ENVIRONMENTAL MONITORING PLAN

for diazinon

2010 Mediterranean Fruit Fly Cooperative Eradication Program

Prepared by
Plant Protection and Quarantine - Environmental Compliance
Animal and Plant Health Inspection Service
United States Department of Agriculture

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GENERAL

The United States Department of Agriculture - Animal and Plant Health Inspection Service Directive 5640.1 (4/19/02) commits the Agency to a policy of fulfilling the mandates of the National Environmental Policy Act; the Endangered Species Act; the Federal Insecticide, Fungicide, and Rodenticide Act; and other statutes that require monitoring the effects of Federal programs on the environment. The monitoring described in this document partially fulfills these commitments for the Mediterranean Fruit Fly Cooperative Eradication Program (the Program).

BACKGROUND

The Mediterranean fruit fly or Medfly, *Ceratitis capitata*, is a major pest of agriculture throughout many parts of the world. Because of its wide host range (over 300 species of fruits and vegetables) and its potential for damage, the Medfly represents a serious threat to U.S. agriculture. Between June 2 and June13, 2010, 35 Medflies were identified at six different sites within the city of Boca Raton, Palm Beach County, Florida. The U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS) and the Florida Department of Agriculture and Consumer Services (FDACS) are cooperating to eradicate the Medfly infestation and prevent the spread of Medfly to non-infested areas of the United States.

For many species of exotic fruit flies, effective nonchemical control or eradication techniques do not exist. The initial treatment plan for Medfly within the eradication zone includes ground applications of an organic formulation of spinosad bait to the foliage of host trees and plants applied with hydraulic spray or hand-spray equipment. A diazinon soil drench will be applied to sites where Medfly larvae have been detected. Sterile Insect Technique (SIT) will also be used on the Medfly population—the eradication zone will be flooded with a continued release of sterile male Medflies in order to disrupt the reproduction cycle and thereby reduce the wild population. The public will be notified 24 hours prior to insecticidal treatment or physical removal of potentially infested fruit from their property, and provided with guidelines for post-treatment precautions and harvest protocols. Treatments will be repeated daily for 7 to 14 days (or one Medfly life cycle). The eradication project will continue for three life cycles past the date of the last Medfly trapped.

The monitoring described below is for Program use of diazinon, the use of which is authorized under a FIFRA section 18 Federal Quarantine Exemption. Minor risks from the use of diazinon have been suggested by EPA, and environmental monitoring will be used to provide information to the program regarding these risks. No monitoring is described for the use of spinosad at this time, due to the experience with the Program use of this chemical and its very low toxicological risk, particularly to humans.

MONITORING

This environmental monitoring plan describes the objectives of the monitoring effort and provides guidance for selecting sampling sites, collecting environmental samples, determining sampling frequency and the number of samples. It also lists what observational data must be collected in the field and what other supporting documentation must accompany all environmental samples. This plan does not include any monitoring that might be required following consultation with the U.S. Fish and Wildlife Service (FWS) regarding endangered or

threatened (E&T) species. Should monitoring requirements result from these consultations, this plan will be modified to incorporate them. Worker safety monitoring will not be addressed in this plan but is addressed in the APHIS Safety and Health Manual.

OBJECTIVES

1. Examine the potential for exposure of the public and wildlife to diazinon from soil drench treatments conducted as part of this program.

2. Demonstrate the effectiveness of required protection measures to avoid adverse effects to federally protected species.

3. Investigate any reports of possible adverse effects on public health or wildlife due to program treatment.

MONITORING METHODS

Before undertaking any environmental monitoring for the treatment season, contact the Environmental Compliance Team (ECT) in Riverdale, Maryland for specific guidance at (301) 734-8876 or (301) 734-7592 if there are any questions regarding the monitoring plan. Note that Standard Operating Procedures (SOPs) listed below are available at http://www.aphis.usda.gov/plant_health/plant_pest_info/emt/support_docs.shtml. Minimum samples sizes for individual media are provided at the end of this section.

1. *Examine the potential for exposure of the public and wildlife to diazinon from soil drench treatments conducted as part of this program.*

Sampling in regards to human health. The main human health concern with the use of diazinon is a potential risk to children. Select at least three sites where soil drench treatments with diazinon will be conducted. Sites of the greatest concern are residences, schools, and playgrounds. Prior to a treatment and within 24 hours after a treatment collect, collect composite samples of surface soil from the treatment area. Follow the guidelines provided in *SOP EM-06 Collection of Soil Samples*.

Sampling in regards to avian dietary items. The main environmental concern with the use of diazinon is a potential risk to birds. Select at least three sites where soil drench treatments with diazinon will be conducted. Prior to a treatment and within 24 hours after a treatment, collect composite samples of avian dietary items from the substrate within the drip line of trees where the treatment were made. The composite sample will consist of seeds, forbs and invertebrates. If such samples are not available, collect an appropriate surrogate sample, such as leafy vegetation from the treatment area. Follow the guidelines provided in *SOP EM-07 Collection of Vegetation Samples* and *SOP EM-08 Collection of Insect Samples*.

<u>General Information</u>

The sampling schedule described above is for guidance and should be modified as appropriate to best address the reason for sampling. For example, additional soil samples may be taken through time if further characterization of diazinon degradation would prove useful to answer possible

questions raised by the Program or the public. An Environmental Monitoring Supplies Checklist is provided at the end of this plan. Use this form to ensure field personnel have the appropriate number and type of supplies and equipment for sampling. This form should also be used to order monitoring supplies from Center for Plant Health Science Technology (CPHST) analytical chemistry laboratory in Gulfport, Mississippi. Note that this form is used for all monitoring directed by ECT and not all supplies will be needed for all pest control programs.

Minimum Required Sample Sizes

The following are minimum samples sizes for various media that might be collected. This indicated amounts should be the minimum collected to characterize a single sample location. Composite samples may be made as appropriate if sample media is limited, but must be noted as such on the sample documentation. Samples of other media should not be collected, as appropriate analytical methods may not be readily available.

- WATER: 500-750 ml sample size
- SOIL: (assuming sandy loam, not potting media) 120 g minimum sample size per analysis
- VEGETATION & TWIGS: 15 g minimum sample size per analysis
- INSECTS: 3-5 g minimum sample size per analysis

2. *Demonstrate the effectiveness of required protection measures to avoid adverse effects to federally protected species.*

The Fish and Wildlife Service has reviewed the proposed expansion of the Medfly treatment area in Palm Beach County, FL. It is the Service's opinion that no candidate or federally listed endangered or threatened species are likely to be adversely affected by the expansion of this project if (1) applications occur using ground-based equipment and (2) applications are restricted to the regulated boundary. Should the eradication area expand to areas where protected species become a concern, monitoring may be required and this monitoring plan will be updated accordingly.

3. *Investigate any reports of possible adverse effects on public health or wildlife due to program treatment.*

Priority sampling will be conducted to investigate incidents of unknown origin involving non-target species or other unintended environmental or human health impacts possibly associated with Program-applied diazinon. Information about priority sampling can be found in *SOP EM-09, Priority (Emergency) Sampling*. Collect priority samples as soon as possible after the complaint, request, or problem is reported. Contact the ECT at (301) 734-7592 or 734-8876 to collaborate on a sampling plan, sampling methods, and types of samples to collect in order to optimize the investigation. If the incident occurs on a weekend, commence the investigation and sampling without delay, and contact the ECT via email immediately or as soon as possible on Monday.

Proper documentation of the incident, investigation, and samples is extremely important. When responding to priority incidents, send to the ECT all GPS maps showing the site, location where samples were collected, the nearest treatment area, and treatment history. Be sure to completely

fill out all information on the APHIS 2060 forms with each sample. Be sure to provide an incident/complaint report to the ECT, along with any other information that you feel will be helpful in resolving the incident (i.e. photos, observations at the site, interviews, etc.).

SAMPLE DOCUMENTATION

All samples must be documented using individual originals of APHIS Form 2060 (see page 10-11 for a copy.) Draw a clear diagram of the sample locations relative to the sensitive site and the treatment block. The diagram should include where each sample is collected, important features (i.e. residences, water bodies, roads) identified with labels, a North arrow, and an approximate scale. In addition to the site map drawn in the Remarks section of the 2060 form documenting the sample and treatment locations, sample figures can be created either on a Geographic Information System (GIS) map, on a separate piece of paper. If you are collecting a series of samples from the same site, submit the map and diagram only once, as long as the treatment block, sensitive site, and each sample location are clearly indicated on the map or the appropriate sections of the APHIS 2060 form.

Complete a separate APHIS 2060 form for each sample. Instructions for completing the 2060 forms can be found on the back of form originals. For each sample; submit the blue copy of the APHIS 2060 form with the sample, and the white copy to the CPHST Gulfport laboratory in the sample shipping container but separate from the sample, and the yellow copy (and any maps, photos, etc.) to PPQ Environmental Compliance in Riverdale, Maryland. Keep the pink copy in your local office.

Properly identify each sample as "routine" or "priority" in box 12 of the 2060 form. An incorrect identification regarding the nature of the sample creates confusion for those who must interpret the data and delays the processing of samples. Mark samples as "priority" only for instances where a fast turnaround of samples is required. This applies to all complaint investigations, spill incidents, potential human health issues, and other samples considered to be of very high importance. Otherwise, mark the sample as "routine."

SHIPPING OF SAMPLES

Ship all samples using some form of overnight delivery. See *SOP EM-17, Packaging and Shipping of Samples* for details. This applies to all samples, whether they are priority or routine. Do not ship samples using the U.S. Postal Service Priority Mail or standard ground service with other carriers. Preservation of the samples by freezing requires overnight delivery rather than alternative shipping arrangements which are more likely to result in the melting of ice and samples.

With the exception of neat (pure) chemical, be sure that all samples are frozen, shipped in a cooler box (not a regular cardboard box), and kept frozen during shipment. Neat samples should not be frozen, but should be placed on ice in a cooler box when shipped. To keep samples cold, use dry ice when possible since it does not turn to liquid when thawed and will not ruin forms or samples. Water samples should not be shipped in dry ice, since it will cause the sample containers to crack or break. Since dry ice may not be available in all areas, regular ice can be used for shipping any samples, but only if the ice is placed in a separate sealed container. Either use "blue ice" containers (the reusable plastic containers with the blue liquid inside) or contained

regular ice (that is, seal the ice in zip-loc bags). Unsealed ice will melt and leak during shipment, causing unnecessary concern when received at the laboratory and possibly damaging the samples and documentation.

DISCRETIONARY MONITORING

Additional monitoring samples can be collected at the discretion of program staff. Although the monitoring outlined in this plan should be adequate to generate the data needed to meet the objectives, the program may decide that additional sampling is necessary. Examples might include sites where there have been issues in previous years, sites that are highly visible to the public or are politically sensitive, or sites where environmental monitoring might help prevent future conflicts. Guidance involving any of these cases can be obtained by contacting PPQ Environmental Compliance in Riverdale, Maryland.

RESPONSIBILITIES

APHIS-PPQ Field Personnel or Cooperators will:

a. Ensure that sufficient resources from the program are allocated for completing the monitoring detailed in this Environmental Monitoring Plan.
b. Coordinate with federal and local wildlife officials to identify E&T species and critical habitats near or within areas that may be affected by program activities, and inform PPQ Environmental Compliance in Riverdale, Maryland about any protection measures and monitoring requirements.
c. Implement appropriate operational procedures, mitigations, and protection measures.
d. Identify monitoring sites for sampling, collect samples, record all relevant environmental and sample data, and submit samples to the CPHST Gulfport laboratory for residue analysis.
e. Submit information describing the sample, sampling site, and treatment to Environmental Compliance.
f. Inform Environmental Compliance when priority samples are collected and the CPHST Gulfport laboratory when priority samples are shipped.

APHIS-PPQ Environmental Compliance staff in Riverdale, Maryland will:

a. Provide training and support for the implementation of this monitoring plan.
b. Respond to requests for additional information by field personnel when special sampling requirements occur.
c. Review and interpret pesticide residue data.
    (1) If adverse environmental effects are suspected: inform the Program Director and the National Program Manager, make recommendations if modifications to program operations might be in order, and reinitiate consultation with the Fish and Wildlife Service or National Marine Fisheries Service, if needed.
    (2) Send raw data for any priority samples within 1 working day of receipt from the CPHST Gulfport laboratory to the Program Coordinator.
    (3) Prepare a final report within 90 days of analysis of all samples by the CPHST Gulfport laboratory and receipt of documentation from the field.

d. Maintain liaison with field personnel to assure monitoring is being conducted and to review pertinent documentation for accuracy and completeness. Feedback to field personnel will be done in a timely manner so procedures can be modified, if needed.

APHIS-PPQ Center for Plant Health Science Technology analytical chemistry laboratory staff in Gulfport, Mississippi will:

a. Prepare and ship sampling containers and equipment required for collection and submission of environmental monitoring samples.
b. Provide instructions and training on methods for collecting, preserving, and shipping samples.
c. Analyze samples for the program pesticides specified on the associated 2060 Form.
d. Input APHIS Form 2060 data into the database system at the CPHST Gulfport laboratory. Send data to Environmental Compliance electronically within 23 working days of sample receipt for routine samples and five working days for priority samples.

OMB NO.: 0579-0117

PRESS HARD,
YOU ARE MAKING 4 COPIES
See Guidelines on back of this form.
Use a separate form for each sample collected.

Environmental Monitoring Form

41033H

1. Program	2. State	3. County	4. Site Identification	5. Date Collected MO-DA-YR	6. Time Collected

7. Sample Description	8. Location DISTANCE (FT.)	DIRECTION	9. Pesticide	10. Formulation	11. Application Method	Rate	12. Sample Type
							☐ Priority ☐ Routine

13. Dates Treatment Applied

1 Month	1 Day	2 Month	2 Day	3 Month	3 Day	4 Month	4 Day	5 Month	5 Day	6 Month	6 Day	7 Month	7 Day	8 Month	8 Day

14. Total Trtmnts	15. Time of Last Treatment	16. Soil Type *(from county soil survey)*	17. Land Slope *(Degrees)*	18. Last Rainfall MONTH	DAY	AMT.	19. Wind SPEED	DIRECTION	20. Rel. Hum.

21. Water Body Type *(Pool, Pond, Reservoir, Well, Stream, etc.)*	Size *(Acres or Width)*	22. Water Depth *(Feet)*	Velocity *(Ft./Min.)*	Temp. *(°F)*	pH *(include decimal pt.)* Before	After	Dissolved Oxygen *(mg/L)*	23. Average Air Temp. *(°F)*

24. **Remarks** *(e.g. Sketch of site, unusual occurrences, additional information unique to sample, etc.)*

25. Lat.	
Long.	

26. Name of Collector *(type or print)*	27. Initials	28. Telephone Number of Collector

FOR LABORATORY USE ONLY

29. Date Sample Received	30. Date Analyzed	31. Results	Public reporting burden for this collection of information is estimated to average 0.5 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Agriculture, Clearance Officer, OIRM, AG Box 7630, Washington, D.C. 20250; and to the Office of Information and Regulatory Affairs Office of Management and Budget, Washington, D.C. 20503.
32. Laboratory Accession Number	33. Condition of Sample on Receipt		

APHIS FORM 2060 (OCT 99) replaces APHIS FORM 2060 (MAR 94) which is obsolete.

PT. 1 LABORATORY

Front page of APHIS Form 2060, the Environmental Monitoring Form.

Guidelines

Every sample must be accompanied by a completed APHIS Form 2080. The present guidelines are generic and will be superseded by specific instructions included in an Environmental Monitoring Plan for a particular program or operation. If you have any questions about how to fill out the form, or any other questions about monitoring, please call the Environ. Monitoring Team at 301-734-7175.

1. **Program**: Enter the most accurate description, or a commonly used acronym, of program.
2. **State**: The two letter postal abbreviation of the state in which the sample was collected.
3. **County**: The county in which the sample was collected.
4. **Site ID**: Assign a number which uniquely identifies the site (can be alphanumeric).
5. **Date Collected**: The date that the sample was collected.
6. **Time Collected**: The time the sample was collected, using a 24 hour clock.
7. **Sample Description**: Enter what the sample is (e.g., soil, sediment, water, grass, dye card, grasshoppers).
8. **Location**: The distance (in feet) and direction (e.g., 242 degrees as measured with a compass) from the nearest point of the treatment block to the site where the sample was collected.
9. **Pesticide**: The name of the pesticide for which the laboratory should analyze. If analyses for more than one pesticide are necessary, list the other pesticides in the Remarks block.
10. **Formulation**: The formulation of the pesticide used (e.g., emulsifiable concentrate, wettable powder).
11. **Application**:
    - **Method**: The method used to apply the pesticide (e.g., fixed wing aircraft, highboy, backpack sprayer, drench).
    - **Rate**: The rate at which the pesticide is applied (e.g., pounds a.i. per acre).
12. **Sample Type**: Check off the appropriate box: Sample types are usually defined as follows:
    - **Priority**: Samples collected to respond to any reported or observed adverse impact (e.g., bird kill, fish kill, public health concern, property damage).
    - **Routine**: All samples not considered priority samples.
13. **Dates Treatment Applied**: The dates treatments applied. If more than 8, then list additional in Remarks block.
14. **Total Treatments**: Enter the total number of treatments.
15. **Time of Last Treatment**: The time of day that the last treatment was completed (use 24 hour clock).
16. **Soil Type**: Enter the type of soil (e.g., sandy loam).
17. **Land Slope**: Enter the slope, measured from the treatment block to the sample collection site (positive degrees above horizontal for an incline or negative degrees below horizontal for a decline).
18. **Last Rainfall**: The date and amount of the last rainfall before the sample collection.
19. **Wind**: The speed (mph) and direction (e.g., 320 degrees as measured with a compass) from which the wind was coming at the time of the last treatment.
20. **Rel. Humidity**: The relative humidity of the air, measured as a percentage (e.g. 75%) at the time of the last treatment.
21. **Water Body**:
    - **Type**: Examples; pool, lake, river.
    - **Size**: Surface area (acres) or width (feet).
22. **Water**:
    - **Depth**: Average depth (feet).
    - **Velocity**: At the sample collection site (feet per minute).
    - **Temp.**: Water temperature (°F).
    - **pH Values**:
      - **Before**: The pH of the water sample.
      - **After**: If a pH adjustment is required to stabilize the sample, enter the pH of the sample after the adjustment.
    - **Dissolved Oxygen**: Enter the oxygen content of the water sample.
23. **Average Air Temp.**: Enter the air temperature at the time of the last treatment.
24. **Remarks**: Additional information concerning the location of the sampling site (sketch of the site or attach a map), weather conditions (additional wind speeds and directions, gusts, cloud cover), circumstances relevant to the results of the sample analysis, and who to report results to if different from collector.
25. **Latitude and Longitude**: Coordinates of sampling site as determined by GPS unit.
26. **Name of Collector**: Print submitter's name.
27. **Initials**: Submitter's initials in script.
28. **Telephone Number of Collector**: Include area code.

Distribution

Laboratory (original) - submit to the USDA-APHIS National Monitoring and Residue Analysis Laboratory (NMRAL), 3505 25th Avenue, Building 4, Gulfport, Mississippi 39501, c/o Environmental Monitoring Coordinator.

Headquarters (yellow copy) - mail to: USDA-APHIS-PPQ, 4700 River Road, Unit 150, Riverdale, MD 20737, along with any attached maps or other documentation.

Collector (pink copy) - the collector will keep this copy on file for reference.

Sample (blue copy) - package with the individual sample so that if several samples are being shipped in the same container, each form will be associated with it's corresponding sample.

Back page of APHIS Form 2060, the Environmental Monitoring Form

ENVIRONMENTAL MONITORING SUPPLIES CHECKLIST

SUPPLIES TO BRING EACH TIME YOU GO TO A SAMPLING SITE					
Monitoring plan/SOP's		Obtain from ECT	Thermometer		
Field log notebook			Ice chest/wet or blue ice		Obtain locally
Compass			Baby wipes		
Wind gauge			2060 monitoring forms		
Indelible marker			Packing/strapping tape		

Run-off Sampling			Dye Cards		
Plexiglas cover			Oil sensitive dye cards		
8"x 8" mesh screen			Water sensitive dye cards		
Tent pegs/nails			5' bamboo poles/stakes		
Funnels attached to caps			Paper/alligator clips		
500 ml bottles			Tacks		
4" PVC pipe, 14" long			4" x 4" plastic bags		
Post hole digger			12" x 12" plastic bags		
Pea gravel			Tweezers/forceps		
Large rocks/bricks			disposable gloves		
Bamboo pole/flagging tape			**Water Samples**		
collapsible cubitainer			Dissolved oxygen kit		
Sodium sulfate (small vials)			collapsible cubitainer		
pH paper/pH meter			Sodium sulfate (small vials)		
Sulfuric acid (squeeze bottle)			pH paper/pH meter		
Styrofoam 'coffin'			Acid or base (squeeze bottle)		Obtain locally

Vegetation/Fish/Insect Samples			Sediment Samples		
Pruning sheers/scissors			Dredge tied to strong rope		
Aluminum foil envelopes			3 gallon galvanized pail		
Strapping tape			Hand trowel		
			3" mesh screen		
			Aluminum foil envelopes		

Soil Samples			Swab/Wipe Samples		
Soil core sampler			3” x 3” sterile cotton pads with resealable plastic bag		
3 gallon galvanized pail			Metric ruler		
Hand trowel			Pencil		
3" mesh screen			Disposable gloves		
Aluminum foil envelopes			Isopropyl alcohol		Obtain locally
Baby wipes					

Neat (Pure) Chemical Formulations			Miscellaneous Supplies		
Amber glass bottle			Labels		
Parafilm			Styrofoam coolers/mailers		
Small mailing tubes			Freezer		Obtain locally
Cat litter/packing material			Dry ice		Obtain locally
Disposable pipette			Resealable plastic bags:		
Pipetting bulb			4" x 4"		
Disposable gloves			6" x 6"		
Protective eyewear			8" x 8"		
			12" x 12"		

Program: _____ **Requested by: _____**

Date: _____ **Phone: _____**

Address: _____

_____

_____

To order supplies, indicate the quantity of each items needed. Fax a copy of this form to the CPHST Gulfport laboratory at 228-822-3137. If fax machines are not working, leave a message with the CPHST Gulfport laboratory supplies manager at 228-323-5329 or 228-822-3106. Please realize that it may be difficult to completely fill order for large quantities of materials.

Note: This is not an exhaustive supply list…items that are not listed here may be available through the CPHST Gulfport laboratory.