITTEE
IDENTIFIED SPECIFIC TARGET AREAS FOR TREATMENT TOTALING
231 000 HA BASED ON THIS LATEST INFORMATION THESE
TARGET AREA WERE SELECTED SO AS TO MAKE OPTIMAL USE OF
DC 7 S ON PRIORITY BASIS LESSER PRIORITY AREAS ARE TO
BE TREATED BY SMALL PLANE AS COPILOT ARE
OPERATIONAL USE HAS BEEN CONSIDERING DC 7 OPERATION
VERY CLOSELY WITH GOS/FAO AND OTHER DONORS

4 FLIGHT PLANS

THERE WAS AN OPERATIONS PLAN MEETING YESTERDAY TO
DETERMINE THE TIME OF THE ORIENTATIONAL FLIGHT THE START
OF THE SPRAYING OPERATIONS AND CONFIRM ALL LOGISTIC
REQUIREMENTS ORIENTATIONAL FLIGHT IS SCHEDULED FOR 8 00
AM 9/3 ARMED FORCE ARE DEPLOYING LOGISTIC SUPPORT
NECESSARY TO LAUNCH FIRST SORTIE MORNING OF 9/4/85
LOUGA LINGUIERE WILL BE THE FIRST AREA TO BE TREATED AFTER
WHICH DC 7 S WILL TREAT MATAM BAKEL BASED ON LATE T
GROUND SURVEYS SCHEDULED 9/4

5 GROUND SURVEY METHODOLOGY

PRE SPRAY GROUND SURVEY PERSONNEL HAVE MADE INITIAL AND
SUCCESSIVE SURVEYS OF THE PROPOSED CONTROL AREA A
MODIFIED GRID WAS SET UP AND EACH SURVEY TEAM DROVE A
PRESCRIBED DISTANCE STOPPING THEN WALKING A CIRCLE
WHILE MAKING GRA HOPPER COUNT NUMBER PER SQUARE METER
AVERAGE AND RECORDING THEM ON A MAP DISTANCES BETWEEN
STOPS WERE QUANTITATIVELY INITIALLY SURVEY TEAMS TO
DETERMINE THE PREVALENCE OF GRA HOPPER POPULATION MADE
EVERY 10 TO 15 KILOMETER LATER SURVEY REQUIRED MORE
FREQUENT STOP DISTANCE THE FINAL DELIMITING SURVEY WHEN
STOP WERE AT LEAST EVERY KILOMETER LOCUST POPULATION
ADDITIONAL PHOTOGRAPHIC SURVEY WILL BE CONDUCTED WHILE
INFESTATION CAN SHIFT MOVE TO A NEW LOCATION OR EVEN
DISAPPEAR

ALL SURVEY MAPS AND DATA TO BE PLOTTED IN A MAP
THE SURVEY RESULTS TO BE REPORTED TO THE CONTROL
AREA WERE PLOTTED INCLUDING THE FORTIOR HOWING
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SINCE NATURAL INFESTATION ARE NEVER BOUNDED BY NICE STRAIGHT LINE A CERTAIN AMOUNT OF PERSONAL JUDGMENT MUST BE USED TO OUTLINE FEASIBLE CONTROL BLOCKS DURING SPRAY THE FIELD OPERATOR MUST MONITOR THE PERFORMANCE OF THE SPRAYING TO HELP MONITOR THE PERFORMANCE OF THE OPERATOR... INCH BY 3 INCH CARD ACROSS THE FLIGHT LINE TO RECORD THE RESULT OF THE SPRAYING... THE SENSITIVITY OF THE CARD WILL NOW LIGHT UP... HEARD... THE FIELD OPERATOR... SPRAYING OPERATIONS... STOPPED FOR THE... CONTROL OF THE... A MINI WEATHER STATION... OR OTHER CLIMATIC CONDITIONS... SPRAYING OPERATIONS

MEDICAL SERVICES ARE AVAILABLE AND DRINKING AND WASHING WATER IS ON SITE

8 PUBLIC RELATIONS STRATEGY

WORK WITH... AND INTERNATIONAL MEDIA REPRESENTATIVES WITH PHOTO OPPORTUNITIES AND... GRAF HOPPER... IS... AND... WALKER

IN MANY INSTANCES GROUND PEOPLE ARE USED TO PACE THE SWATHS OF THE SPRAY AIRCRAFT BY THE USE OF MIRRORS SPOTLIGHTS VEHICLE HEADLIGHTS OR FLAGS THE GROUND PERSON SIGNALS THE SPRAY PLANE AS THEY APPROACH ON ONE SWATH AND MOVES AHEAD THE PRESCRIBED DISTANCE FOR THE SUCCEEDING SWATH

POST-SPRAY GROUND PERSONNEL PERFORM SURVEYS TO DETERMINE GRAF HOPPER MORTALITY AFTER THE SPRAYING AT LEAST 3 DAYS MUST ELAPSE BEFORE APPLICATION AND THESE FIELD CHECKS TO ALLOW THE MAINTENANCE TO EXERT ITS INSECTICIDAL ACTIVITY... TO DETECT GRAF HOPPER ACTIVITY IF SUBSTANTIAL SWIPS ARE FOUND THEY ARE MAPPED AND THE AREAS SHOWING LITTLE OR NO MORTALITY ARE SCHEDULED FOR SPRAYING BY ONE OR MORE AIRCRAFT SPECIAL ATTENTION BY THE SURVEY ARE AIMED AT PLACES WHERE THE SENSITIZED CARDS SHOWED POOR PATTERNS WHERE WIDE SWATHS WERE OBTAINED DURING SPRAYING AND WHERE RAIN OR OTHER WEATHER CONDITIONS ARE SUSPECTED TO HAVE RESULTED IN POOR MORTALITY

6 CPS HEALTH INFORMATION

THE CROP PROTECTION SERVICE IS SPONSORING RADIO/TV PUBLIC ANNOUNCE WHICH ARE BROADCAST ON A REGULAR BASIS TO VILLAGERS IN THE AREA TO BE SPRAYED BY THE DC 7'S INFORMATION GIVEN INCLUDES THAT LARGE PLANE WILL BE FLYING LOW TO SPRAY IN THE EARLY MORNING THE MESSAGES REQUEST THAT PEOPLE STORE TWO DAYS OF WATER ON THE EVE OF THE OPERATIONAL DATES FOR SPRAYING WILL BE GIVEN AHEAD OF TIME PEOPLE ARE BEING ADVISED NOT TO BATHE THE DAY OF OR FOR A FEW DAYS AFTER THE SPRAYING IN ADDITION THE POPULATION IS BEING ADVISED TO REFRAIN FROM COOKING OUTDOORS DURING THE TREATMENT OPERATION THEY ARE ALSO BEING ADVISED TO COVER FOOD COMMODITIES WATER JUGS AND WELLS... BEEN HEARING THE ANNOUNCEMENT AND THEY ARE AWARE THAT THE SPRAYING OPERATION IS ABOUT TO BEGIN

7 CHEMICAL HANDLING

ALL... THE MALATHION... PROCEEDURE... FIRE TRUCK

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AMEMBASSY PARIS IMMEDIATE
AMEMBASSY THE HAGUE IMMEDIATE

UNCLAS DAKAR 10077

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LOCUST

SECSTATE FOR OFDA (TED KNIGHT) DAA/AFR AFR/TR (REILLY)
AFR/SWA ROME FOR FODAG FAO BRADER PARIS FOR EMBASSY REP
(BROWN) P. MICHAUX MINCOOP AID OECD (LLOCUM) OTTAWA
FOR CIDA (BARCHECHAT) BRUSSELS FOR EEC (SHIDA) THE
HAGUE FOR MFA (VAN TOOREN) BONN FOR MINDEVCOOP LONDON
FOR ODA FAA/AIA

E O 12356 N/A

SUBJECT ENEGAL GRASSHOPPER SITUATION REPORT NO 8

REF DAKAR 09858

1 SUMMARY THIS CABLE REPORTS ON POTENTIAL DC 7
OPERATIONS DUE TO BAD WEATHER ON FAO PREPARATION FOR
SMALL PLANE OPERATION ON LATEST DONOR COMMITMENTS AND
ON GOOD PRESS COVERAGE END SUMMARY

2 DC-7 AERIAL SPRAYING DELAYED 9/4 AND 9/5 BY TORMS
AND HEAVY WINDS IN DAKAR OVER FIRST TARGET AREA IN
LOUGA LINGUERE REGION (AROUND DAROU MOUSTI) NOW HOPING
TO LAUNCH FIRST SPRAYING OPERATION TOMORROW 9/6 AND MOVE
ON TO BAKEL MATAM 9/9
GROUND SURVEY WORK AIDED BY ONE SENEGALESE AIR FORCE
HELICOPTER WILL BE COMPLETED TODAY AND RESULTS WILL BE
REPORTED IN NEXT SITUATION REPORT ALL FOUR MALATHION
SHIPMENT HAVE ARRIVED AND NECESSARY LOGISTICS SUPPORT IS
IN PLACE

3 FAO HERE IS ORGANIZING SMALL PLANE LOGISTICS THROUGH
OCLALAV AND CRIQJET CRISE COMMITTEE AND EXPERIENCING
SOME OF THE PREDICTABLE DIFFICULTIES LOGISTICS
EXPERT MR BILLARD HAS BEEN IN COUNTRY ONE WEEK AND
CANADIAN LOGISTICS EXPERT IS DUE TO ARRIVE 9/7 FAO
LIAISON WITH SENEGALESE ARMED FORCE NOT YET
ESTABLISHED USAID COORDINATING PHASE I CLOSELY WITH FAO
PHASE II PREPARATION TO FACILITATE IDENTIFICATION OF

SPRAYING AREA AND EXTENSION OF USAID SUPPORTED PHASE I
LOGISTICAL ARRANGEMENT TO FAC COORDINATED PHASE II
LOGISTICS FAO HOPING TO HAVE LOGISTICS IN PLACE IN
LOUGA BY 9/9 TO SUPPORT FIRST SMALL PLANE SPRAYING
OPERATION AROUND DAKRA ONCE LARGE PLANE OPERATIONS IN
LOUGA LINGUERE ARE COMPLETED ETA FOR CANADIAN PLANES IS
STILL 9/15 FIRST SHIPMENT OF 14 000 LTRS OF
FENITROTHION (FROM GERMANY) ARRIVED 9/4 AND CANADIANS
HAVE PLACED ORDER FOR 40 000 LTRS OF FENITROTHION FROM
LOCAL INSECTICIDE PRODUCER WHO CAN PROVIDE 30 000 LTRS
OFF THE SHELF AND SUPPLY REMAINDER WITHIN 10 DAYS UNDP
PLANS TO PROCURE ANOTHER 55 000 LTRS OF FENITROTHION
LOCALLY ESTIMATED QUANTITIES OF FENITROTHION PIPELINE IS
243 000 LTRS WHICH SHOULD BE ENOUGH TO TREAT OVER 400 000
HA

4 MR CAUDRON DEPUTY DIR CTOR OF FRENCH MINISTRY
COOPERATION AND FAO/ECHO ADVISOR CHAIRED MEETING OF
DONORS AT FRENCH COOPERATION MISSION ON 9/4
REPRESENTATIVES FROM FAO, FRANCE CANADA (CIDA) GERMANY
UNITED KINGDOM ITALY JAPAN EEC UNDP AND USAID WERE
PRESENT BASED ON DONOR REPS COMMENT FOLLOWING IS
REVISED BREAKDOWN OF DONOR CONTRIBUTIONS FOR THREE PHASES
OF OPERATIONS REPORTED REF A

4 U S PLANES	DOLS 1 2 MILLION
U S SUPPORT AND COSTS	DOLS 16 MILLION
GOS MALATHION PURCHASE	DOLS 1 2 MILLION
CANADA FUEL CONTRIBUTION	CFA 25 MILLION
U K FUEL CONTRIBUTION	CFA 5 MILLION
GERMAN FUEL CONTRIBUTION	CFA 25 MILLION
(TO BE CONFIRMED)	
OFDA TEAM	N/A

PHASE TWO

4 CANADIAN PLANES	CDN DOLS 600 000
FUEL COSTS (CANADA)	CFA 20 MILLION
1 OCLALAV PLANE WITH FAO PILOT	N/A
OCLALAV SUPPORT COSTS (CANADA)	CFA 30 MILLION
FENITROTHION (ENQU 4 FOR 4 0 000 HA)	N/A
ULV 500 EQUALS 171 000 LITERS FROM CANADA (40 THOUSAND)	
UNDP (55 THOUSAND) JAPAN (THOU ID)	
ULV 1000 EQUALS 77 000 LITERS FROM FAO (EEC 57 THOUSAND AND GERMANY 15 THOU AND)	
FAO SUPPORT FOR 4 PUMPING TATIO	N/A
CANADIAN LOGISTICS EXPERT (MR BILLARD)	N/A
FRENCH SPRAYING OPERATIONS EXPERT (MR BALMA)	N/A
U S SUPPORT TO OCLALAV AND CPS	DOLS 116 000

PHASE THREE

198 000 BAGS OF INSECTICIDE POWDER (U K)
12 LARGE SCALE SPRAYERS (FAO)
9 JACTO SPRAYERS (FAO/ITALY)
27 FULLY EQUIPPED VEHICLES (U S)
4 SSB RADIOS (GROUND TO GROUND) - FAO
4 VHF RADIOS (GROUND TO AIR) FAO

GERMANS SEEM WILLING TO PICK UP REMAINING U S PLANE FUEL
COSTS FRENCH APPEAR TO HAVE SHIFTED FUND FROM
FENITROTHION FOR FAO TO BILATERAL CONTRIBUTION OF CFA 30
MILLION FOR LOCAL SUPPORT COSTS FRENCH ALSO EXPLORING
AVAILABILITY TO FRENCH AIR FORCE HELICOPTER LOCATED IN
SENEGAL FOR GROUND SURVEY WORK FAO NO LONGER HAS DUTCH
PLANES ON STANDBY DUTCH CONTRIBUTION STILL REMAINS TO
BE DETERMINED
SEVERAL DONOR ARE PREPARED TO SUPPORT OPERATIONAL AND
LOGISTICAL COSTS OF OCLALAV CROP PROTECTION SERVICE

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PAGE 02 OF 02 DAKAR 10077 00 OF 03 060938Z 8855 025730 AID4960
(GPS) AND SENEGALESE ARMED FORCE LOGISTICS DONORS
ALSO AWARE OF GO INTEREST IN ANY CONTRIBUTION TO HELP
DEFRAY COST OF MALINTHION THAILAND HAS OFFERED TO
CONTRIBUTE DOLLARS 10 000 FOR THIS PURPOSE NEXT DONOR
MEETING WITH GOS CRIQUET COMMITTEE IS SCHEDULED TOMORROW
TO REVIEW MATAM BAKEL GROUND SURVEY RESULTS ANOTHER
MEETING IS SCHEDULED 9/8 TO DECIDE PRIORITY ALLOCATION OF
RESOURCES

5 MEDIA RELATIONS

PRESS AND TV COVERAGE HAS BEEN COORDINATED BY USIS
OFFICE ACTIVITIES INCLUDE PRESS RELEASES TO GO PRESS
CONFERENCE AT AIRPORT 9/3 AT WHICH U.S. AMBASSADOR MADE
REMARKS STILL PHOTO AND VIDEO OF OVERALL OPERATIONS
TO DATE 2 PHOTOS W/STORIES HAVE APPEARED IN THE
SENEGALESE PRESS (LE SOLEIL) ON 2 DIFFERENT DAYS THERE
WAS TV COVERAGE OF THE PRESS CONFERENCE AND A FRENCH
REPORTER (PIERRE ROUELI) FROM AITENNE COVERED THE
ORIENTATION FLIGHT OF THE DC 7 WHICH HIS REPORT WAS
AIRED ON FRENCH TV ON 6 00 EVENING NEWS ADDITIONALLY
WE HAVE RECEIVED NUMEROUS ENQUIRIES FROM OTHER MEDIA
OUTLETS

6 FINAL BUDGET FOR SENEGAL ARMED FORCES SUPPORT BEING
NEGOTIATED TODAY WE WILL REVIEW AGAINST OFDA FUNDS AND
PROVIDE DETAILED BUDGET SEPTEL

7 USAID/SENEGAL HAS CONTACTED BY PHONE USAID DIRECTORS
NOUAKCHOTT BAMAHO AND OUAHOU DOUGOU REGARDING STATUS OF
SENEGAL OPERATIONS AND AVAILABILITY OF DC 7'S FOR
ADDITIONAL OPERATIONS AFTER SEPTEMBER 12 IF HOST
GOVERNMENTS AND DONORS AGREE THEY ARE NEEDED AND FUNDING
CAN BE FOUND DR PHILIPS RETURNED FROM MAURITANIA 9/4
WITHOUT HAVING BEEN ABLE TO DETERMINE WHETHER MAURITANIA
SIDE OF SENEGAL RIVER (ACROSS FROM MATAM BAKEL) IS ALSO
INFESTED THROUGH PROBABILITY OF SOME HIGH INFESTATION
BURKINA FASO APPEARS TO BE COUNTRY WITH MOST LIKELY USE
FOR LARGE AIRCRAFT PER CABLE TRAFFIC AND MISSION DIRECTOR
COMMENTS
WALKER

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HELICOPTER TO HELP JOINT CROP PROTECTION/FAO/FRENCH
TEAM SURVEY CASAMANCE AREA IN ORDER TO DETERMINE DEGREE
OF INFESTATION AND WHETHER MALL PLANE SPRAYING WILL
BE NEEDED WE ARE IN CONTACT WITH USAID/GUINEA BISSAU
AND EXPECT TO CARRY HELICOPTER SURVEY WORK INTO BORDER
AREAS IN GUINEA BISSAU

INFO LOG-00 INR 10 AF 00 CIAE-00 EB-00 DODE 00 IO 19
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5 MINISTRY OF RURAL DEVELOPMENT CALLED MEETING OF
DONORS 9/9 TO REVIEW STATUS OF OPERATIONS AND PLAN
FOR FUTURE PHASES AS A RESULT OF THIS MEETING AN
OPERATIONAL CELL COMPOSED OF CROP PROTECTION SERVICE
FAO CANADA OGALAY FRANCE AND USAID WAS ESTABLISHED
AND TASKED WITH DEVELOPING A DETAILED PLAN OF ACTION
FOR PHASE II INCLUDING NECESSARY LOGISTICS AND GROUND
SURVEY WORK THE IDEA I TO HAVE THE VARIOUS ADVISORS
PROVIDED BY DIFFERENT DONORS WORK AS A TEAM IN DEFINING
THE TECHNICAL AND OPERATIONAL DETAILS FOR PHASE II
MR NADEAU THE CANADIAN LOGISTICS EXPERT ARRIVED
9/10 AND IS EXPECTED TO WORK CLOSELY WITH THE FAO
LOGISTIC EXPERT MR BILLARD USAID/OFDA LOGISTICS
EXPERTS ARE IN CONTACT WITH BOTH OF THESE ADVISORS
THERE REMAINS A LOT OF WORK AHEAD FOR FAO AND THE OPERA
TIONAL CELL TO PREPARE FOR PHASE II FAO IS ASSERTING
ITS ROLE AS LEAD COORDINATOR AND IS SETTING UP REGULAR
CONSULTATIONS WITH THE GOS AND THE OTHER DONORS

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FM AMEMBASSY DAKAR
TO SECSTATE WASHDC PRIORITY 2390
INFO FAA WASHDC PRIORITY
AMEMBASSY BAKAKO PRIORITY
AMEMBASSY BANJUL PRIORITY
AMEMBASSY ROME PRIORITY
AMEMBASSY NOUAKCHOTT PRIORITY
AMEMBASSY BONN PRIORITY
AMEMBASSY BRUSSELS PRIORITY
AMEMBASSY LONDON PRIORITY
AMEMBASSY NJJAMENA PRIORITY
AMEMBASSY OTTAWA PRIORITY
AMEMBASSY OUAGADOUGOU PRIORITY
AMEMBASSY PARIS PRIORITY
AMEMBASSY THE HAGUE PRIORITY
AMEMBASSY BISSAU PRIORITY

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Info

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6 WE ARE PROVIDING BURKINA FASO WITH THE DETAILS ON
THE BIG PLANES AS USAID OUAGA REQUESTED FAO REP,
GANA DIANE WAS IN TOWN AND ASKED USAID REP ABOUT LARGE
PLANES BUT SEEMED PUT-OFF BY SIGNIFICANT COSTS INVOLVED

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7 WE HOPE TO FINALIZE THE MILITARY BUDGET VERY SHORTLY
AND WILL PROVIDE REVISED BUDGET SEPTEL

LOCUST

SECSTATE FOR OFDA (TED KNIGHT DAA/AFR AFR/TR (REILLY)
AFR/SWA ROME FOR FODAG FAO BRADER PARIS FOR EMBASSY
REP (BROWN) PASS MICHAUX MINCOOP AND OECD (SLOCUM)
OTTAWA FOR CIDA (BARCHECHAT) BRUSSELS FOR EEC (MIDA)
THE HAGUE FOR MFA (VAN TOOREN) BONN FOR MINDEVCOOP
LONDON FOR ODA FAA/AIA

8 WE ARE ATTEMPTING TO SET-UP MEETING WITH LOCAL
CHEMICAL CO ON DISPOSAL OF DRUMS WHICH ARE PROPERTY
OF GOS THIN WALLS OF DRUMS AND COSTS OF DECONTAMINA
TION PRECLUDE CONSIDERATION OF RECYCLING THESE DRUMS
FOR BURKINA FASO NEEDS WALKER

E D 12356 N/A
SUBJECT SENEGAL GRASSHOPPERS SITUATION REPORT NO 9

1 DC 7 AERIAL SPRAYING OF LOUGA LINGUERE AREA STARTED
SATURDAY 9/6 AND WAS COMPLETED WEDNESDAY 9/10 THREE
PLANES FLEW SORTEES ON SATURDAY SUNDAY AND MONDAY
THE FOURTH PLANE WAS GROUNDED DUE TO PROBLEMS WITH SPRAY-
ING SYSTEM FOUR PLANES WERE OPERATIONAL ON TUESDAY
AND WEDNESDAY SORTEES 231 000 HECTARES HAVE NOW BEEN
TREATED

2 SPRAYING OF 135 000 HECTARES IN BAKEL WILL BEGIN
FRIDAY 9/12 PLANES WILL NOT FLY THURSDAY 9/11 IN
ORDER TO GIVE SENEGALESE ARMED FORCES TIME TO TRANSFER
BASE FOR SPOTTER PLANES FROM ST LOUIS TO BAKEL ALSO
BAKEL HAS SEEN HEAVY RAINS AND OFDA TEAM BELIEVE IT
ADVISABLE TO ALLOW GROUND TO DRY BEFORE SPRAYING

3 USAID AND CROP PROTECTION TEAMS IN LOUGA-LINGUERE
AREA DURING AND AFTER SPRAYING REPORT THAT SPRAYING
HAS BEEN EFFECTIVE IN RIDDING AREAS OF GRASSHOPPERS
REACTION OF VILLAGERS HAS BEEN FAVORABLE AND NO COM-
PLAINTS OF ILL EFFECTS HAVE BEEN REPORTED GROUND SURVEY
TEAMS WILL CONTINUE TO ASSESS EFFECTIVENESS OF SPRAYING
IN LOUGA-LINGUERE OVER THE NEXT COUPLE OF DAY WE
ARE TRYING TO ARRANGE A PRESS CONFERENCE TO REPORT THE
FINDINGS OF THE JOINT CROP PROTECTION/USAID TEAMS

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4 DR PHILIPS AND USAID STAFF ARE TAKING SENEGALESE

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RUFHFR RUFHTE RUFHPBI
DE RUTADS #0381/01 256 **

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FM AMEMBASSY DAKAR

TO RUEHC / SECSTATE WASHDC IMMEDIATE 2451

INFO RUKGHA / FAA WASHDC IMMEDIATE

RUTABM / AMEMBASSY BAKO IMMEDIATE 4743

RUFHJL / AMEMBASSY BANJUL IMMEDIATE 2580

RUFHRO / AMEMBASSY ROME IMMEDIATE 2068

RUTANK / AMEMBASSY NOUAKCHOTT IMMEDIATE 4402

RUFHOL / AMEMBASSY BONN IMMEDIATE 0938

RUFHES / AMEMBASSY BRUSSELS IMMEDIATE 0851

RUEELD / AMEMBASSY LONDON IMMEDIATE 1377

RUTAND / AMEMBASSY NDJAMENA IMMEDIATE 0568

RUEFOI / AMEMBASSY OTTAWA IMMEDIATE 0283

RUFHOC / AMEMBASSY OUAGADOUGOU IMMEDIATE 5453

RUFHFR / AMEMBASSY PARIS IMMEDIATE 8621

RUFHTE / AMEMBASSY THE HAGUE IMMEDIATE 0184

RUFHPBI / AMEMBASSY BISSAU IMMEDIATE 5823

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LOCUST

SECSTATE FOR OFDA (BTHIBEAULT), DAA/AFR, AFR/TR (REILLY)
AFR/SWA, ROME FOR FODAG FAO BRADER PARIS FOR EMBASSY
REP (BROWN) PASS MICHAUX, MINCOOP, AND OECD (SLOCUM),
OTTAWA FOR CIDA (BARCHECHAT) BRUSSELS FOR EEC (SMIDA)
THE HAGUE FOR MFA (VAN TOOREN), BONN FOR MINDEVCOOP,
LONDON FOR ODA FAA/AIA

E O 12356 N/A

SUBJECT SENEGAL GRASSHOPPER CAMPAIGN ~~XXXXXXXXXX~~

REF A DAKAR 9858 B STATE 276003

1 SUMMARY - THIS MESSAGE PROVIDES UPDATE ON OPERATIONS
AND TRANSMITS REVISED BUDGET, INCLUDING ARMED SERVICES
SUPPORT COSTS

2 FOUR DC-7'S COMMENCED SPRAYING TODAY IN BAYEL BLOCK
AND COMPLETED 77 000 HA OF TOTAL 135 000 HA TARGET
AREA A SECOND RUN IS PLANNED TOMORROW TO FINISH THE
BAYEL BLOCK THIS WILL BRING TOTAL AREA TREATED TO
366,000 HA ADDITIONAL 6 000 HA WERE THANKS TO EXTRA
GALLONS OF MALATHION FROM 55 GALLON BARRELS INCLUDED IN
50 GALLON BARREL SHIPMENT

3 REPORT FROM GROUND TEAMS IN LOUGA-LINGUERE AND BAYEL
INDICATE MALATHION HAS BEEN 90-100 PERCENT EFFECTIVE IN
TREATING GRASSHOPPERS VILLAGERS CONTINUE TO BE VERY
PLEASED WITH RESULTS POPULATION IN AREAS OUTSIDE
TREATMENT AREA ASKING FOR SPRAYING

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4. WE CAREFULLY REVIEWED INITIAL BUDGET SUBMITTED BY ARMED FORCES (WHICH TOTALLED DOLS 154,000, INCLUDING FUEL AT LOCAL PRICES). BY PURCHASING FUEL TAX FREE AND THROUGH TOUGH NEGOTIATION WE HAVE SUCCEEDED IN BRINGING ARMED SERVICES SUPPORT COSTS DOWN TO DOLS 83,700 NOW THAT GERMANY HAS AGREED TO COVER REMAINING DOLS 75 000 OF DC-7 FUEL NEEDS, THE FIRST LINE ITEM IN PARA 2 REFFEL A IS ADEQUATE TO COVER ARMED SERVICES SUPPORT COSTS FROM ADVICE OF BUDGET ALLOWANCE PROVIDED REFFEL B BOTTOM LINE IS WE HAVE ENOUGH FUNDS ALLOTTED IN REFFEL B TO COVER CURRENT OPERATIONAL NEEDS

5. DETAILS OF REVISED BUDGET ARE AS FOLLOWS

- REVISED BUDGET

A DIRECT COSTS

AVGAS FOR TRG FLIGHT & RESERVE	30,000
AVIATION OIL (30 BLS X DOLS 527/BL)	15,800
LOADING CREW	1,100
BUS FOR LABORERS	000
STORAGE CONTAINERS (2)	750
FORKLIFT	2,000
EQUIPMENT FOR SUPVEY TEAMS (REF CABLE DAJAR 09705)	1 500
MAPS AND CHARTS	500
6 RADIOS INCL SHIPPING	16,000
LARGE TRANSPORT TRUCK	500
- SUB-TOTAL	69 250

B. ARMED SERVICES DEPLOYMENT (15 DAYS)

AERIAL OPERATIONS (2 SPOTTER PLANES 1 TRANSPORT PLANE 1 HELICOPTER FLIGHT TIME)	30 000
AVIATION GAS (75 000 LITS) AND LUBRICANTS	32 000
GROUND OPERATIONS (7 SUPPORT VEHICLES)	2,900
VEHICLES GAS (14 000LITS) AND LUBRICANTS	4 500
PERSONNEL (PER DIEM FOR 50 PERS)	12,500
MEDICAL SUPPLIES	500
CONTINGENCY	1 200
- SUB-TOTAL	83,700

C USAID OE EXPENSES FOR OFDA 17,200

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TEAM AND CREW SUPPORT

D. PHASE II/III SUPPORT

75 HOURS OF SURVEY	9,000
3 ADDITIONAL WEEKS ENTOMOLOGIST	8,000
2 ADDITIONAL WEEK PILOT/TRAINER	8,000
FUEL FOR GROUND SURVEY VEHICLES	4,000
SUPPORT FOR CPS PUBLIC AWARENESS CAMPAIGN	4,000
CONTINGENCY	4,380
-	-
-	-
SUB-TOTAL	37,380
-	207 335

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- FM AMEMBASSY DAKAR
- TO RUEHC/SECSTATE WASHDC NIACT IMMEDIATE 2677
- INFO RUAGNHA/FAA WASHDC IMMEDIATE
- RUTABM/AMEMBASSY BAKAKO IMMEDIATE 4772
- RUFHJL/AMEMBASSY BANJUL IMMEDIATE 2604
- RUFHRO/AMEMBASSY ROME IMMEDIATE 2088
- RRRR RUTANA/AMEMBASSY NOUAKCHOTT IMMEDIATE 4424
- RUFPOL/AMEMBASSY PONN IMMEDIATE 0945
- RUFHBS/AMEMBASSY BRUSSELS IMMEDIATE 0857
- RUFHLD/AMEMBASSY LONDON IMMEDIATE 1384
- RUTAND/AMEMBASSY NDJAMENA IMMEDIATE 0572
- RUEHOT/AMEMBASSY OTTAWA IMMEDIATE 0285
- RUFHOC/AMEMBASSY OUAGADOUGOU IMMEDIATE 5470
- RUFHER/AMEMBASSY PARIS IMMEDIATE 0653
- RUFHTR/AMEMBASSY THE HAGUE IMMEDIATE 0105
- RUFHPBI/AMEMBASSY BISSAU IMMEDIATE 5942
- BT
- UNCLAS SECTION 01 OF 72 DA AR 10543
- RRRR AIDAC
- LOCUST
- SECSTATE FOR OFDA (ETHIEBAULT), DAA/AFR, AFR/TR (REILLY)
AFR/SWA, ROME FOR FODAG, FAO BRADER, PARIS FOR EMBASSY
REP (EROWN) PASS MICHAUX, MINCOOP, AND OECD (SLOCUM),
OTTAWA FOR CIDA (BARCECHAT), BRUSSELS FOR EFC (SMIDA),
THE HAGUE FOR MFA (VAN TOOPEN), BONA FOR MINCOOP,
LONDON FOR ODA, FAA/AIA

RRRR E O 12356 N/A
SUBJECT SENEGAL GRASSHOPPER CAMPAIGN UPDATE NO 11

- 1 SUMMARY THIS MESSAGE REPORTS ON RESULTS OF
GOS/DONOR MEETINGS OF 9/23 AND 9/25 AND ON STATUS OF
PHASE II SMALL PLANE OPERATIONS AND SUMMARY
- 2 AT REGULAR MEETING ON 9/23 OF MINISTRY OF PJRAL
DEVELOPMENT/DONOR GRASSHOPPER COORDINATING GROUP RESULTS
OF 5 INTERNATIONAL SURVEY TEAMS WERE PRESENTED MAJOR
AREAS OF INFESTATION WERE REPORTED IN LOUGA/LINGUERE
NORTH AND EAST OF AREAS TREATED IN PHASE I AND TOTALING
RRRR ROUGHLY 451,000 HECTARES AND THE CASAMANCE IN POC ETS
NORTH AND SOUTH OF ZIGUINCHOR AND EAST OF DIAATTACOUNDA
COVERING AN AREA OF 290,000 HECTARES EARLIER SURVEY BY
AID TEAMS HAD SHOWN AREA ABOUT 320,000 HECTARES IN
LOUGA/LINGUERE AREA, NORTH AND SOUTH OF AREA ALREADY
SPRAYED THERE WERE PRELIMINARY REPORTS OF AS MUCH AS
80,000 HECTARES IN THE MBACIF AREA, JUST SOUTH OF AREAS
TREATED IN PHASE I MATAM/BAKEL WAS REPORTED CALM AND NO
OTHER NEW INFESTATIONS WERE REPORTED. ON HEARING THESE

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CONCLUSIONS

RESULTS THAT THERE MAY BE 920,000 HECTARES INFESTED. CANADIAN AND SENEGALESE REPRESENTATIVES EXPRESSED CONCERN THAT PHASE II RESOURCES, I P PLANES AND PESTICIDF, WOULD NOT BE ENOUGH TO TREAT THESE AREAS SINCE THE THEORETICAL CAPACITY OF THE SMALL PLANE OPERATIONS IS BETWEEN 300 AND 400 THOUSAND HECTARES

3 MEETING OF 9/25 WAS HELD AT THE CROP PROTECTION SERVICE AND WAS AIMED AT BRINGING TOGETHER ALL OF THE SURVEY TEAMS TO COMPARE RESULTS AND MORE ACCURATELY PINPOINT AREAS OF INFESTATION AND IDENTIFY APPROPRIATE STRATEGY FOR TREATMENT. IT WAS NOT POSSIBLE TO FURTHER REFINES THE SURVEY RESULTS SINCE SOME OF THE SURVEY TEAMS WERE IN LOUGA/LINGUERE SUPPORTING START-UP OF PHASE II OPERATIONS FROM A BASE IN DAHRA. SURVEY WORK IS BEING ASSISTED BY ONE FRENCH MILITARY HELICOPTER AND 5 JEEPS WITH AN ENTOMOLOGIST FROM PRIFAS (MESTRE). NEVERTHELESS, MEETING WAS USEFUL IN ESTABLISHING THAT CASAMANCE REPRESENTED A SIGNIFICANT GRASSHOPPER PROBLEM AND IN WEIGHING THE OPTIONS FOR TREATMENT. GIVE THE THICK AND DENSE VEGETATIVE COVER THE POPULATION OF THE INFESTATIONS, AND THE PRESENCE OF MANY RIVERS AND STREAMS, CASAMANCE IS MOST APPROPRIATE FOR SMALL PLANE TREATMENT. IF THE CANADIAN PLANES ARE DEPLOYED IN THE CASAMANCE, THEY WILL NOT BE ABLE TO TREAT AS MUCH OF THE INFESTED AREA IN LOUGA/LINGUERE AS ORIGINALLY PLANNED AGAIN, UNDERSCORING THE NEED FOR ADDITIONAL AFFAIR RESOURCES. THIS REALIZATION PROMPTED THE PRESIDENT OF THE CRICKET CRISIS COMMITTEE AND THE HEAD OF THE CROP PROTECTION SERVICE TO RAISE THE POSSIBILITY OF ADDITIONAL BIG PLANE SPRAYING. THE MEETING WAS ALSO USEFUL IN REVIEWING USAID CROP PROTECTION SURVEY AND MAPPING METHODOLOGY AND IN REVIEWING RESULTS OF PHASE I CROP PROTECTION AGENTS ENGAGED IN LIVELY DISCUSSION ON RELATIVE MERITS OF LARGE PLANE MALATHION VS CROP PROTECTION AGENTS ASSOCIATED WITH PHASE I. PRESENTED WRITTEN EVALUATION REPORT ON PHASE I TREATMENT AREAS. RESULTS WERE PERSUASIVE IN ESTABLISHING THE EFFECTIVENESS OF LARGE PLANE MALATHION TREATMENT NOT ONLY ON GRASSHOPPERS, BUT ON APHIDS, Hairy CATERPILLARS, AND BLISTER BEETLES WHICH ARE SERIOUS PESTS THAT DAMAGE CROPS EVERY YEAR IN SENEGAL.

4 MINISTER OF RURAL DEVELOPMENT HAS BEEN FORMED A FULL REPORT OF SURVEY RESULTS AND CONCLUSIONS. DURING FROM THESE TWO MEETINGS AND PROCEEDINGS. THE REPORT WILL BE COMPLETED EARLY NEXT WEEK (PROBABLY NEXT WEEK). THE ACTION PLAN AND THE QUANTITIES AND COSTS OF THE CROPS

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REQUEST FOR ADDITIONAL SPRAYING, REFUG-7/AS

5. PHASE II OPERATIONS BEGAN 9/20 WITH ONE OCLALAV PLANE SPRAYING AROUND DAHRA THE OCLALAV PLANE HAS AVERAGED TWO SORTES A DAY, SPRAYING 1,500 HA A DAY ACCORDING TO OCLALAV REPORTS THE SECOND OCLALAV PLANE IS EXPECTED TO BE OPERATIONAL TODAY OR TOMORROW. INITIAL SPRAYING RESULTS WITH FENITHROTHION, ACCORDING TO CROP PROTECTION AGENTS, INDICATE 30-40% EFFECTIVENESS THIS POOR PERFORMANCE MAY BE CAUSED BY THE PLANE FLYING TOO HIGH AND CALIERATING THE SPRAY FOR TOO WIDE A SWATH

6 ALL FOUR CANADIAN PLANES ARRIVED IN THE EVENING OF 9/23 AND INITIATED OPERATIONS ON 9/25. THE CANADIAN PLANES ARE EXPECTED TO TREAT 12,800 HECTARES A DAY BASED ON TWO HOUPS EFFECTIVE SPRAYING TIME WHICH REPRESENTS 3,200 HECTARES PER DAY PER PLANE THE CANADIAN PLANES ARE CONTRACTED FOR 400 HOURS WITH ASSURED FUEL AND EXCUG-INSECTICIDE FROM FAO AND DONOR SOURCES APPARENTLY IN THE PIPELINE

7 INTERNATIONAL AND LOCAL PRESS ARE SHOWING INTEREST IN GRASSHOPPER CONTROL CAMPAIGN RADIO QUEBEC HAS TV TEAM IN DAHRA DOING DOCUMENTARY FOR PUBLIC TV PROGRAM NORTH-SOUTH, WITH FOCUS ON CANADIAN SMALL PLANE OPERATIONS USAID DEPUTY DIRECTOR GAVE VIDEO INTERVIEW AND ANSWERED QUESTIONS WHICH INCLUDED SOME OF THE CRITICISMS AGAINST LARGE PLANE OPERATIONS AND MAL TRION USE MARIQUEI BASED REPORTERS FROM THE LOS ANGELES TIMES ALSO REQUESTED INFORMATION ABOUT THE OPERATION USAID HAS PROVIDED USIS WITH FULL DETAILS ON CAMPAIGN AND THEY HAVE BEEN MEETING WITH REPORTERS AND PROVIDING INFORMATION FOR ARTICLES IN LOCAL PRESS, WHICH HAS BEEN GIVING THE FRENCH-SPONG CAMPAIGN GOOD COVERAGE THE VIETNAM GOVT DEVELOPMENT IS CALLING A PRESS CONFERENCE CONCERNING THE CRISIS IN CRISIS COMMUNITIES CROP PROTECTION, OCLALAV, FAC, CANADA, AND USAID WILL BE REPRESENTED

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- AMEMBASSY OUAGADOUGOU IMMEDIATE
- AMEMBASSY PARIS IMMEDIATE
- AMEMBASSY THE HAGUE IMMEDIATE
- AMEMBASSY BISSAU IMMEDIATE

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SECSTATE FOR OFDA (TIM KNIGHT) AFR/SWA (S J LITTLEFIELD)
DAA/AFR AFT/TR (REILLY) AF/DAS (R STACY) ROME FOR FODAG
FAO BRADER PARIS FOR EMBASSY REP (BROWN) PASS MICHAUX
MINCOOP AND OECD (SLOCUM) OTTAWA FOR CIDA (BARCHECHAT)
BRU SELS FOR EEC (MIDA) THE HAGUE FOR M-A (VAN TOOREN)
BONN FOR MINDECOOP LONDON FOR ODA FRA/AIA

E O 12356 N/A

SUBJECT SENEGAL GRASSHOPPER CAMPAIGN SITUATION UPDATE
NO 12

REF A DAKAR 10306 B DAKAR 10843

SUMMARY THIS MESSAGE REPORTS ON THE WORSENING
GRASSHOPPER SITUATION. GOS AND INTERNATIONAL DONOR
CONSENSUS REACHED AT MEETINGS OF 9/29 AND 9/30 ON THE
NEED FOR ADDITIONAL DC-7 SPRAYING IN THE LOUGA AREA AND
ADDITIONAL SMALL PLANE SPRAYING IN CASAMANCE
PROPOSED DONOR CONTRIBUTIONS OF DOLS 1 MILLION TO EXTEND
DC-7 OPERATIONS, SPECIFIC REQUIREMENTS FOR RESUMING DC-7
SPRAYING AND A PROPOSAL FOR USIS/AID COLLABORATION IN
PREPARING A PROFESSIONAL VIDEO DOCUMENTARY OF THE SENEGAL
GRASSHOPPER CONTROL CAMPAIGN
END SUMMARY

2 WORSENING SITUATION - DURING THE PAST 20 DAYS
ABUNDANT RAINS IN LOUGA-LINGUIERE HAVE SPANNED A 2ND
GENERATION OF NYMPHS IN DENSITIES OF OVER 200 PER SQUARE
METER IN BLOCS ALREADY TREATED IN PHASE I AND UP TO 1000
PER SQUARE METER IN UNTREATED AREAS. GRASSHOPPERS ARE
NOW ATTACKING MILLET CROP. ESTIMATED AREA INFESTED MORE
THAN 20 OPER SQUARE METER) IN LOUGA-LINGUIERE TOTALS

650 000 HA WINDOW FOR EFFECTIVE TREATMENT NOW 1 10 12
DAY INCE NYMPHS ARE IN 4TH AND 5TH IN TAR TAGE
LATEST ESTIMATE OF GROS AREA INFESTED IN CASAMANCE
BASED ON DETAIL U AID/CROP PROTECTION SERVICE SURVEY IS
350 000 HA NOT COUNTING GAMBIA GRAFHOPPERS ARE NOW IN
RICE PADDIES CASAMANCE DENSITIES EXCEED 50 PER SQUARE
METER OF GRAFHOPPERS MOSTLY IN IMMATURE ADULT STAGE
WINDOW FOR TREATMENT IS 7-9 DAYS

3 NEW GAME PLAN PROPOSED BY GOS - MINISTER OF RURAL
DEVELOPMENT CHAIRED MEETING OF ALL DONORS ON 9/29/86 AT
WHICH HE REPORTED ON WORSENING SITUATION AND REQUESTED
ALL DONORS TO CONTRIBUTE MORE RESOURCES FOR ADDITIONAL
SPRAYING OPERATIONS THE MINISTER OUTLINED A STRATEGY
WHEREBY THE 2 OCLAVAV AND 4 CANADIAN PLANES WOULD
COMPLETE SPRAYING OF ABOUT 330 000 HA IN LINGUIERE
(WITHIN 80 KM RADIUS SOUTH OF DAHRA) BY 10/7/86 AND THEN
PROCEED TO CASAMANCE TO TREAT INFESTED AREAS THERE HE
PROPOSED THAT U.S. DC-7'S RESUME SPRAYING IN LOUGA TO
CLEAN UP REMAINING UNTREATED AREAS AS WELL AS REINFESTED
BLOCS AFTER A CAREFUL REVIEW OF THE FACTS THE GENERAL
CONSENSUS OF THE DONORS WAS THAT THE SITUATION WAS MUCH
WORSE THAN ORIGINALLY ANTICIPATED AND THAT ADDITIONAL
OPERATIONS WERE REQUIRED ALL AGREED ON THE DESIRABILITY
OF A FULLY COORDINATE INTERNATIONAL APPROACH, SUPPORTING
COMBINED LARGE AND SMALL PLANE OPERATIONS ALL PROMISED
TO CABLE TO THEIR RESPECTIVE CAPITALS REQUEST FOR
ADDITIONAL SPRAYING OPERATIONS INCLUDING TWO THIRDS OF
COSTS OF RESUMED DC-7 OPERATIONS
USAID PLEDGED TO PICK-UP OTHER ONE THIRD OF DC-7 COSTS
MEETING WAS A MAJOR BREAK-THROUGH IN REESTABLISHING
PRODUCTIVE AND HARMONIOUS COLLABORATION AMONG ALL DONORS
WITH FRANCE PLAYING AN ESPECIALLY CONSTRUCTIVE ROLE

4 OPERATIONAL DETAILS AND DONOR CONTRIBUTIONS - AT THE
REQUEST OF THE MINISTER OF THE RURAL DEVELOPMENT A
FOLLOW-UP TECHNICAL MEETING OF THE CRICKET CRISIS

COMM TTEE S OPERATIONAL CELL MET THE NEXT DAY 9/30 TO
ELABORATE THE OPERATIONAL DETAILS REPRESENTATIVES FROM
CROP PROTECTION SERVICE OCLAVAV FAO CANADA AND USAID
CAREFULLY REVIEWED TOTAL AREA REQUIRING TREATMENT
PRIORITIES FOR SPRAYING AND SPECIFIC NEED FOR ADDITIONAL
PESTICIDE FUEL AND FLYING TIME FOR SMALL PLANES AND
DC 7 S BASED ON CURRENT STOCKS AND CONTRACT TERMS
MEASURED AGAINST PERFORMANCE TO DATE THIS ANALYSIS
REVEALED THAT 6 SMALL PLANES CAN COMPLETE ABOUT 330 000
HA IN LINGUIERE BY 10/7/86 AND TREAT AN EFFECTIVE AREA OF
ABOUT 210 000 HA IN CASAMANCE WITH THE RESOURCES ALREADY
AVAILABLE (SMALL PLANES HAVE BEEN TREATING EFFECTIVELY
OVER 30 000 HA A DAY)

APPROXIMATELY 320 000 HA OF DENSELY INFESTED AREA
REMAINS TO BE TREATED IN LOUGA AREA BY DC 7 S
OPERATIONAL CELL FOCUSED ON QUESTION OF FINANCING FOR
DC-7 S AND CAME UP WITH FOLLOWING FORMULA
- USAID TO PICK UP DOLS 700 000 ESTIMATED COSTS FOR
CONTRACT RENEWAL FUEL AND LUBRICANTS AND SENEGALESE
ARMED FORCES LOGISTICS SUPPORT CITED REF A

- DONORS TO FINANCE ESTIMATED DOLS 1 MILLION FOR
OPERATION THROUGH LOCAL CURRENCY CONTRIBUTIONS TO GOS

- CANADA TO ADVANCE LOCAL CURRENCY FUNDS TO PERMIT
GOS TO OPEN LETTER OF CREDIT NLT 10/3 FOR QUICK PURCHASE
AND DELIVERY OF MATERIAL FROM U.S. SOURCE THROUGH GOOD
OFFICES OF OFDA (I.E. REPEAT OF PHASE I PROCUREMENT
ARRANGEMENTS)

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FOLLOWING THE MEETING GOV PREPARED INDIVIDUAL REQUESTS FOR SUPPORT OF THIS PLAN TO U A D CANADA JAPAN EEC FRANCE ITALY FAO UK WE WILL ADVISE ONCE FIRM COMMITMENT ARE KNOWN

5 REQUIREMENTS FOR RESUMPTION OF DC 7 SPRAYING - TARGET DATE FOR RESUMED OPERATION. 10/9

- AREA TO BE TREATED 300 000 HA
- ACTUAL SPRAYING TIME 4 DAYS USING 4 DC-7 S
- PESTICIDE REQUIREMENTS 180 000 LITERS OF MALATHION
- DELIVERY SCHEDULE 1ST SHIPMENT BY 10/7 AND LAST SHIPMENT BY 10/8
- ESTIMATED COST DOLS 1 MILLION INCLUDING FREIGHT
- FUEL REQUIREMENTS 215 000 LITERS AVGAS
- COST DOLS 150 000
- SOURCE LOCAL SUPPLIERS
- OIL REQUIREMENTS 24 BARRELS OF SHELL A V OIL
- 110 60W DETERGENT
- COST DOLS 18 000

PERSONNEL REQUIREMENTS

BRUCE THORNTON - ENTOMOLOGIST ON BOARD
BOB ADAMS - LOGISTICS ETA 10/3
LYNN THOMAS - OPERATIONS ETA 10/7
DICK DYER - AIR FORCE LIAISON ETA 10/5
T&G FLIGHT CREWS ETA 10/5

THIS SCHEDULE CAN BE ADJUSTED TO SYNCHRONIZE OPERATIONS

WITH MALI IF GO DECISION MADE THERE ALSO THERE WILL BE COST AND TIMING ADVANTAGES TO CLOSE COORDINATION OF PESTICIDE PROCUREMENT AND OTHER LOGISTICS

6 AS SOON AS WE ARE CERTAIN OF DONOR COMMITMENTS FOR DOLS 1 MILLION (330 MILLION FCFA WE WILL ADVISE YOU TO PROCEED WE WILL RELY ON OFDA TO RENEW T G CONTRACT (DOLS 474 000 AT DOLS 1.50/HK OR DOLS 60/ACRE) EXTEND SERVICES OF ADAMS THOMAS DYER (COST UNKNOWN TO USAID) AND TO ORDER PESTICIDE (NO COST TO U S) USAID WILL TAKE CARE OF FUEL LUBRICANTS AND LOGISTICS SUPPORTS WE WILL NEED IMMEDIATE FUND CITE IN AMOUNT OF DOLS 226 000 TO COVER THESE COSTS AS FOLLOWS

- | | |
|---|------------|
| | DOLS (000) |
| - FUEL (DC 7 S) | 150 000 |
| LUBRICANTS (DC-7 S) | 18 000 |
| SENEGAL ARMED SERVICE SUPPORT (INCL FUEL) | 72 000 |
| - USAID OPERATION SUPPORT | 26 000 |

WE EXPECT GOV TO HAVE DONOR RESOURCES LINED UP BY END OF TODAY SO WE CAN ACTIVATE THIS PLAN

7 COUNTRY TEAM BELIEVES THAT RESUMPTION OF DC-7 OPERATIONS PROVIDES 2ND CHANCE TO ARRANGE FOR PROFESSIONAL VIDEO COVERAGE OF SENEGAL GRASSHOPPER CONTROL CAMPAIGN PROPOSE USIS/AID COLLABORATE IN FUNDING TEAM OF PROFESSIONALS TO DOCUMENT COMPLETE STORY ON "SENEGAL LEAD DONOR SUPPORTED CONTROL PROGRAM TEAM COULD PULL TOGETHER VIDEO FOOTAGE TAKEN BY FRENCH ANTENNE 2, RADIO QUEBEC USIS AND USAID LOCUST CONTROL STAFF AND FILL IN ANY GAPS WITH NEW FOOTAGE THEN TAPE INTERVIEWS WITH KEY PLAYERS ON THE SCENE REQUEST OFDA EXPLORE POSSIBILITIES WITH AID/XA AND USIS DEPTTEL FOLLOWS WITH OUR DETAILED SUGGESTIONS AND ESTIMATED COSTS WALKER

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3. RESULTS OF SUNDAY FIELD SURVEY. U S AMBASSADOR WALKER INVITED THE AMBASSADOR FROM CANADA, THE FRENCH AND BRITISH CHARGES, THE FAC LOCUST COORDINATOR, AND THE PRESIDENT OF THE CRICKET CRISIS COMMITTEE TO VISIT THE LOUGA-DIOURBEL AREA ON 10/5 TO ASSESS FIRST-HAND THE GRASSHOPPER SITUATION. GROUP INCLUDED ACTING U-AID DIRECTOR, OPDA ENTOMOLOGIST, FRENCH CROP PROTECTION EXPERT, USAID AGRICULTURE STAFF, CIDA REP, AND SENEGALESE TV CPLW. GROUP BROKE UP INTO THREE TEAMS WHICH WEALED IN DIFFERENT DIRECTIONS TO COUNT GRASSHOPPERS USING METHODOLOGY SUGGESTED BY J.S. ENTOMOLOGIST. AFTER 2 HOURS OF SURVEYING GRASSHOPPERS TWO TEAMS REPORTED VERY HEAVY INFESTATIONS (200-300 PER SQUARE METER), EXCEPT IN THE AREA TREATED BY COLLABORATIVE CANADIAN PLANTS. MANY HOPPERS WERE DESTROYED IN MILLET FIELDS DESTROYING THE CROP WHICH IS 2-1/2 - 3 WEEKS FROM HARVEST. THE OTHER TEAM FOUND ONLY HEAVY INFESTATION IN A TRIANGLE BETWEEN AREAS TREATED BY DC-7'S AND SMALL PLANTS. TEAMS RECORDED FINDINGS ON MAP OF AREA AND ALL AGREED THAT GRASSHOPPERS WERE PRESENT IN THE AREA IN SIGNIFICANT NUMBERS AND THAT LARGE SCALE SPRAYING OPERATIONS WERE JUSTIFIED. A PRESS CONFERENCE WAS HELD AT 10:30 AM AT WHICH ALL DC-7 REPRESENTATIVES ASSOCIATED THEMSELVES WITH THESE FINDINGS AND DESCRIBED THEIR PARTICIPATION IN SENEGAL'S GRASSHOPPER CONTROL CAMPAIGN. REPORTS WERE SHOWN ON THE SUNDAY EVENING NEWS.

4. DONOR COMMITMENT TO SUPPORT THE STRATEGY OF THE SUNDAY SURVEY FINDINGS, MINISTER OF RURAL DEVELOPMENT WANTED TO LIMIT UP ON 12/8 FIRM REQUESTS FROM ITALY AND JAPAN TO COVER ENTIRE AMOUNT OF LETTER OF CREDIT. COS FAC REQUESTED ECUS 542,322 IN COUNTERPART TO FUND FROM JAPAN WITH 5-1000 US\$ FROM CANADA AT A 10% INTEREST RATE. COMMITMENT FUNDS TO PRE-FINANCE THE MAINTENANCE OF THE DC-7'S AND TO COVER THE LOGISTICS COSTS OF THE 10 MILLION GFA AND 10 MILLION GFA PERIOD.

5. OPERATIONS AND LOGISTICS. PLANE CREWS AND OPERATIONS CREW (ADAMS, THOMAS AND DRYDEN) ALL ARRIVED ON SCHEDULED AND BEGAN PREPARATIONS FOR DC-7 OPERATIONS. AFTER COMPLETION MAP OF SPRAY PATTERNS, THE CREW LEFT FOR THE EC-1190 ON 10/7 TO ASSIST BAMAJO IN PREPARING FOR TREATMENT BY D-41-BASED DC-7'S. THE CREW DEPARTED FOR BAMAJO ON 10/8. THE CREW ARRIVED TODAY 10/10. SENEGALSE ARMED FORCES HAVE DEPLOYED ALL OVER THE AREA.

6. FLIGHT PLAN. DC-7'S WERE DEPARTING FOR BAMAJO OPERATIONS MORNING OF 10/10. IN THE AREA OF THE DC-7'S, THE CREW WILL BE OPERATING SOUTH OF THE AREA.

STWARD. THE OTHER 5 BLOCKS ARE TO BE TREATED 10/12, 10/13, AND 10/14. BASED ON PESTICIDE AVAILABILITY, FOUR DC-7'S PLAN TO TREAT 50,000 HA IN MALI-AURITANIA BOARDER AREA ON 10/10, WHICH WILL INVOLVE A 500 MILE RUN FROM DAKAR AND AN 8 HOUR MISSION, INCLUDING 2 HOURS OF EFFECTIVE SPRAYING TIME. DC-7'S DO NOT PLAN TO FLY 10/11 TO PERMIT REST FOR CREWS, RECONDITIONING OF PLANES AND EQUIPMENT, AND LOADING OF PESTICIDES

7 SMALL PLANE OPERATIONS THE FOUR CANADIAN PLANES AND THE OCLALAV PLANE THAT REMAINS OPERATIONAL CONCLUDED OPERATIONS IN THE NORTH ON 10/6/85, HAVING EXHAUSTED AVAILABLE FUEL AND PESTICIDE AT THEIR BASE. TOTAL AREA TREATED AFTER ABOUT 12 DAYS OF OPERATIONS IS 150,000 HA. OPERATIONS APPEAR TO HAVE BEEN GENERALLY EFFECTIVE (90 PERCENT OR BETTER GRASSHOPPER KILL RATE IN SPRAYED AREAS). FOUR CANADIAN PLANES FLY TO CASAMANCE ON 10/8 AND SHOULD START OPERATIONS O/A 10/8

8. ENVIRONMENTAL ASSESSMENT ENTOMOLOGISTS FUDDLESTON AND EDWARDS ARRIVED ON 10/8 AND WERE INTRODUCED TO CROP PROTECTION SERVICE. THEY PLAN TO TAKE PRE-TREATMENT SAMPLES AND GET SET UP TO MONITOR DC-7 MALATHION OPERATIONS IN THE SPRAY ZONE. THEY WILL MOVE TO CASAMANCE IMMEDIATELY AFTER THE NORTH OPERATIONS TO ASSESS EFFECTS OF SMALL PLANE SPRAYING OPERATIONS IN THE LOCAL AREAS. THEY WILL ALSO BE LOOKING AT EFFECTS OF TRADITIONAL GROUND TREATMENT APPROACHES

9 GREATLY APPRECIATE OEDA'S SPLENDID SUPPORT FOR RESUMPTION OF OPERATIONS. WPL/CP
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 RUFHJL / AMEMBASSY BANJUL PRIORITY 2671
 RUFHRO / AMEMBASSY ROME PRIORITY 2110
 RUTANI / AMEMBASSY NOUAKCHOTT PRIORITY 4505
 RUFHOL / AMEMBASSY BONN PRIORITY 0965
 RUFHBS / AMEMBASSY BRUSSELS PRIORITY 0870
 RUFHLD / AMEMBASSY LONDON PRIORITY 1400
 RUTAND / AMEMBASSY NDJAMENA PRIORITY 0599
 RUEHOT / AMEMBASSY OTTAWA PRIORITY 0297
 RUFHOC / AMEMBASSY OUAGADOUGOU PRIORITY 5512
 RUFHFR / AMEMBASSY PAPIS PRIORITY 6734
 RUFHTH / AMEMBASSY THE HAGUE PRIORITY 0199
 RUFHPBI / AMEMBASSY BISSAU PRIORITY 5880

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LOCUST

SECSTATE FOR OFDA (TKNIGHT), DAA/AFR, AFR/TR (PEILLY)
 AFR/SWA, ROME FOR FODAG, FAO BRADER, PARIS FOR EMBASSY
 PEP (BROWN) PASS MICHAUX, MINCOOP, AND OECD (SLOCUM),
 OTTAWA FOR CIDA (BAPCHECHAT), BRUSSELS FOR EEC (SMIDA),
 THE HAGUE FOR MFA (VAN TOOREN), BONN FOR MINDEVCOOP,
 LONDON FOR ODA, FA4/AIA

I O 12355 N/A

SUBJECT SENEGAL GRASSHOPPER CAMPAIGN SITUATION ~~SECRET~~

1 SUMMARY THIS MESSAGE REPORTS ON THE AFTERMATH OF
 THE CRASH, THE SPEEDY RECOVERY OF THE SURVIVOR,
 RESUMPTION OF DC-7 OPERATIONS, THE CEREMONIES HONORING
 PILOTS AND RESCUING FISHERMEN, PLANS FOR OFDA TEAM AND
 DC-7 CREW RETURN TO THE U S END SUMMARY

2 THE TRAGIC CRASH OF ONE OF THE FOUR DC-7 SPRAY PLANES
 ON OCTOBER 9 WHICH CLAIMED THE LIVES OF THREE AMERICAN
 PILOTS ENGENDERED AN OUTPOURING OF SYMPATHY FROM THE
 SENEGALESE AND THE INTERNATIONAL COMMUNITY IT ALSO
 SPARKED HEROIC EFFORTS ON THE PART OF FISHERMEN AND
 RESCUE TEAMS AND BROUGHT OUT THE FINEST IN THE CREWS
 USAID, OFDA TEAM AND EMBASSY STAFF IT ALSO INVOLVED
 MANY ADMINISTRATIVE ARRANGEMENTS INCLUDING AUTOPSIES AND
 RETURN OF THE BODIES TO THE U S , STATEMENTS TO POLICE
 APPEARANCES BEFORE THE PRELIMINARY ENQUIRY BY THE
 SENEGALESE CIVIL AVIATION DIRECTORATE INTO THE CAUSES OF
 THE ACCIDENT, MONITORING AND REPORTING ON THE EFFECTS OF
 THE MALATHION DUMPED IN THE OCEAN AND THE L'1 A

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MEMORIAL SERVICE WAS HELD AT THE EMBASSY ON 10/18 AND
CONDOLENCE BOOK OPENED

3 SERGIO TOMASSONI WAS PULLED FROM THE WATER BY TWO
FISHERMEN MINUTES AFTER THE CRASH AND TAKEN TO THE
BEACH. HE WAS PLACED IN INTENSIVE CARE AT THE PRINCIPAL
HOSPITAL AND WAS RELEASED AFTER 48 HOURS SINCE THEN HE
HAS RECOVERED RAPIDLY

4 OPERATIONS - THE THREE DC-7'S, BASED ON THE COMPANY
PRESIDENT'S DECISION TO GET ON WITH THE JOB, RESUMED
SPRAYING ON OCTOBER 11, IN LOUGA-DIOURBEL AREA AND
COMPLETED OPERATIONS IN SENEGAL ON 10/18 IN SIX DAYS OF
ACTUAL SPRAYING IN SENEGAL 321,500 HA OF GRASSHOPPER
INFESTED PLANTLANDS AND CROPS WERE TREATED WITH MALATHION
AS PART OF THE EXTENDED SPRAYING OPERATIONS REQUESTED BY
THE GOS AND SUPPORTED BY THE DONOR COMMUNITY THE DC-7'S
ALSO SPRAYED 40,000 HA IN MALI-MAJIPITANIA ON 10/14 AND
85,000 HA IN GAMBIA ON 10/19 AND 10/21 FIELD REPORTS
CONFIRM THE SAME HIGH GRASSHOPPER KILL RATES LOGGED
DURING PHASE I IN ALL COUNTRIES THE FOUR CANADIAN
PLANES SPRAYED IN CASAMANCE FROM 10/8 THROUGH 10/19 AND
WERE ABLE TO TREAT ABOUT 120,000 HA (PRELIMINARY
ESTIMATE) OF THE ESTIMATED 200,000 HA INFESTED HIGHER
TEMPERATURES AND RAINS KEPT THE SMALL PLANES TO ONE
SORTIE A DAY AT AN AVERAGE OF 12,000 HA A DAY BOTH
CANADIAN PLANES HAD ACCIDENTS DURING THIS MONTH WITHOUT
INJURY TO PILOTS AND ARE PERMANENTLY OUT OF COMMISSION

5 DISCOVERY OF DC-7 WRECKAGE - RESCUE OPERATIONS
CONTINUED UNTIL 1900 OCTOBER 18, WHEN THE SEARCH FOR THE
WRECKAGE AND THE MISSING PILOT WAS ABANDONED FOR LACK OF
RESOURCES WITH MORE CAPACITY FOR DEEP WATER PROSPECTING SUCH
AS A MINE SWEEPER OR SALVAGE SHIP THE PRESIDENT OF T
AND C AVIATION CONCURRED IN THIS DECISION OF THE CHIEF OF
THE JOINT CHIEFS STAFF, WHO PERSONALLY COORDINATED RESCUE
OPERATIONS ON OCTOBER 23, DIVERS FROM THE VILLAGE OF
YOFF DISCOVERED THE WRECKAGE AND ARE STILL DIVING IN
SEARCH OF THE MISSING PILOT

6 CEREMONIES - ON OCTOBER 18 THE U S AMBASSADOR, THE
PRESIDENT OF T AND C AVIATION, SERGIO TOMASSONI, AND
ACTING U S AID DIRECTOR THANKED AND PRESENTED
CERTIFICATES OF MERIT AND A NEW OUTBOARD MOTOR TO THE TWO
FISHERMEN WHO SAVED SERGIO'S LIFE THE CEREMONY WAS

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DAYAR 11823

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37 PRESIDED OVER BY THE MAYOR OF DAKAR AND TOOK PLACE AT THE FISHERMAN'S HOME VILLAGE OF IOFF, NEAR THE AIRPORT. LATER THAT EVENING THE MINISTER OF RURAL DEVELOPMENT HOSTED A RECEPTION IN HONOR OF THE PILOTS AND CREW

7 PLANS FOR RETURN - WOODY GRANT/PAM RETURNED TO THE U.S. ON OCTOBER 19 THE PLANES AND PILOTS PLAN TO FLY HOME O/A OCTOBER 25, THE OFDA TEAM PLANS TO DEPART AS FOLLOWS

DEMOBILIZATION OF TEAM MEMBERS

1 LYNN THOMAS

DEP DAKAR 02 35 THURSDAY OCT 23 VIA PAN AM 189
ARR JFK/NY 06 20 THURSDAY OCT 23
DEP JFK/NY 13 45 THURSDAY OCT 23 VIA PAN AM 971
ARR ATLANTA, GA 16 50

NOTE LYNN HAS TO RETURN TO ATLANTA ASAP TO PREPARE FOR A FOREST SERVICE MEETING IN BILOXI, 27-31 OCT

2 BRUCE THORNLEY

DEP DAKAR 11 15 SATURDAY OCT 25 VIA SWISSAIR 243
ARR GENEVA 17 35
DEP GENEVA 10 20 SUNDAY OCT 25 VIA TWA 931
ARR JFK/NY 14 20
DEP JFK/NY 16 10 VIA TWA 703
ARR WASH D C 17 20

NOTE BRUCE WILL NEED ROOM RESERVATIONS AT THE STATE PLAZA HOTEL, PM SUNDAY

3 DICK DYER

DEP DAKAR 11 15 SATURDAY OCT 25 VIA SWISSAIR 243
ARR GENEVA 17 35
DEP GENEVA 10 20 SUNDAY OCT 26 VIA TWA 931
ARR JFK/NY 14 20
DEP JFK/NY 16 10 VIA TWA 703
ARR WASH D C 17 20

NOTE DICK WILL NEED ROOM RESERVATIONS AT THE STATE PLAZA HOTEL, PM SUNDAY

4 BOB ADAMS

DEP DAKAR 11 15 SATURDAY OCTOBER 25 VIA SWISSAIR 243
ARR GENEVA 17 35
DEP GENEVA 10 20 SUNDAY OCTOBER 26 VIA TWA 931
ARR JFK/NY 14 20
DEP JFK/NY 16 10 VIA PAN AM 947
ARR PHILADELPHIA 16 55

NOTE BOB AND HIS WIFE WILL DRIVE TO WASHINGTON VIA USNA-ANNAPOLIS SUNDAY PM HE WILL NEED RESERVATIONS AT THE STATE PLAZA SUNDAY PM

8 OFDA MAY WISH TO DEBRIEF ADAMS, DYER AND THORNLEY ON MONDAY, OCTOBER 29 AND SCHEDULE A MORE COMPLETE DEBRIEFING WITH THE WHOLE TEAM INCLUDING LYNN THOMAS O/A

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AID 10/14/86
DIR GCARNER
ADO:HUDDLESTON/EDWARDS:SW
ADO RHARVEY
AID AMB DCM, CHRON

AMEMBASSY DAKAR
SECSTATE WASHDC

LOCUST

AIDAC

STATE FOR OFDA

E.O. 12356: N/A
SUBJECT: ENVIRONMENTAL ASSESSMENT

HUDDLESTON AND EDWARDS VISITED SEPTEMBER LARGE PLANE
SPRAY AREAS. CONTROL APPEARS GOOD AND ENVIRONMENTAL
EFFECTS APPEAR NIL. PLOTS HAVE BEEN ESTABLISHED FOR
EVALUATION OF OCTOBER LARGE PLANE SPRAYING. TWO
OUTSTANDING SENEGALESE COUNTERPARTS HAVE BEEN ASSIGNED TO
ASSIST THEM. HUDDLESTON WILL EVALUATE LARGE PLANE
OPERATIONS AND EDWARDS WILL EVALUATE SMALL PLANE
OPERATIONS IN CASAMANCE. PRELIMINARY INDICATIONS ARE
THAT THERE IS POTENTIAL FOR INTEGRATED PEST MANAGEMENT
APPROACH MODELLED AFTER HUDDLESTON'S RANGE CATERPILLAR
IPM PROGRAM IN NEW MEXICO. GROUND TESTS ARE IN PLANNING
STAGES WITH SENEGAL CROP PROTECTION GROUP. WE ARE
TRAINING SENEGALESE COUNTERPARTS IN SCIENTIFICALLY SOUND
GRASSHOPPER DENSITY ASSESSMENT. WE MONITORED DC-7 CRASH
SITE AND BEACHES. THERE WAS NO APPARENT PESTICIDE
POLLUTION. THE SPECIFIC GRAVITY OF MALATHION IS GREATER
THAN SG OF SEA WATER SO THE MALATHION SHOULD HAVE SETTLED
TO THE BOTTOM. WALKER##

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WUWV VZCZCDRE *
OO RUEHC RUTABM RUFHJL RUFHOL RUFHBS RUTAND
RUTANR RUFHOT RUFHOC RUFHFR RUFHRO RUFHTE
DE RUTADS #2161/01 304 **
ZNF UUUU ZER
C 311216Z OCT 86
FM AMEMBASSY DAKAR
TO RUEHC / SECSTATE WASHDC IMMEDIATE 320F
RUTABM / AMEMBASSY NAMAFO IMMEDIATE 4855
RUFHJI / AMEMBASSY BANJUL IMMEDIATE 2601
RUFHOL / AMEMBASSY BONN IMMEDIATE 0971
RUFHES / AMEMBASSY BRUSSELS IMMEDIATE 0673
WUWV RUTANR / AMEMBASSY NDJAMENA IMMEDIATE 0604
RUTANK / AMEMBASSY NOUAKCHOTT IMMEDIATE 4528
RUFHOT / AMEMBASSY OTTAWA IMMEDIATE 0300
RUFHOC / AMEMBASSY OUAGADOUGOU IMMEDIATE 5522
RUFHFR / AMEMBASSY PARIS IMMEDIATE 6726
RUFHRO / AMEMBASSY ROME IMMEDIATE 2115
RUFHTE / AMEMBASSY THE HAGUE IMMEDIATE 0222
BT

→ Edwards
CLASS: UNCLASSIFIED
CHPG: AID 10/30/86
APPRV: ADIR-GCARNER
DRFTD: AID:HUDDLESTON
DRAFTS
CLEAR: ADO:PARVEY
DISTR: AID AMB COM
CHRON

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STATE FOR ODA (BETHIEAULT), AFF/S+A (S.J. LITTLEFIELD)
DAA/AFF APT/TP (PEILLY) AF/PAS (PSTACY); POMI FOR FOLAC
PAO BRADER, PARIS FOR EMBASSY REP. (BROWN) PASS MICHAUX
MILCOOP AND OECO (SLOCUM) OTTAWA FOR CIDA (FAUCHEUX T.,
BRUSSELS FOR E.C. (SMIDA), THE HAGUE FOR MEA (VAN TOOT),
LOAN FOR MINDEVCOOP, LONDON FOR ODA

E.O. 12356 N/A
SUBJECT ENVIRONMENTAL ASSESSMENT REPORT

WUWV SUMMARY. THIS IS THE SECOND WEEKLY ENVIRONMENTAL
ASSESSMENT REPORT FROM HUDDLESTON AND EDWARDS. THIS
REPORT CONTAINS THE FINAL DATA ON EFFICACY AND
ENVIRONMENTAL IMPACT OF THE LARGE PLANE OPERATIONS IN
NORTH CENTRAL SENEGAL AND THE SMALL PLANE OPERATIONS IN
SOUTHERN SENEGAL. PRELIMINARY NOTES ON CROP LOSSES ARE
INCLUDED. STANDARDIZED RESEARCH TECHNIQUES WERE USED AT
FOUR LOCATIONS IN THE NORTH CENTRAL CONTROL ZONE. FIVE
LOCATIONS WERE STUDIED IN THE SOUTH AND SUMMARY

1 RESULTS IN NORTH CENTRAL SENEGAL. JULY MALATHION AT
E.5E 1/4 WAS FOUND TO BE HIGHLY EFFECTIVE AGAINST
OPTALIS SENEGALENSIS WHEN APPLIED BY LARGE AIRCRAFT
(DC-7). MEAN PERCENT MORTALITY AT THE FOUR STUDY SITES
WAS 99.5 PERCENT IN MILLET AND 97.4 PERCENT IN ADJACENT
GRASSLAND AREAS

2 RESULTS IN SOUTHERN SENEGAL. THE EFFICACY OF
MALATHION AND PERMETHYLIN ON OPTALIS BY SMALL AIRCRAFT
EVALUATED. THE PERCENT MORTALITY OF OPTALIS BY
E.C. 10 TO 1 PERCENT IN MILLET AND 90 PERCENT IN
PARCHURUS FOR PERMETHYLIN. THE PERCENT MORTALITY
EVALUATED IN MILLET AND PARCHURUS BY SMALL AIRCRAFT

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3. OPERATIONAL CONSIDERATIONS FOR LARGE AND SMALL PLANES: THE OPERATIONS AND PESTICIDE HANDLING AND LOADING OF THE LARGE PLANE OPERATIONS DIRECTED BY THE AMERICANS AND THE SMALL PLANE OPERATIONS DIRECTED BY THE CANADIANS WERE EVALUATED. THE LARGE PLANE OPERATION WAS FOUND TO BE VERY WELL ORGANIZED WITH AN EXCEPTIONALLY HIGH DEGREE OF ADHERENCE TO SAFETY AND ENVIRONMENTAL PROTECTIONS. THE CANADIAN OPERATION WAS ALSO WELL ORGANIZED AND SUPERVISED.

4. CROP LOSS ASSESSMENT: IN THE LARGE PLANE AREA IN SENEGAL, MILLET LOSSES FROM GRASSHOPPER DAMAGE RANGED FROM 15 TO 30 PERCENT IN AREAS TREATED IN SEPTEMBER TO 70 TO 90 PERCENT IN AREAS NOT TREATED UNTIL OCTOBER. THE OCTOBER TREATMENT WAS MADE PRIOR TO EGG LAYING BY THE LAST GENERATION WHICH SHOULD RESULT IN GREATLY REDUCED POPULATIONS IN 1987 IN THE TREATMENT AREAS. IN THE SMALL PLANE SPRAY AREAS IN THE SOUTH, CROP LOSS DUE TO GRASSHOPPERS WAS MINIMAL WHEN EVALUATED IN MID-OCTOBER. RICE LOSSES AVERAGED ABOUT 5 PERCENT. PASTURE FEEDING RESULTED IN 25 PERCENT DAMAGE; HOWEVER, THERE WAS MORE THAN ADEQUATE GRASS FOR LIVESTOCK SO DAMAGE WAS OF LITTLE IMPORTANCE. THE GREATEST DAMAGE WAS IN CORN. APPARENTLY 20 PERCENT OF THE CORN WAS LOST TO FEEDING BY GRASSHOPPERS AND BIRDS. THERE WAS NO APPRECIABLE LOSS IN MILLET OR SORGHUM TO GRASSHOPPERS IN THE CASAMANCE.

5. ENVIRONMENTAL IMPACT: NO ADVERSE ENVIRONMENTAL EFFECTS WERE APPARENT IN THE NORTH CENTRAL SENEGAL AREA TREATED BY THE DC-7'S. NO CHANGE IN PRE- AND POST-SPRAYED POPULATIONS WERE DETECTED. BENEFICIAL ENVIRONMENTAL EFFECTS INCLUDED REDUCED FLY AND MOSQUITO POPULATIONS.

IN THE SMALL PLANE SPRAY AREAS TREATED WITH FENITROTHION IN THE SOUTH, NO ADVERSE ENVIRONMENTAL EFFECTS WERE OBSERVED EXCEPT FOR THE FOLLOWING ISOLATED REPORTS. FISH AND BIRD KILLS WERE REPORTED BUT WERE NOT CONFIRMED. - IN ONE AREA, A SIGNIFICANT KILL OF CRABS WAS CONFIRMED. - PONDYARD LOSSES WERE OBSERVED IN A FEW SITES.

6. FUTURE CONSIDERATIONS FOR 1987: INTENSIFIED SCOUTING AND A PILOT INTEGRATED PEST MANAGEMENT PROGRAM WOULD BE STRONGLY RECOMMENDED.

INFO UNCLAS SECTION 02 OF 02 DAKAR 12181

7. HUIDLESTON AND EDWARDS ARE FINALIZING THEIR REPORT AND EXPECT TO DEPART DAKAR AT THE END OF THE WEEK.

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