

APPENDIX A

Sampling Protocol



California Environmental Protection Agency

AIR RESOURCES BOARD

Monitoring and Laboratory Division
Air Quality Surveillance Branch

Sampling Protocol for Diazinon and its Oxygen Analog Diazoxon Application Study

November 30, 2009

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Signatures:

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Air Quality Surveillance Branch
Air Resources Board

The following protocol has been reviewed and approved by staff of the Air Resources Board (ARB). Approval of this protocol does not necessarily reflect the views and policies of the ARB, nor does the mention of trade names or commercial products constitute endorsement or recommendation for use.

Table of Contents

| <u>Section</u> | <u>Page</u> |
|---|-------------|
| 1.0 INTRODUCTION..... | 3 |
| 2.0 PROJECT GOAL AND OBJECTIVES..... | 3 |
| 3.0 CONTACTS..... | 4 |
| 4.0 STUDY LOCATION..... | 5 |
| 5.0 STUDY DESIGN..... | 5-8 |
| 6.0 SAMPLING AND ANALYSIS PROCEDURES..... | 8-9 |
| 7.0 LIST OF FIELD EQUIPMENT..... | 9 |
| 8.0 QUALITY CONTROL..... | 9-11 |
| 9.0 DELIVERABLES..... | 11-12 |

Figures

| | |
|---|----|
| FIGURE 1: AIR SAMPLER TREE WITH PUMP..... | 7 |
| FIGURE 2: RESIN SORBENT TUBE FIELD LOG SHEET..... | 13 |

Appendix

APPENDIX A: Standard Operating Procedure Sampling and Analysis of O,O-diethyl O-2-isopropyl-6-methylpyrimidin-4-ylphosphorothioate (Diazinon) and the Oxygen Analog (Diazinon).

1.0 Introduction

The California Department of Pesticide Regulation's (DPR) memorandum dated February 5, 2009, "Proposed Toxic Air Contaminant Monitoring For 2009", requests that the Air Resources Board (ARB) conduct a comprehensive air monitoring study for Diazinon and its oxygen analog Diazoxon during an air blast orchard application.

This study will consist of up to six sampling periods; a background sample period, an application sampling period, a post application sampling period ending one (1) hour before sunset, two (2) overnight sampling periods and one (1) daytime sampling period. The background sampling period will be performed for twelve to twenty-four hours prior to application of Diazinon onto an orchard. The application sampling period will begin thirty minutes prior to the application of Diazinon onto the orchard. There will be a total of 68 resin sorbent tube samples (four (4) backgrounds, six (6) collocated, six (6) field spikes, one (1) trip spike, one (1) trip blank, 40 application/post application and ten (10) spares).

Background sampling will be started the day before the application and end approximately one (1) hour prior to the start of the application. Four (4) background samplers on each side of the field along with one (1) collocated sampler and one (1) field spike sampler on the downwind side will sample for twelve to twenty-four hours.

2.0 Project Goals and Objectives

The primary goal of this monitoring project is to measure the concentrations of Diazinon and Diazoxon in the ambient air during and after application.

To achieve the project goal, the following objectives should be met:

1. Identification of monitoring sites that mutually satisfies criteria for ambient air sampling and DPR's requirements.
2. Appropriate application of sampling/monitoring equipment to determine Diazinon concentrations in the air adjacent to the application.
3. Application of relevant field quality assurance/quality control practices to ensure the integrity of field samples.
4. A final report containing all relevant information, data and results gathered in the course of MLD's activities during the planning and execution of this project.

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4.0 Study Location

A Diazinon application is planned for the month of December 2009 or January 2010 in the county of Glenn. The field lies near Artois.

5.0 Study Design

The Diazinon sampling schedule is listed in Table 1 (Sampling Periods). For January 1, 2010 sunrise occurs at 0724 PST and sunset occurs at 1656 PST. Due to the State of California's current furlough and overtime policies one (1) day and one (1) night sampling period are deleted from the schedule.

TABLE 1: SAMPLING PERIODS

| Sample Period Begins | Sample Duration/Time |
|---------------------------------------|---|
| Background (pre-application) | Minimum 12-24 hours |
| Application | Start of application until 1 hour after end of application |
| End of Application (post application) | 1 hour after end of application until 1 hour before sunset |
| 1 hour before sunset | Overnight until 1 hour after sunrise (1 st overnight sample) |
| 1 hour after sunrise | Daytime until one hour before sunset |
| 1 hour before sunset | Overnight until 1 hour after sunrise (2 nd overnight sample) |

- a) Background sampling will start the day before the application for a minimum of twelve hours, but no more than twenty four hours. The background samples will be removed at least one (1) hour prior to the start of the application. The background samplers will be located close to midway on each of the four sides of the field with one (1) field spike sampler and one (1) collocated sampler next to the downwind site. The field spike will be spiked with a concentration of approximately 70 nanograms (ng) of Diazinon and 170 ng of Diazoxon.
- b) The Diazinon application sampling will consist of five (5) sampling periods unless the application is not completed within three (3) hours of sunset. The application sampling period will start approximately thirty minutes prior to the air blast application of Diazinon. It will continue until one (1) hour after the application is complete. A post application sampling period will immediately start and then end one (1) hour before sunset unless the application runs late in which the application period's samples will not be removed until one (1) hour before sunset. The rest of the study will consist of two (2) overnight sampling periods and one (1) daytime sampling period. Each overnight sampling period will start one (1) hour prior to sunset and end one (1) hour after sunrise. Each daytime sampling period will start one (1) hour after sunrise and end one (1) hour before sunset.
- c) There will be eight (8) sampling sites around the orchard. For a square field, four (4) sites will be located at each corner and four (4) sites will be located midway on each side. The projected downwind site will have two additional samplers,

one (1) collocated and one (1) field spike, located within 0.6 meter of the regular sampler. All sampler intakes will be 1.7 meters (67 \pm 6 inches) above the ground. Samplers will be placed 20 \pm 10 meters (33 to 98 feet) from the edge of the field.

- d) Samples will be collected by passing a measured volume of ambient air through one XAD resin sorbent tube that is mounted on a sampling tree as shown in Figure 1. Sample flow is controlled by an inline rotameter (flow range of 0-5 LPM) and the resin sorbent tubes will be protected from direct sunlight or rain. Prior to each sampling period, the sampler is checked for leaks. After the sample resin sorbent tube is installed, the flow rate will be set at 3.0 lpm using a digital mass flow meter. The flow rate will be checked at the end of each sampling period and the average of the start and stop flows shall be 3.0 lpm \pm 20%. At the end of each sampling period, the tubes will be placed in culture tubes with an identification label affixed and placed in a dry ice cooler. The field log sheet and resin sorbent tube label will contain the following information: log #, sample name, sampler ID number, start and end date and time, start and end elapsed time meter reading, start and end mass flow meter display reading, comments (if applicable), weather conditions and the start and end initials of the operator. The exposed XAD-2 resin sorbent tubes (SKC #226-30-06) with 400 and 200 mg of packing are stored in an ice chest (on dry ice) or in a freezer until extracted in the laboratory.

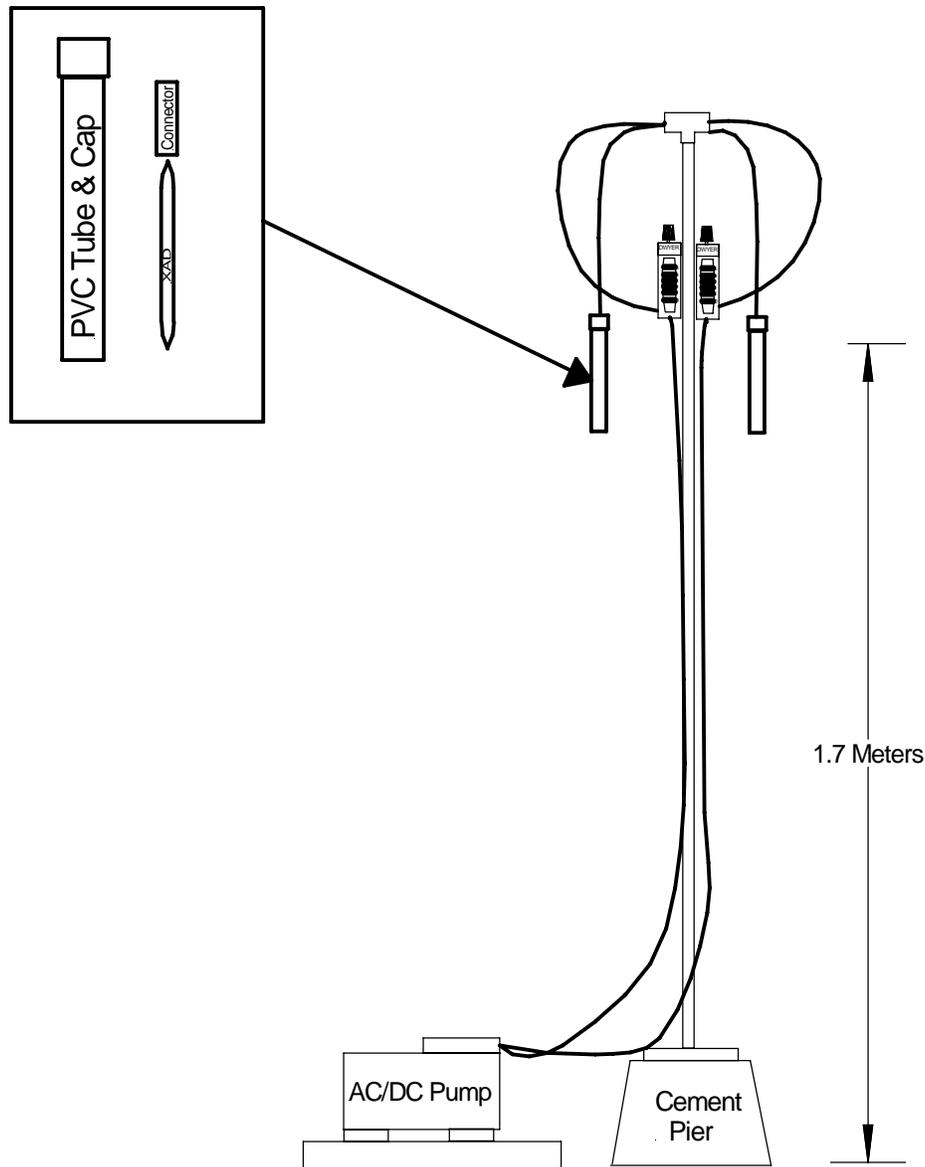


FIGURE 1: AIR SAMPLER TREE WITH PUMP

- e) In order to reduce direct exposure to ARB staff during the pesticide application period all samplers will begin a minimum of thirty minutes prior to the start of the application. At the end of each sampling period the following general procedure will occur at each site; Flows will be verified, documentation completed, all resin sorbent tubes removed, the battery replaced, a new resin sorbent tube installed and flows adjusted if necessary. Field notes and observations will be recorded (such as Diazinon application flow rate and total amount of Diazinon applied).
- f) Meteorological data will be collected using a Met One Instruments' AutoMet Digital Meteorological Monitoring System located on a trailer with a crank up tower. The AutoMet will be located no closer than twenty meters from the edge of the field being monitored. The meteorological sensors will be installed between 5.9 and 6.9 meters above the ground. The AutoMet station will

continuously measure and record 5 minute averages for wind speed, wind direction, ambient temperature and percent relative humidity throughout the background and application sampling periods.

- g) The MLD will provide DPR with a final report containing all relevant information, collected data and analytical results gathered during the course of the study.

6.0 Sampling and Analysis Procedures

Special Purpose Monitoring Section (SPM) staff will hand-carry resin sorbent tubes to and from MLD's laboratory in Sacramento, and to and from the sampling location. The resin sorbent tubes will not be exposed to extreme conditions or subjected to rough handling that might cause loss or degradation of sample. At the end of the each sampling period, all resin sorbent tubes will be removed from the sampler, placed in a culture tube, labeled, and secured in a dry ice cooler.

At each sampling site, the operator will replace the batteries for each pesticide sampler with a charged batteries; install a new resin sorbent tube and install the rain/sun shield over the resin tube. The resin sorbent tube field log sheet (See Figure 2) shall be filled out along with the resin sorbent tube label. Prior to any sampling, flows will be set to 2.9 to 3.0 lpm. At the start of each sampling period, the pesticide samplers will be manually turned on and the start date, time, elapsed time meter reading and indicated flow will be recorded. At the end of each sampling period, the flow will be measured, the pesticide sampler manually shut off and the following recorded on the resin sorbent tube field log sheet; end date, time, elapsed time meter reading and flow.

Sampling will occur as scheduled unless ambient conditions at the start include rain or instantaneous gusts of wind over ten (10) miles per hour. All reported sampling times, including meteorological data, will be reported in Pacific Standard Time (PST).

The Northern Laboratory Branch (NLB) will supply SPM with 68 resin sorbent tubes (four (4) backgrounds, six (6) collocated, six (6) field spikes, one (1) trip spike, one (1) trip blank, 40 application/post application and ten (10) spares). A label will be affixed around the top section of the resin sorbent tube identifying the sample. Spiked resin sorbent tubes and other QC resin sorbent tubes will be identified. The NLB will perform analyses for Diazinon and Diazoxon on all collected samples and report results to SPM in electronic format (Excel) and hardcopy. Laboratory analysis will be performed in accordance with the draft standard operating procedures, "Standard Operating Procedure Sampling and Analysis of O,O-diethyl O-2-isopropyl-6-methylpyrimidin-4-ylphosphorothioate (Diazinon) and the Oxygen Analog (Diazoxon)". This analytical method currently has a Method Detection Limit (MDL) of 6.48 nanograms (ng) per sample for Diazinon and 15.12 ng/sample for Diazoxon. The laboratory's operating procedure is included in this Protocol as Appendix A.

The following resin sorbent tube validation and analytical quality control criteria will be followed during pesticide analysis.

1. **Sample Hold Time:** Sample hold time criteria will be consistent with the laboratory's operation procedure stated 28 days.

2. **Duplicate Analysis:** Laboratory to establish relative percent difference (RPD) criteria for duplicate analysis. Lab to provide duplicate analytical results and RPD.
3. **Method Detection Limit (MDL):** Sample analysis results less than the MDL shall be reported as a less than numerical value. This less than numerical value shall incorporate any dilutions.
4. **Analytical Linear Range:** Any analytical result greater than 10% of the highest calibration standard shall be diluted and reanalyzed within the calibrated linear range.

7.0 List of Field Equipment

| <u>Quantity</u> | <u>Item Description</u> |
|-----------------|--|
| (1) | Met-One Auto met portable meteorology system consisting of a data logger and calibrated sensors measuring 5 minute averages for wind speed, direction, ambient temperature, and relative humidity. |
| (1) | Measuring Wheel |
| (1) | 200 ft measuring tape |
| (1) | Tripod and compass |
| (1) | Global Positioning System (GPS) with backup batteries and carrying case |
| (1) | Digital Camera with backup batteries and carrying case |
| (2) | Aalborg mass flow meter 0-5 lpm |
| (68) | Resin sorbent tubes (4 backgrounds, 6 collocated, 6 field spikes, 1 trip spike, 1 trip blank, 40 application/post application and 10 spares) |
| (10) | Pesticide sampler each equipped with two (2) each sampling trains and voloflows setup to sample two (2) resin tube samples. |
| (12) | Pump, 12 vdc. |
| (80) | Battery, 12 vdc 40 amp. |
| (13) | Chargers |

8.0 Quality Control

Quality control procedures will be observed to ensure the integrity of samples collected in the field. National Institute of Standards and Technology (NIST) traceable transfer standards will be used to calibrate meteorological sensors and measure sample flow rates.

The sample flow rate of the pesticide sampler's voloflows will be measured using certified mass flow meters with a range of 0-5 liters per minute.

The metrological sensors will be calibrated and aligned following the procedures outlined in the standard operating procedures on the Air Monitoring Web Manual at the following link.

<http://arb.ca.gov/airwebmanual/amwmn.php?c=5&t=sop>

A label will be affixed around the top section of the resin sorbent tube identifying the sample with the following information: log #, sample name, sampler ID number, start and end date and time, start and end elapsed time meter (ETM) reading, start and end mass flow meter display reading and operators initials.

Collocated (side-by-side) air samplers will operate at one site during the study period. This collocated site will be located at the projected downwind site.

Field Spike (FS): Six (6) field spikes will be prepared by the laboratory by injecting resin sorbent tubes with a known concentration of Diazinon and Diazoxon. The field spike resin sorbent tubes will be coupled with a pesticide sampler and collocated next to the projected downwind sampler. One (1) each field spike will be collected during each sampling period.

Trip Spike (TS): A trip spike will be prepared by the laboratory by injecting a resin sorbent tube with a known concentration of Diazinon and Diazoxon with the same level as the field spikes. The trip spike resin sorbent tube accompanies the sample resin sorbent tubes from the lab to the field but is not sampled.

Trip Blank (TB): A trip blank will be prepared by the field staff. The trip blank resin sorbent tube accompanies the sample resin sorbent tubes from the lab to the field and returns but is not sampled.

Collocated (C): Collocated samples will be collected at the designated down wind sampling site during all sampling periods starting with the background period.

Valid samples are those that have a final corrected average flow within $\pm 20\%$ of 3.0 lpm.

The Diazinon sampling sites will be named accordingly for the background, application, and post application as follows:

Background Site Naming:

Site: NS-B, NS-B-C & NS-B-FS

Site: ES-B, SS-B & WS-B

Application and Subsequent Sampling Periods Site Naming:

Site: NS-#, NS-#-C & NS-#-FS

Sites: NEC-#, ES-#, SEC-#, SS-#, SWC-#, WS-# and NWC-#

= the run number. #1 will be the application, #2 will be the next sampling period and so forth.

Letter Abbreviations as follows:

The first letter or two designates the cardinal direction from the center of the field in relation to true north such as: W = West and SW = Southwest.

The second or third letter designates whether the site is located at a side (S) or corner (C).

B = Background Sample

FS = Field Spike
C = Collocated Sample
TS = Trip Spike
TB = Trip Blank

Following the quality control procedures listed above will ensure the quality and integrity of the samples collected in the field and will insure accurate field and laboratory results.

9.0 Deliverables

9.1 Northern Laboratory Branch (NLB) Deliverables

Within 90 days after the last collected sample is received at the laboratory, the NLB will provide SPM with a report that will include the following topics:

- 1) Table(s) of sample to include:
 - a. Sample identification (name).
 - b. Date sample received from field.
 - c. Date sample analyzed.
 - d. Dilution ratio.
 - e. Analytical results.
- 2) All equations used in calculating analytical results.
- 3) Table of duplicate results including calculated relative percent difference (RPD) when applicable.
- 4) Table of collocated results.
- 5) Table of analytical results from all field, trip and laboratory spikes including percent recoveries when applicable.
- 6) Table of analytical results from all trip blanks.
- 7) Table of analytical results from all laboratory blanks, standards and control checks performed, including dates performed and relative percent recoveries when applicable.
- 8) Copy or location of analytical method or Standard Operating Procedures (SOP) used for analysis.
- 9) Section or provision listing or reporting any and all deviations from analytical SOP and this protocol.

9.2 Air Quality Surveillance Branch Deliverables

Within 90 days from receipt of the final results report from the NLB, AQSB will provide DPR with a report containing the following topics:

- 1) Sampling Protocol.
- 2) Personnel Contact List.
- 3) Site Maps.
- 4) Site Photographs.

- 5) Site Descriptions and Measurements (site, sampler, GPS coordinates, inlet height, distance to roads, site-specific comments, Diazinon application rate, and total pounds or gallons of Diazinon applied).
- 6) Sample Summary Table.
- 7) Field Log Sheets.
- 8) Laboratory Analysis Reports with calculations in electronic format.
- 9) Met Station and Sampler Calibration Reports.
- 10) Transfer Standards' Certification Reports.
- 11) Disk containing electronic files of 5-minute averaged Meteorological Data.
- 12) Disk containing electronic files of Report.

In addition, the Special Purpose Monitoring Section (SPM) will prepare a project binder containing the above information. This binder will remain with SPM though available for viewing and review as requested.

APPENDIX A: Standard Operating Procedure Sampling and Analysis of O,O-diethyl O-2-isopropyl-6-methylpyrimidin-4-ylphosphorothioate (Diazinon) and the Oxygen Analog (Diazinon).

The Special Analysis Section of MLD's Northern Laboratory Branch will perform the analyses for Diazinon collected by the resin sorbent tube method. This analytical procedure is entitled, "Standard Operating Procedure Sampling and Analysis of O,O-diethyl O-2-isopropyl-6-methylpyrimidin-4-ylphosphorothioate (Diazinon) and the Oxygen Analog (Diazinon)" and can be located starting on the next page.

See Appendix C of report

APPENDIX B

Site Photographs and Pesticide Label



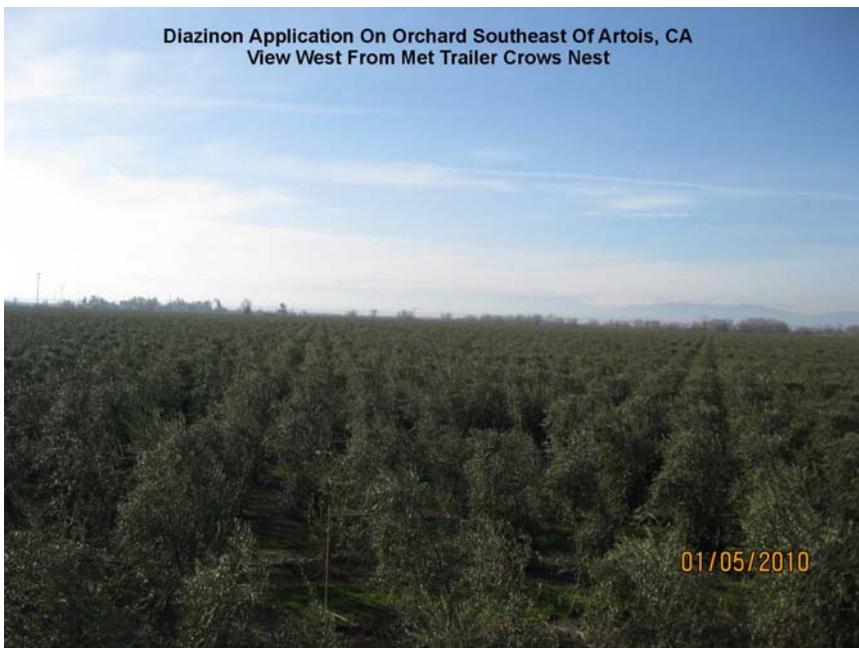
Diazinon Application On Orchard Southeast Of Artois, CA
View North From Met Trailer Crows Nest



Diazinon Application On Orchard Southeast Of Artois, CA
View South From Met Trailer Crows Nest



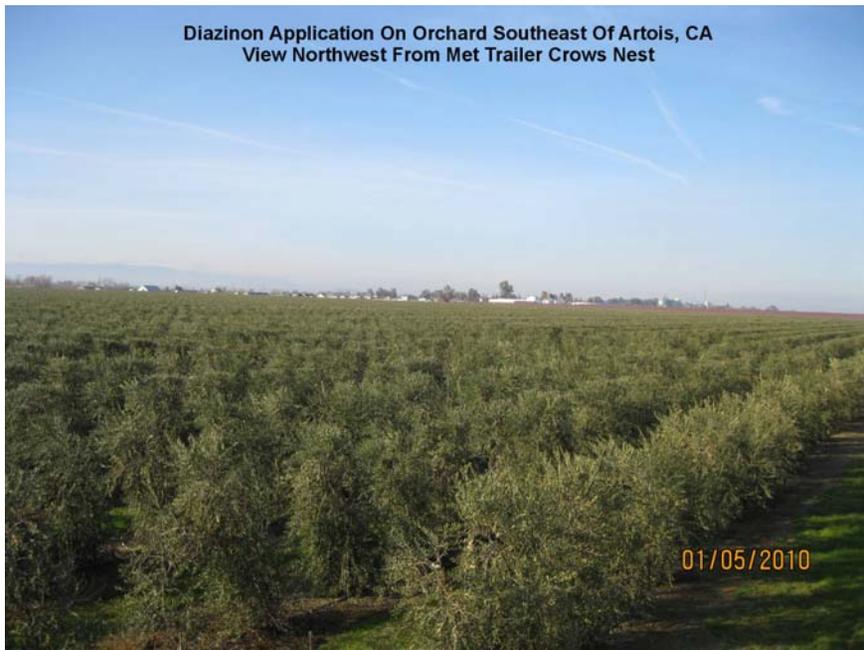
Diazinon Application On Orchard Southeast Of Artois, CA
View West From Met Trailer Crows Nest



Diazinon Application On Orchard Southeast Of Artois, CA
View East From Met Trailer Crows Nest



Diazinon Application On Orchard Southeast Of Artois, CA
View Northwest From Met Trailer Crows Nest



01/05/2010

Diazinon Application On Orchard Southeast Of Artois, CA
View Northeast From Met Trailer Crows Nest



01/05/2010

Diazinon Application On Orchard Southeast Of Artois, CA
View Southeast From Met Trailer Crows Nest



01/05/2010

Diazinon Application On Orchard Southeast Of Artois, CA
View Southwest From Met Trailer Crows Nest



01/05/2010



Diazinon Application On Orchard Southeast Of Artois, CA
View North Of Northwest Corner Sampler



Diazinon Application On Orchard Southeast Of Artois, CA
View South Of Northwest Corner Sampler



Diazinon Application On Orchard Southeast Of Artois, CA
View West Of Northwest Corner Sampler



Diazinon Application On Orchard Southeast Of Artois, CA
View East Of Northwest Corner Sampler



Diazinon Application Of Orchard Southeast Of Artois, CA
View South Of Northeast Corner Sampler



Diazinon Application On Orchard Southeast Of Artois, CA
View North Of Northeast Corner Sampler



Diazinon Application On Orchard Southeast Of Artois, CA
View West Of Northeast Corner Sampler



Diazinon Application On Orchard Southeast Of Artois, CA
View East Of Northeast Corner Sampler



Diazinon Application On Orchard Southeast Of Artois, CA
View North Of West Side Sampler



Diazinon Application On Orchard Southeast Of Artois, CA
View South Of West Side Sampler



Diazinon Application On Orchard Southeast Of Artois, CA
View West Of West Side Sampler



Diazinon Application On Orchard Southeast Of Artois, CA
View East Of West Side Sampler



Diazinon Application On Orchard Southeast Of Artois, CA
View North Of East Side Sampler



Diazinon Application On Orchard Southeast Of Artois, CA
View South Of East Side Sampler

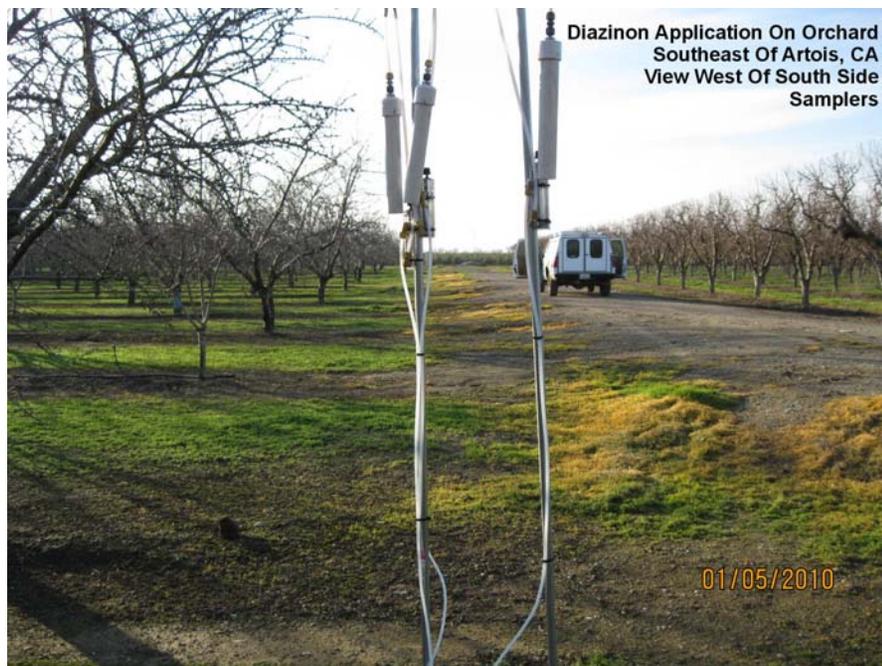


Diazinon Application On Orchard Southeast Of Artois, CA
View East Of East Side Sampler



Diazinon Application On Orchard Southeast
Of Artois, CA
View West Of East Side Sampler





Diazinon Application On Orchard Southeast Of Artois, CA
View North Of Southwest Corner Sampler



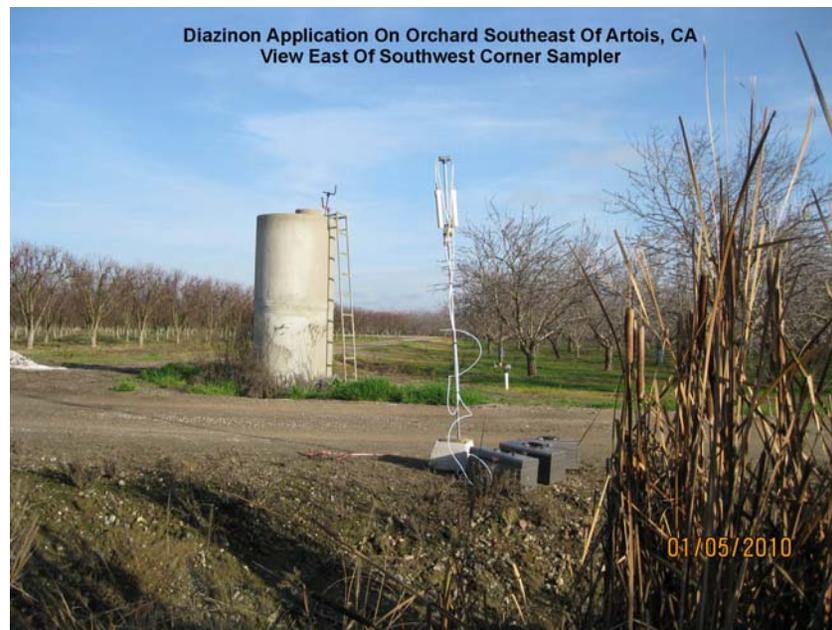
Diazinon Application On Orchard Southeast Of Artois, CA
View South Of Southwest Corner Sampler



Diazinon Application On Orchard Southeast Of Artois, CA
View West Of Southwest Corner Sampler



Diazinon Application On Orchard Southeast Of Artois, CA
View East Of Southwest Corner Sampler





Diazinon Application On Orchard Southeast Of Artois, CA
View West Of Southeast Corner Sampler



Diazinon Application On Orchard Southeast Of Artois, CA
View East Of Southeast Corner Sampler



Diazinon Application On Orchard Southeast Of
Artois, CA
View South Of Southeast Corner Sampler



Diazinon Application On Orchard Southeast Of Artois, CA
View North Of Southeast Corner Sampler

**Diazinon Application On Orchard Southeast Of Artois, CA
View Northeast Of Sprayer Applying To South Side Of Orchard**



**Diazinon Application On Orchard Southeast Of Artois, CA
Side View Closeup Of Sprayer**

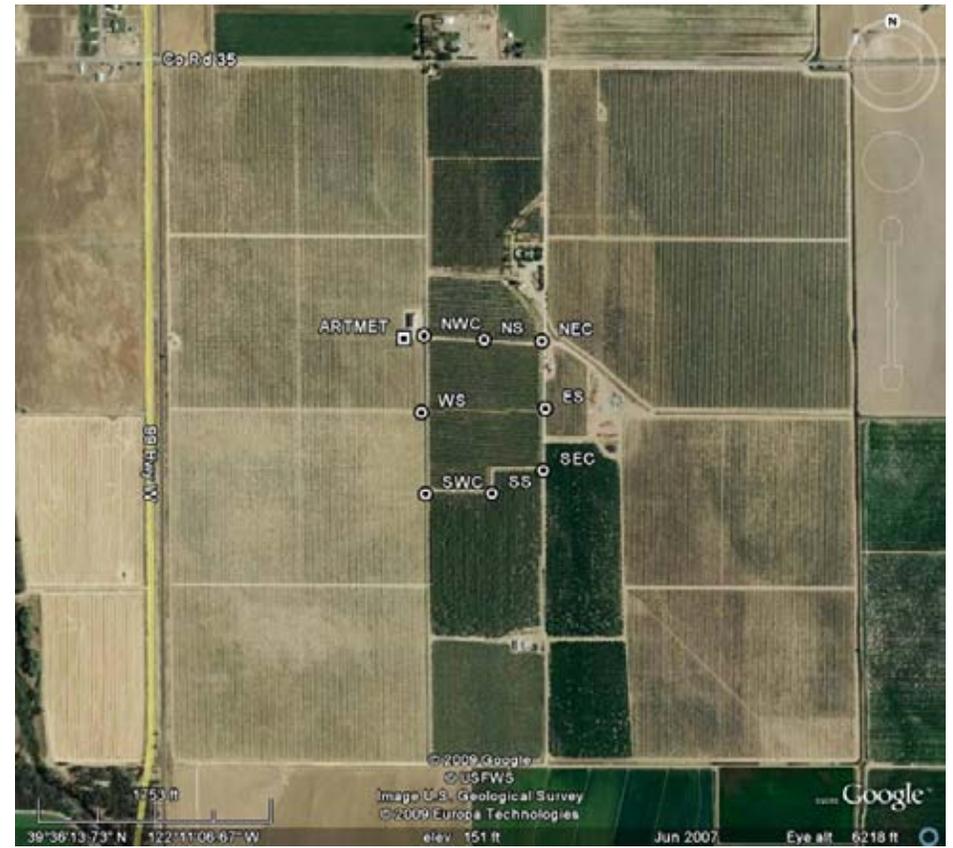
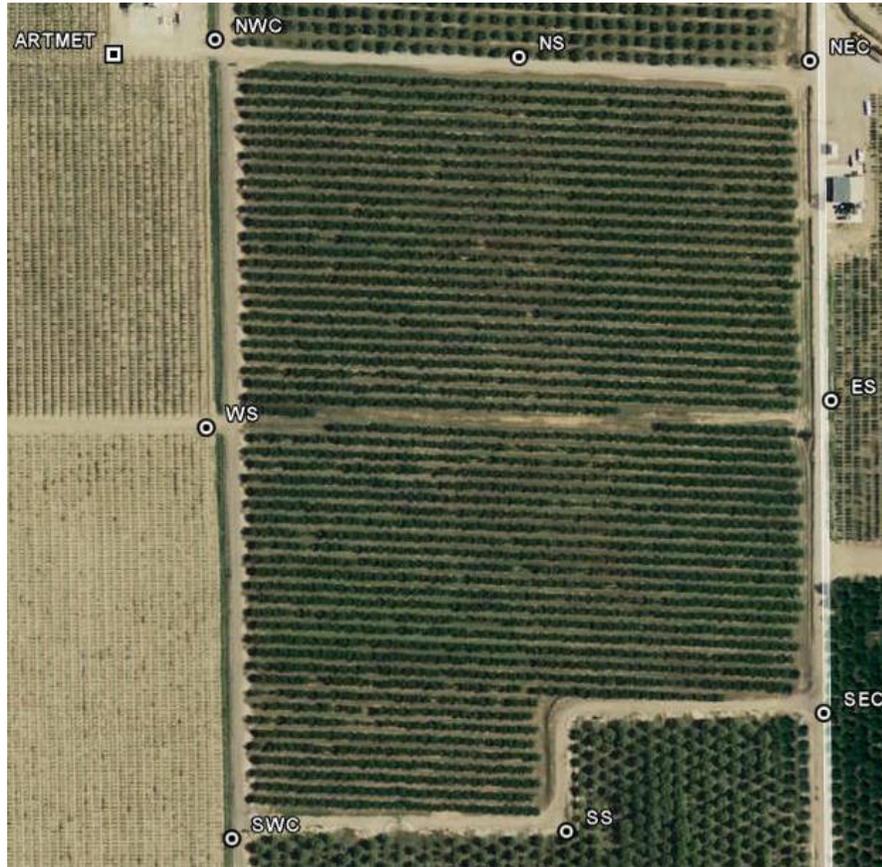


**Diazinon Application On Orchard Southeast Of Artois, CA
Front View Closeup Of Sprayer**



**Diazinon Application On Orchard Southeast Of Artois, CA
View West Of Sprayer Applying On Orchard**

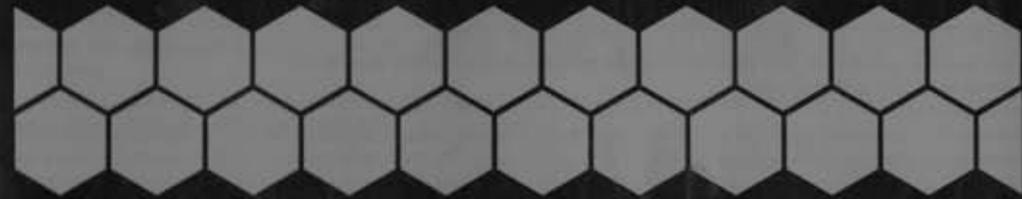




NOTES

**RESTRICTED USE PESTICIDE
DUE TO AVIAN AND AQUATIC TOXICITY**

FOR RETAIL SALE TO AND USE ONLY BY CERTIFIED APPLICATORS OR PERSONS UNDER THEIR DIRECT SUPERVISION AND ONLY FOR THOSE USES COVERED BY THE CERTIFIED APPLICATOR'S CERTIFICATION.



Diazinon AG500
INSECTICIDE

For control of certain insects on fruits, nuts, vegetables, and ornamentals grown outdoors in nurseries.

| ACTIVE INGREDIENT: | % BY WT. |
|---|----------|
| Diazinon: O,O-diethyl O-(2-isopropyl-6-methyl-4-pyrimidinyl) phosphorothioate | 48.0% |
| INERT INGREDIENTS* | 52.0% |
| TOTAL | 100.0% |

*Contains 4 lbs. diazinon per gallon.
*Contains xylene range aromatic solvent.

EPA Reg. No. 66222-9

EPA Est. No. 67545-AZ-001

**KEEP OUT OF REACH OF CHILDREN
CAUTION**

| FIRST AID CONTAINS AN ORGANOPHOSPHATE THAT INHIBITS CHOLINESTERASE | |
|---|---|
| IF SWALLOWED: | <ul style="list-style-type: none"> Call a poison control center or doctor immediately for treatment advice. Do not induce vomiting unless told to by a poison control center or doctor. Do not give any liquid to the person. Do not give anything by mouth to an unconscious or convulsing person. |
| IF ON SKIN OR CLOTHING: | <ul style="list-style-type: none"> Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice. |
| IF INHALED: | <ul style="list-style-type: none"> Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice. |

(continued)

FIRST AID (continued)

- IF IN EYES:**
- Hold eye open and rinse slowly and gently with water for 15-20 minutes.
 - Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.
 - Call a poison control center or doctor for treatment advice.

Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact Prostar at 1-877-256-5291 for emergency medical treatment information.

NOTE TO PHYSICIAN: This product is an organophosphate insecticide. If symptoms of cholinesterase inhibition are present, atropine sulfate by injection is antidotal. 2-PAM is also antidotal and may be administered, but only in conjunction with atropine. This product contains petroleum distillates (xylene range aromatic solvent) which may pose an aspiration hazard. Vomiting may cause aspiration pneumonia. Gastric lavage may be indicated if product was taken internally.

For additional precautionary, handling and use statements, see inside of this booklet.



Manufactured for:
**Makhteshim Agan
of North America, Inc.**
4515 Falls of Neuse Road
Suite 300
Raleigh, NC 27609

M A N A

EPA100307

Net Contents: 2.5 gallons

Note: To protect bees, do not apply this product to fruit trees when trees or substantial numbers of weeds in the orchard are in bloom.

Diazinon AG500 may be used during dormancy on deciduous trees and vines. When mixing with spray oils, follow oil manufacturer's use directions.

| CROP | GROUND APPLICATION MINIMUM GALS./ACRE | |
|-----------------|--|-------------|
| | Dilute | Concentrate |
| Almonds* | 100 | 20 |
| Apricots | 100 | 20 |
| Blackberries** | 100 | 20 |
| Blueberries | 100 | 20 |
| Boysenberries** | 100 | 20 |
| Cherries | 100 | 20 |
| Cranberries | 15 | - |
| Dewberries** | 100 | 20 |
| Figs* | 100 | 20 |
| Filberts*** | 250 | 20 |
| Loganberries** | 100 | 20 |
| Nectarines | 100 | 20 |
| Peaches | 100 | 20 |
| Plums | 100 | 20 |
| Prunes | 100 | 20 |
| Raspberries** | 100 | 20 |
| Strawberries | 100 | 20 |

*CA Only

**CA, OH, OR, WA Only

***OR, WA Only

FRUIT AND NUT CROPS

| CROP | PEST | RATE | COMMENTS |
|---|--|------------------------------------|---|
| ALMONDS (California Only) | San Jose Scale, Parlatoria Scale, Black Scale, Brown Scale, Apricot Scale, European Red Mite eggs, Brown Mite eggs, Twig Borers, Apple Aphid eggs, Black Cherry Aphid eggs, Mealy Plum Aphid eggs, Mealybugs | 1 - 1 1/2 pts. per 100 gals. water | Apply in 100 gals. water plus 2 - 3 gals. dormant oil or 1 - 1 1/2 gals. superior type oil. Apply during the dormant season only. |
| <ul style="list-style-type: none"> Do not apply more than 6 pts. of diazinon or 9 gals. of oil per acre. Make a maximum of one application per year during the dormant season only. Apply every other year unless pest infestations can be controlled only with consecutive annual treatments. The REI is 7 days. | | | |

| CROP | PEST | RATE | COMMENTS |
|--|---|---|--|
| ICOTS (21) | San Jose Scale, Parlatoria Scale, Black Scale, Brown Scale, Apricot Scale, European Red Mite eggs, Brown Mite eggs, Twig Borer, Apple Aphid eggs, Black Cherry Aphid eggs, Mealy Plum Aphid eggs, Mealybugs | 1 pt. per 100 gals. water | Apply as a dormant spray year. When using spray oil manufacturer's use directions. |
| | Aphids, Brown Mite (Clover Mite), Two-spotted Spider Mite, Olive Scale Crawler, San Jose Scale Crawler | 1 pt. per 100 gals. water | Apply when infestation is observed. |
| | Olive Scale Crawler | 1/2 pt. plus 1 1/2 gals. of light medium horticultural oil per 100 gals. of water | Apply when crawlers are present. |
| | Apricot Mealybug | 1 pt. per 100 gals. water | Apply as a cover spray from June. |
| <ul style="list-style-type: none"> Do not apply more than 4 pts. of product per acre per application. A maximum of two applications are allowed per year: 1) a maximum of one as a dormant application and 2) a maximum of one as an in-season foliar application regardless of target pest. For in-season applications, apply every other year unless pest infestations can be controlled only with consecutive annual treatments. The REI is 4 days. | | | |

| CROP | PEST | RATE | COMMENTS |
|--|--|---------------------------|--|
| BLUEBERRIES (7) | Cranberry Fruitworm, Cherry Fruitworm, Blueberry Maggot, Aphids, Thrips, Two-spotted Spider Mite | 1 pt. per 100 gals. water | Apply when infestation is observed. |
| | Fire Ants | 1 pt. per 100 gals. water | To aid in the control of fire ants, apply 1 gal. of diluted mixture around each mound. Do not apply if capable of delivering the mixture as a gentle rain. High pressure may disturb the ants and reduce product effectiveness. Apply in cool weather or in early morning or late afternoon. |
| <ul style="list-style-type: none"> Do not apply more than 2 pts. of product per acre per application. A maximum of two applications are allowed per year: 1) a maximum of one as a dormant application regardless of target pest and 2) a maximum of one for control of fire ants. The REI is 5 days. | | | |