

GRASSHOPPER ASSESSMENT ASSIGNMENT  
MALI, AFRICA

Submitted To:

Office Of Foreign Disaster Assistance  
U.S. Agency For International Assistance

Submitted By:

Michael G. Hopf  
Operations Specialist  
U.S.D.A. Forest Service

TABLE OF CONTENTS

	Page
I SUMMARY.....	1
II OPERATIONAL PROBLEMS	
A. COMMUNICATIONS.....	2
B. AIRCRAFT CONTRACTS.....	2
C. AIRSTRIP CONDITIONS & LOCATIONS.....	4
D. PROCUREMENT & STORAGE OF PESTICIDE.....	5
E. AVAILABILITY OF COUNTRY MAPS.....	5
F. SAFETY (PESTICIDE HANDLING).....	5
III CONCLUSION.....	6

I. SUMMARY

On August 6, 1986, I was assigned to an assessment team in the capacity of Operations Specialist to review the threat of grasshopper infestations within the country of Mali, Africa.

On August 10, after briefings in Washington D.C, our team departed for Bamako, Mali and arrived on August 11. After discussions with U.S.A.I.D. and local Government Agencies, several field observation trips, and the completion of evaluations of different pesticides by means of aerial application, our team departed the country on September 8, 1986.

Field surveys within the areas observed proved low populations of grasshoppers with the exception of the area surrounding Safintara (west of DIII) which was the test site for the evaluation of the pesticides.

It should be recognized that, possibly, due to isolated and spotty rainfall across Mali during our assessment is a direct result for the low numbers of grasshoppers observed.

The following deals with the problems I encountered during the period of time spent in the country and recommendations toward possible solutions.

## II. OPERATIONAL PROBLEMS

### A. COMMUNICATIONS

Problem: This deals only with respect to two-way radio communications. The current radio system in use facilitating U.S.A.I.D. Mail consists of two radio frequencies. A VHF-FM system designed for short range, car-to-car use. Since there are no existing repeaters installed in the country there is no long range application for this system.

The second system is a High Frequency (HF) unit that is designed for long range communications that is used between U.S.A.I.D and units in the field. Most all of the U.S.A.I.D. vehicles are equipped with both radio frequencies.

The VHF-FM system is currently adequate for the intended use however, the H.F. system, and most critical due to its long range capacity, appears to be ex-military surplus units with no way of knowing the age or who manufactured the unit. The transmit watt output is questionable for the distances communications are required. In addition, the antenna must be tuned to achieve the maximum signal strength. In some cases, the U.S.A.I.D. employed drivers did not understand the procedures involved with tuning the antenna.

The loss of communications between U.S.A.I.D. and units in the field occurs all too often with the system currently in use.

Recommendation: The H.F. Radio is a viable communications link. Currently there are numerous sources of supply in the United States that provide State-Of-The Art H.F. units that offer greater transmit/receive capability than what is in use currently in Mali. In addition, automatic antenna tuners are available which eliminates the possibility of mis-tuned radio signals. The existing radios in use should be replaced with a new H.F system.

### B. AIRCRAFT CONTRACTS

Problem: There are several problems dealing with contracting for Aviation Services. Because of the lack of competition in and around Bamako the few local operators, for the most part, dictate to U.S.A.I.D. what they want in a contract rather than what is in the best interests of the Mission.

1. Aircraft Contracts are written to provide compensation on an hourly basis with a minimum number of hours guaranteed per day.

Recommendation: Offer contracts on a per hectare treated basis. Too often airstrips that are considered for loading out of are thirty minutes or more from the area targeted for treatment, creating a negative cost/benefit ratio. By contracting by the hectare treated produces incentive for the contractor to complete applications in the most expedient fashion. The contracts should not include more than 1-1/2 hours guaranteed per day. This should be sufficient and equitable for both parties.

2. There are no requirements within the aircraft contracts that address "Contractor Furnished" avionics, navigational devices, fuel and pesticide handlers, and safety equipment.

1 inspected aircraft to be placed under contract for aerial application that did not have compatible radio communications with those at the target areas had no fire extinguishers or first aid kits on board, and no way of navigating with the exception of "dead reckoning" by means of compass only.

Recommendation: All aircraft contracts to include the following "contractor furnished equipment" section:

Avionics - Shall provide an operational H.F. radio system for communications with contracted agency.

Navigation - Shall provide a navigational guidance system to insure for flight planning purposes and accurate spray swath alignments. I.E. Loran C Nav. System, I.N.S. (Inertial Nav. System) or Omega.

Fuel and Pesticide Handler - Shall provide at least one person to facilitate the loading of aviation fuel and pesticide in the aircraft.

Safety Equipment - Shall provide (installed within the aircraft) one fire extinguisher, one emergency locator transmitter, and one first aid kit

3. By Contract, U.S.A.I.D. provided aviation fuel and lubricants and was responsible for transporting and pre-positioning at various airstrips.

Recommendation: Considering the expense of aviation fuel at Bamako (U.S. \$1.80 per gal. at a minimum) insist on the contractor furnishing his/her own fuel and lubricants and U.S.A.I.D. to be responsible for the transportation and the pre-positioning at various airstrips. There has got to be a compromise as this is too costly for one party to provide for both.

4. U.S.A.I.D. agreed to provide food and lodging for pilots and mechanics while operating in the field and to provide for overnight security of the aircraft.

Recommendation: Actually, it is more cost effective to offer per diem U.S. \$50.00 to \$75.00 per day for overnight allowances rather than deal with the logistics of arranging for meals and lodging. The aircraft overnight security would also be provided by the contractors fuel and pesticide handler.

5. Within the contracts I observed, I did not see mention of pilot duty day or flight time limitations.

Recommendation: All of our Forest Service Contracts contain a Flight Time and Duty Limitations clause. The F.S. specifies the pilots can only accumulate up to eight hours of flight time in any one day and can be on duty no longer than fourteen hours in any one day thus creating a rest period of ten hours away from the contract. I'm concerned that if a contract were awarded over a thirty day period little thought would surface toward the relief and safety of the pilot.

I strongly suggest contracts include some type of pilot flight time and duty day limitation.

6. There was no evidence of follow-up action regarding contract administration and enforcement.

Recommendation: Assign a Contract Officers Representative (U.S.A.I.D. or Malian Representative) who is familiar with the scope of the contract to provide for administration and enforcement of the contract through completion, i.e. verify hectares treated, pilot flight time and duty day limits are not violated, and aircraft in and out times are recorded.

7. Too often as a result of unavailable transport category aircraft passengers are permitted to fly on aerial application aircraft.

Recommendation: Again the Forest Service places aerial application aircraft within the "Restricted Category" which permits ONLY pilots and mechanics to ride on board. This should be included within the contract.

#### C. AIRSTRIP CONDITIONS AND LOCATIONS

Problem: Adequate airstrips are too few and far between to attempt multiple small aircraft application project.

Recommendation: Inspect on a periodic basis the existing airstrips at Balle, Mourdiah, Lere (west of Niafunke), and the construction of at Fallou south of DIII. These villages appear to be located within a high risk area. In order to reduce excessive distances for spray operations, there is an urgent need to act on these airstrips.

#### D. PROCUREMENT OF PESTICIDE AND STORAGE

Problem: It appears that once pesticides arrive at Abijan it requires anywhere from thirty to sixty days to transport to various locations within Mali. In addition, storage for pesticides until use are inadequate.

Recommendation: The distribution of pesticides to areas identified as being high risk should be an ongoing process to be conducted well in advance of the rainy season. The storage problem is a little more complicated considering the inaccessibility of Mali possibly working with the Plant Protection Agencies will help bridge the gap.

#### E. AVAILABILITY OF COUNTRY MAPS

Problem: Upon our arrival in Bamako we requested detailed maps of Mali. We were told that due to military activity within the country over the past years the Malian Military was not permitting or allowing the issuance of country maps. With the few large scale maps that we had it was difficult to track, plan for, and plot on-going and projected activities.

Recommendation: As soon as possible, U.S.A.I.D. and Malian Plant Protection Agencies should apply pressure towards the Malian Government and/or Ministry of Defense to allow the acquisition of necessary maps.

#### F. SAFETY (PESTICIDE HANDLING)

Problem: Adequate personal protective and mixing equipment was not observed as being available. Rubber gloves and coveralls were available at the airstrip for those involved however, there were no fire extinguishers, first aid kits, or dependable respirators on hand.

Recommendation: Plant Protection Agencies have the expertise in providing training and safety courses involved with pesticide handling and mixing. Procurement of personal protective equipment in the future is a must.

### III. CONCLUSION

Our Assessment Team tasks included several field trips, discussions with local Government Agencies, and field evaluations of different pesticides by means of aerial application.

Although our Team spent only thirty days assessing the existing condition, I feel a representative evaluation was made. It should be realized that during our assessment the high risk areas within Mali had received only spotty and isolated rainfall which is not conducive toward wide-spread hatchings.

My recommendations and measures to be taken as a follow-up to our assessment are as follows:

- A. Distribution of pesticides and adequate storage within high risk areas as determined by survey findings, prior to the rainy season.
- B. If the situation dictates aerial application aircraft contracts must be modified to include some of the recommendations contained in this report.
- C. If U.S.A.I.D. continues to be a significant donor, I suggest a Team with a make-up of specialists similar to our assessment team support and assist U.S.A.I.D. in monitoring any subsequent emergency programs.