

United States
Department of
Agriculture



Animal and
Plant Health
Inspection
Service

Guatemala MOSCAMED Program

Environmental Analysis
December 1996

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Agency Contact:

Alan Green
Assistant Director
Operational Support
International Services
Animal and Plant Health Inspection Service
U.S. Department of Agriculture
4700 River Road, Unit 67
Riverdale, MD 20737-1233

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I. Need for the Proposed Action

The Mediterranean fruit fly or Medfly, *Ceratitidis capitata* (Wiedemann), is one of the world's most destructive agricultural pests. A pest of over 200 fruit and vegetable crops, the Medfly is found in Europe, Asia, South America, Central America, Australia, and Hawaii. Because of its destructive potential, there have been major and costly efforts to eradicate the pest each time it was introduced into the United States, beginning in 1929. Medfly was introduced into Central America in 1955 and spread by the mid-1970's to Mexico. Through a cooperative program (the MOSCAMED Program), the United States, Mexico, and Guatemala eradicated Medfly from Mexico in 1982.

Following Medfly eradication in Mexico, the U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS), the Government of Mexico, and the Government of Guatemala jointly proposed and implemented the Guatemala MOSCAMED Program to eradicate the Medfly from Guatemala. In compliance with Executive Order 12114, "Environmental Effects Abroad of Major Federal Actions," APHIS prepared an environmental analysis (EA), the "Guatemala MOSCAMED Program, Environmental Analysis—1991." It comprehensively analyzed alternative program strategies and controls, unique characteristics of the Guatemalan environment, potential environmental consequences, required mitigation of environmental impacts, and applicable environmental law.

On December 7, 1993, the Assistant Secretaries of Agriculture of the United States, Mexico, and Guatemala accepted the EA as "the official and guiding environmental document for operations in Guatemala." That document remains the principal environmental analysis for the Guatemala MOSCAMED Program, and is incorporated by reference in this document. A second analysis, the "Guatemala MOSCAMED Program Summary Environmental Analysis, January 1996," was prepared when control operations were initiated in southwestern Guatemala to counter severe outbreaks of Medfly. This analysis (which replaces the second analysis) has been prepared for modifications to program operations and the addition of an improved technology, the use of the chemical Suredye®.

APHIS' authority to cooperate in international pest control programs is based upon provisions of the Organic Act of 1944 (7 U.S.C. 147a(b) section 102(b)). This Act authorizes the Secretary of Agriculture to cooperate with the governments of all countries of the Western Hemisphere, or the local authorities thereof, and with international organizations or associations, in carrying out necessary surveys and control operations in those countries in connection with the detection, eradication, suppression, control, and prevention or retardation of the spread of plant pests.

II. Alternatives

This environmental analysis incorporates by reference all of the analysis of the original EA, but focuses on and summarizes the potential environmental effects of recent program modifications and the addition of a new control chemical, Suredye®. The proposed program activities in Guatemala will continue the same basic strategy (eradication of Medfly from Guatemala using integrated control) described and analyzed in detail in the original EA, and endorsed by the Assistant Secretaries of Agriculture of the United States, Mexico, and Guatemala. Integrated control offers the combination of maximum environmental protection with program efficacy. For this program, it uses singly or in combination any of the following component control methods: sterile insect technique (SIT), chemical control, cultural control, and regulatory control.

The new program area consists of 50,000 acres in southwestern Guatemala in the vicinity of El Tumbador (see map on page 7). The program will concentrate on applications to coffee, the primary host plant of Medfly in this area. The area consists of tropical humid fields and forests in the Pacific lowlands (to elevations of 2,000 ft). The seasonal rains of this region limit the period of time when chemical applications can be used effectively. A total of four chemical applications would be made to each treatment area, at 7-day intervals. The completion of all chemical treatments within 4 weeks of the starting date in January would ensure that the applications precede the rainy season and optimal efficacy against the Medfly is achieved. This timing of chemical application will ensure that the Medfly populations will be lowered to the level where SIT is effective and that there will be less loss of insecticide residue from washoff or runoff. Substantial improvements have been made recently in the areas of sterile insect technique (SIT) and chemical control. APHIS has added a new, genetically-sexed strain of sterile Medflies to its program operations. The new strain appears substantially more effective and will be used, beginning with the 1997 program.

Suredye®, a new chemical that greatly reduces the potential for environmental effects, also is proposed for use beginning with the 1997 program. The active ingredients in Suredye® consist of 68% phloxine B and 32% uranine. The Suredye® formulation proposed (1% Suredye®, 20% fructose, 40% Mazoferm E802, and 39% water) was highly effective against Medfly in 1996 field trials. Suredye® would be applied primarily from fixed-wing or rotary-wing aircraft, but also may be applied from the ground. Most aerial applications in the northern part of the program treatment area will be made by fixed-wing aircraft. The southern part of the program treatment area consists of an intermittent pattern of Medfly host plants. Some locations in the southern part are anticipated to be treated by helicopters or ground application.

The use of malathion bait spray will be considerably diminished in the 1997 program; its use will be limited to ground applications in locations where aerial application would be unsuitable. This would include locations where effective applications could not be made due to natural or man-made hindrances to safe aerial application or isolated locations where the efficacy of malathion bait spray would be

anticipated to be more effective at lowering Medfly populations to levels suitable for use of SIT.

III. Anticipated Environmental Effects

A. Effects in General

APHIS (and the Guatemala MOSCAMED Program) selected eradication of Medfly from Guatemala using integrated control. Integrated control offers the combination of maximum environmental protection with program efficacy. Integrated control, for this program, uses singly, or in combination, any of the following component control methods: sterile insect technique (SIT), chemical control, cultural control, and regulatory control. Each of those control methods was analyzed in detail in the EA except some new technical innovations to improve the effectiveness of these control methods.

The most important component of a Medfly control or eradication program is sterile insect technique (SIT). APHIS has made remarkable progress in adding a new, genetically-sexed strain of sterile Medflies to its program operations. The new strain appears substantially more effective, has no environmental risk, and may reduce the need for or number of chemical pesticide treatments. This operational variation of SIT therefore will tend to reduce adverse environmental effects. This new strain will be used in the 1997 program.

The use of Sure dye[®] bait spray was not developed for program use until recently, so it was not considered in the previous EA. However, APHIS has prepared two risk analyses of Sure dye[®] (USDA, APHIS, 1995a; USDA, APHIS, 1995b) in anticipation of future program use. The results of these risk assessments are applicable to the proposed Guatemala MOSCAMED Program and their contained information is incorporated by reference. Sure dye[®] bait applications are low risk to human health, most wildlife, and environmental quality. No adverse human health effects are anticipated for program workers or the general public, even under accidental exposure scenarios. The only organisms likely to be affected by Sure dye[®] bait spray applications are those terrestrial invertebrates that are attracted to and feed on the protein hydrolysate. This includes some species of acalypterate muscoid flies (such as fruit flies), plant bugs, ground beetles, midges, gnats, ants, and soil mites. Sure dye[®] is practically nontoxic to vertebrates and poses no risk to invertebrates that do not feed on the protein bait. The potential for adverse effects is lower with Sure dye[®] bait spray than with malathion bait spray. Nontarget invertebrates at risk of adverse effects from malathion bait spray applications and unlikely to be affected by Sure dye[®] bait spray include honey bees, lacewings, calypterate muscoid flies, and spiders. The risks to environmental quality from Sure dye[®] bait spray applications are minimal due to low application rates and rapid degradation.

The EA considered unique aspects of the Guatemalan environment—Guatemala's human population, geography, wildlife, land use, and water resources—focusing on

the program use of malathion bait. No significant adverse environmental effects were foreseen for humans, including program workers or the public. No significant adverse environmental effects were determined for nontarget species, including nontarget invertebrates. Humans and other nontarget species are protected from adverse environmental effects by program design, routine safety procedures, and specially established mitigative measures. The results of the risk assessments indicate that Sure dye[®] bait spray poses even less risk to human health, wildlife, and environmental quality than malathion bait spray, so no significant adverse environmental effects are anticipated for the proposed program chemical applications.

Environmental conditions and Medfly host crops (principally coffee), such as those which exist in the proposed treatment area of Guatemala, were considered in the EA's determination of potential environmental effects. Because the same kinds of conditions were considered and because the adverse environmental impacts are either unchanged (malathion bait spray) or diminished (Sure dye[®] bait spray), no significant environmental effects are anticipated for humans, the physical environment, or nontarget species as a consequence of the proposed treatments in Guatemala.

Mitigative procedures (EA, section VII) for the program include operational procedures that ensure the safe aerial and ground application of pesticide, safe storage and handling of pesticide, and protection of nontarget pollinator species.

No cumulative impacts (those that result from the incremental impact of the program action when added to other past, present, and reasonably foreseeable future actions) are predicted for the proposed treatments. Because of the program's combination of integrated control, low pesticide application rates, routine operational procedures, and mitigative measures, there is no potential for unavoidable environmental impact.

B. Endangered and Threatened Species

APHIS prepared biological assessments in appendix 8 of the environmental analysis (USDA, APHIS, 1991) for species that are endangered or threatened, proposed for endangered or threatened status, or of concern to Guatemala. Those assessments prepared in 1991 revealed no expected significant adverse environmental effects. Because of the proposed treatments in Guatemala, APHIS reviewed the latest version of "Endangered and Threatened Wildlife and Plants" (50 CFR 17.11 & 17.12), dated October 31, 1995, and confirmed that there were no changes for Guatemala on the list.

During the preparation of the EA, particular concern was noted on behalf of an endangered species, the golden-cheeked wood warbler (*Dendroica chrysoparia*). All available information indicates that the warbler is not found in or near the proposed treatment area in southwestern Guatemala.

Special consideration was made for the potential use of Sure dye[®] bait spray to affect endangered, threatened, and proposed wildlife and plants. A review of these species

found that no adverse effects are anticipated from the application of Sure dye[®] bait spray in the program area.

Because the potential risks to wildlife and plants by the proposed program are either unchanged (malathion bait spray) or decreased (Sure dye[®] bait spray) from those analyzed in the EA in 1991, no adverse effects are anticipated for the endangered, threatened, and proposed species as a consequence of the proposed treatments in Guatemala.

C. Improved or Emerging Technologies

Although biological control was not considered operationally feasible at the time of the preparation of the EA in 1991, APHIS continues to investigate the use of biological control agents. APHIS conducted large-scale tests of parasitoids in 1996 in Guatemala. These tests are expected to continue in 1997. The tests will be designed to give evidence of the effectiveness of parasitoids, alone or in conjunction with SIT, in eradicating or substantially suppressing populations of wild Medflies. Because of the nature of the tests and the specificity of the biological control organisms, no adverse environmental effects are anticipated.

D. Summary of Impacts

In summary, the proposed program treatments in Guatemala will use the same control strategies that have been analyzed comprehensively in the EA (“Guatemala MOSCAMED Program, Environmental Analysis—1991”) prepared earlier for the program or in the special risk assessments (USDA, APHIS, 1995a; USDA, APHIS, 1995b). Review of the proposed program treatments, the area of those treatments, the endangered and threatened species of Guatemala, and operational variations (which are considered insignificant with respect to their capacity to generate environmental impact) confirms the adequacy of the existing EA, the risk assessments, and the mitigative procedures to address the relevant issues of the proposed program. The Guatemala MOSCAMED Program would use proven technologies to eradicate Medfly from Guatemala in a manner that is both efficacious and environmentally sound. Comprehensive environmental analysis of the proposed program indicates that it will have no significant effect on humans or their environment.

IV. Agencies and Persons Consulted

David Bergsten
Toxicologist, Environmental Analysis and Documentation
Policy and Program Development
Animal and Plant Health Inspection Service
U.S. Department of Agriculture
4700 River Road, Unit 149
Riverdale, MD 20737-1238

Alan Green
Assistant Director, Operational Support
International Services
Animal and Plant Health Inspection Service
U.S. Department of Agriculture
4700 River Road, Unit 67
Riverdale, MD 20737-1233

Nicanor J. Liquido
Laboratory Director
USDA-ARS Tropical Fruit
and Vegetable Research Laboratory
P.O. Box 4459
Hilo, HI 96720

V. References

USDA, APHIS, 1991. Guatemala MOSCAMED Program Environmental Analysis—1991.

USDA, APHIS, 1995a. Risk Assessment: Suredye Insecticide Trials, January 1995.

USDA, APHIS, 1995b. Suredye Insecticide Applications: Human Health Risk Assessment - May 1995.

MOSCAMED Program Map

Area Proposed for Aerial Application of Sure dye®

Southwest Center of Operations December 1996–January 1997

