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DATE: July 24, 2002

SUBJECT: PRELIMINARY MONITORING RESULTS OF IMIDACLOPRID APPLICATIONS FOR GLASSY-WINGED SHARPSHOOTER CONTROL IN RESIDENTIAL AREAS OF SANTA CLARA COUNTY (STUDY 197)

Summary

On June 14, 2002, the Santa Clara County Department of Agriculture's contract applicator applied imidacloprid to control the glassy-winged sharpshooter in Cupertino, California. During this time, the Department of Pesticide Regulation (DPR) took tank, vegetation, produce, surface water, and air samples at several sites in the treatment area. Air samples were taken at one location, before, during, and after imidacloprid applications. There were no imidacloprid detections in the air, surface water, or produce samples. Tank sample showed a concentration of 0.0020% of imidacloprid active ingredient versus a nominal label rate concentration of 0.003%. Vegetation residue samples had concentrations of no detectable residue and 0.582 ppm (parts per million) imidacloprid.

Introduction

The Santa Clara County Department of Agriculture is currently using ground applications of imidacloprid foliar spray and soil injection to control infestations of the glassy-winged sharpshooter (GWSS). The glassy-winged sharpshooter (*Homalodisca coagulata*) is a serious agricultural pest in California. When feeding, it can transmit Pierce's disease, caused by the bacterium *Xylella fastidiosa*, to grapevines and other diseases to almond trees, alfalfa, citrus, and oleander. First found in the state in 1990, GWSS has spread throughout Southern California and into areas of the San Joaquin Valley.

The Environmental Monitoring Branch of DPR has been monitoring selected treatments in residential areas to provide information on the concentrations of imidacloprid in air, surface water, vegetation, and representative backyard fruits and vegetables. Additionally, tank samples are taken at each location where air samples are collected. Results reported here are from imidacloprid applications on June 14, 2002, in Cupertino, Santa Clara County. Sampling results and related GWSS monitoring reports are also available at DPR's Web site <www.cdpr.ca.gov/docs/gwss>.

Materials and Methods

Pesticide Application - In Santa Clara County approximately 12 residential properties and a commercial parking lot were sprayed over approximately 0.02 square miles in the city of Cupertino on June 14, 2002. Santa Clara County survey crews determined which properties were infested with the glassy-winged sharpshooter. Applications consisted of an imidacloprid soil injection and an imidacloprid foliar spray. Samples were collected in conjunction with the imidacloprid foliar spray. Soil drench applications of Merit® 75 WP, with a 75% active ingredient of imidacloprid, were made by a private pest control operator (PCO) at a dilution rate of 1.5 ounces per 100 gallons. Pesticide was mixed in water and delivered through a feeding/fertilizing gun attached to a 300-foot hose from a truck mounted power rig (consisting of a tank, motor, pressure gun, and pump). Foliar applications of Merit® 75 WP were made at a dilution of 0.5 ounces per 100 gallons of water. Pesticide was mixed in water and No Foam B and delivered through a Bean Spray Gun with a #10 tip attached to a 300 foot hose from a truck mounted power rig. Applications to a commercial area near the residences started at 6:00 A.M.; foliar applications to the residences began around 9:50 A.M. Soil injection applications began at the residences around 8:30 A.M.

Air Sampling- Ambient air samples were collected at one site in Cupertino, a residence on Jamestown Drive. A background air sample was taken prior to any applications on June 13, 2002. Air samples were taken during and for 48 hours following application, according to the following schedule: (1) duration of application plus one hour, (2) duration of 24 hours after application, (3) and another duration of 24 hours. The application air sample was disrupted during this sampling. The PCO reported to DPR that he unplugged the air sampler for an unknown amount of time and then plugged back in prior to applications in the backyard of the residence. DPR staff noted that the run time on the sampler did not match up with the recorded start and stop times of application to the residence. DPR staff determined that it was unlikely that the air sampler was running during applications to the backyard.

Samples were collected using XAD- 2 tubes (SKC#226-30-02) and SKC air samplers (SKC# 224-PCXR8) calibrated at approximately 3 liters-per-minute. The sampler was located outdoors in an open area. Samples were stored on dry ice until delivery to the California Department of Food and Agriculture's (CDFA's) Center for Analytical Chemistry for laboratory analyses. Imidacloprid on XAD-2 was extracted with methanol and analyzed using HPLC with an ultra violet (UV) detector with a reporting limit of 0.5 µg per sample.

Tank Sampling- One tank sample was collected during the treatment at a residence on Jamestown Drive, same location where the air sample was collected. The tank was remixed immediately prior to the application on Jamestown Drive. The sample was taken from the hose end nozzle into a plastic 500-mL container and was stored separate from other samples on wet

ice until delivery to the lab for analysis. The tank sample was extracted with methanol and analyzed using HPLC with an ultra violet detector.

Vegetation Residue - Vegetation samples were collected at two sites; one at the residence where the air sample was collected and at one additional residence. The sample at the additional residence on Poppy Way was collected after the PCO stated that the plants designated for sampling at the Jamestown Drive residence were not sprayed. Each sample consisted of a minimum of 100 grams of terminal shoots of less than 0.5 cm diameter (generally shoots from secondary or tertiary growth) with leaves included. Each sample consisted of composited material from several oleander plants in close proximity to each other, collected into a quart mason jar with a foil lined lid. Samples were collected for total plant residue of imidacloprid. These plants had a soil injection of imidacloprid applied the same day as the foliar application. One background sample was collected prior to any applications on June 13, 2002, at the Jamestown Drive residence. Samples were taken from a height range of zero to six feet from the ground. Samples were kept frozen until extraction. Oleander vegetation samples were extracted with methylene chloride and analyzed using HPLC with a UV detector. The reporting detection limit is 0.05 ppm.

Surface Water Sampling- Surface water samples were taken at two sites, Calabazas Creek at Prospect (upstream of application area) and Calabazas Creek at Calabazas Park (downstream of application area). At these two sites samples were collected following applications to residences. A background water sample was taken at the downstream site prior to the beginning of applications on June 13.

Samples were taken by filling a one-liter amber bottle directly from the creek and then sealing with a Teflon®-lined lid. Samples were stored on wet ice until delivered to the CDFA Center for Analytical Chemistry for analysis. Imidacloprid in surface water was extracted with methylene chloride and analyzed using HPLC with an ultra violet detector with a reporting detection limit of 0.05 ppb (parts per billion).

Produce Sampling- Two produce samples were obtained at the Jamestown Dr. residence. Each sample consisted of approximately one pound of produce collected into either a quart glass mason jar with an aluminum foil lined lid or wrapped in aluminum foil and placed in a plastic Ziploc® bag. The first sample was taken as a background prior to any applications on June 13, 2002 and the second sample was collected on June 21, 2002 at the preharvest interval, the required minimum number of days between last application and harvest. According to the Section 18 label for Merit® 75 WP the preharvest interval for citrus is 7 days. Samples were stored on dry ice while in transport or in a freezer at the storage facility until delivered to the CDFA Center for Analytical Chemistry for analysis. Samples were analyzed for total residues by grinding the produce, extracting with acetonitrile, and analyzed using HPLC with a fluorescence detector. The reporting detection limit is 0.05 ppm.

Weather

The weather was generally clear, sunny, and cool on the application day. On June 14 temperatures ranged from 51 to 68 degrees F with the daily average wind speed of 5 miles-per-hour (mph) from the north.

Results and Discussion

Air- A total of four air samples were analyzed for imidacloprid. There were no detections of imidacloprid in the air samples. The sample collected during the treatment period should be considered invalid, since the PCO likely unplugged the sampler for some or all of the treatment period.

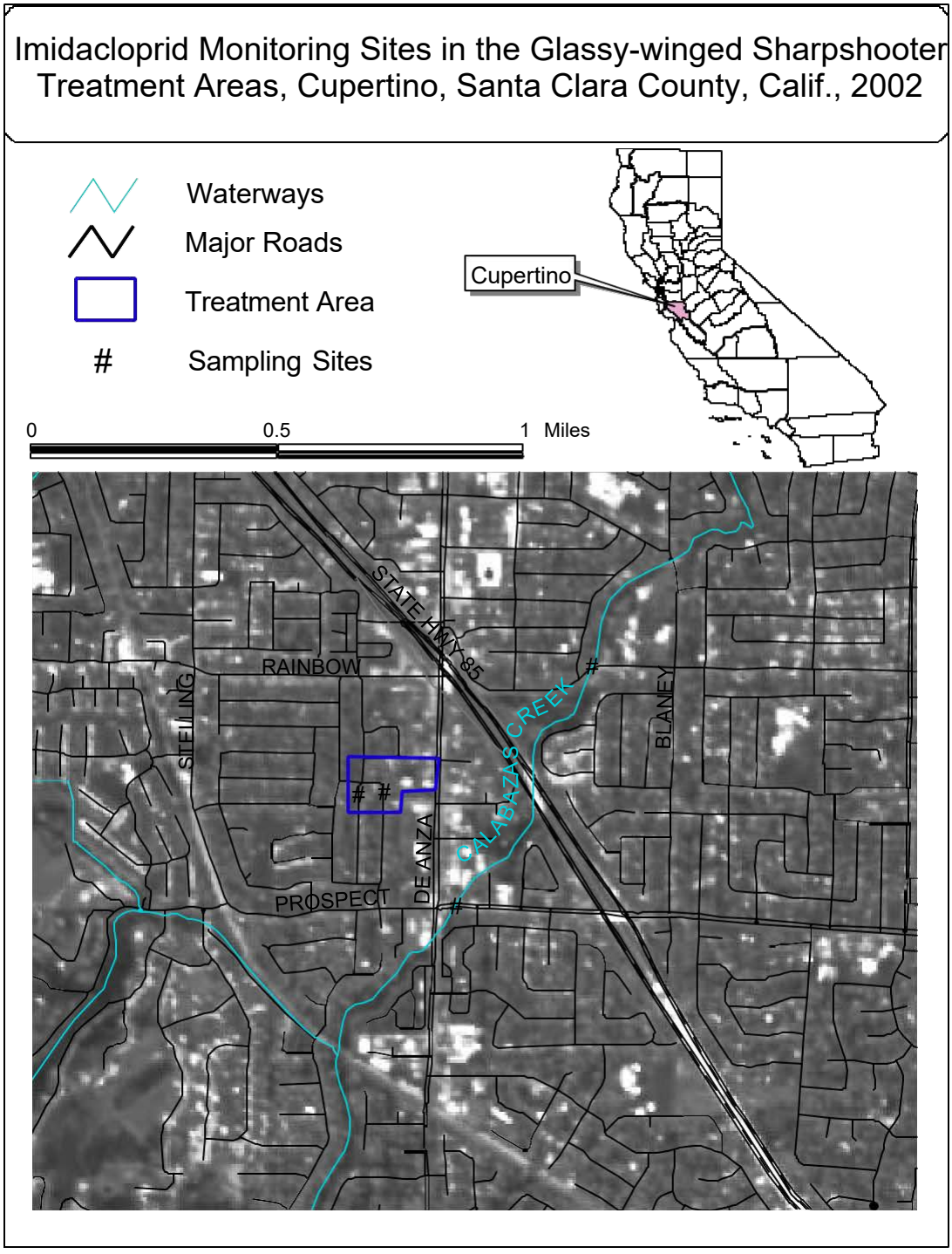
Tank Mix- One tank sample was taken for the application monitored. Tank sample result was 0.0020% active ingredient of imidacloprid. Label rate for Merit® 75 WP (75% active ingredient) as a foliar spray in 100 gallons of water is 0.5 ounces for control of leafhoppers on trees, ornamentals, and pome fruits. Theoretical calculation of percent active ingredient is 0.003% active ingredient.

Vegetation Samples- Vegetation samples were taken at two sites. The background and post application samples collected at the Jamestown Drive residence had no detectable amount of imidacloprid. The post application sample collected at the Poppy Way residence had residue of 0.582 ppm.

Surface Water- A total of three surface water samples were taken during treatments in Cupertino on June 14, one background and two application samples. No imidacloprid was detected in any samples.

Produce Samples- A total of two citrus (orange) samples were collected; one background and one post application sample collected at the preharvest interval. No imidacloprid was detected in either sample.

bcc: Walters Surname File


Imidacloprid Monitoring Sites in the Glassy-winged Sharpshooter Treatment Areas, Cupertino, Santa Clara County, Calif., 2002
Waterways
Major Roads
Treatment Area
Sampling Sites
Cupertino
0
0.5
1 Miles
STATE HWY 85
RAINBOW
STERLING
BLANEY
CALABAZAS CREEK
DE ANZA
PROSPECT