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SUBJECT: MONITORING RESULTS OF IMIDACLOPRID APPLICATIONS FOR GLASSY WINGED SHARPSHOOTER CONTROL IN A RESIDENTIAL AREA OF SANTA CALARA COUNTY

Summary

On August 24, 2006, the Santa Clara County Department of Agriculture's contract applicator applied imidacloprid to control the glassy-winged sharpshooter (GWSS) in San Jose, California. Foliar and soil injection treatments of imidacloprid were applied. The Department of Pesticide Regulation (DPR) and the California Department of Food and Agriculture (CDFA) staff took tank, leaf punch, and air samples at two sites in the treatment area. Air samples were taken before, during, and after the application. All air samples contained no detectable amount of imidacloprid. The tank samples had concentrations of 0.0063% and 0.0085% active ingredient (A.I.) of imidacloprid, versus the mixing rate of 0.0075%. Post application dislodgeable foliar residue from leaf punches had concentrations of 0.12 and 0.13 µg/cm2 for the two sites.

Introduction

GWSS (*Homalodisca coagulata*) is a serious agricultural pest in California. It is a very efficient vector of the bacterium *Xylella fastidiosa* and the associated diseases to grapevines (Pierce's Disease), 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 Santa Clara County Department of Agriculture is currently uses soil injection and foliar applications of imidacloprid to control infestations of GWSS.

DPR's Environmental Monitoring Branch has been monitoring selected treatments made in residential areas to provide information on the concentrations of carbaryl, imidacloprid, and cyfluthrin in air, surface water, and leaf residue. Additionally, tank samples are taken at each location where air samples are collected to verify application rates. In 2006, cooperatively, staff from CDFA Pierce's Disease Control Program and the Environmental Monitoring Branch monitored treatments. Results reported in this memorandum are from imidacloprid applications on August 24, 2006, in San Jose, California. Sampling results and related GWSS monitoring reports are also available at DPR's Web site at <www.cdpr.ca.gov/docs/gwss>.

Materials and Methods

Pesticide Application

The treatment was in a residential area consisting of single family detached homes in the city of San Jose, Santa Clara County, California (figure 1). Treatment occurred on August 24, 2006, monitoring occurred at two residences from August 23 to August 25, 2006. Additional applications were made approximately one half mile south of the monitoring sites, which only tank mix samples were collected. Foliar applications of Merit® 75 WSP (Bayer), 75% A.I. of imidacloprid were made at a dilution of two ounce (56.7 grams) Merit® 75 WSP per 150 gallons (568 liters) of water. Pesticide was delivered through a Spray Systems Co.® GunJet equipped with a #5 nozzle tip attached to a 300 foot hose from a truck mounted power rig (consisting of a tank, motor, pressure gun, and pump). In addition to the foliar application, a soil injection of Merit® 75 WP was made to trees and shrubs at a dilution of 16 ounces (454 grams) per 100 gallons (379 liters) of water. Soil injection applications were not monitored. Applications to monitoring sites began at 945 and 1402 and ended at 945 and 1407 for the two sites, respectively.

Air Sampling

Ambient air samples were collected in the back yard of both sites. A background air sample was taken prior to any treatments at the complex on August 23, 2006. Air samples were taken during and for one day following treatment.

Samples were collected using XAD-2 resin tubes (SKC#226-30-02) and SKC air samplers (SKC# 224-PCXR8) calibrated at a rate of approximately 1.8 liters-per-minute. The samplers were located outdoors near the house but away from any treated material at an air intake height of~3.5 feet. Samples were stored on dry ice until delivery to the CDFA's Center for Analytical Chemistry for laboratory analyses. Imidacloprid on XAD-2 resin was extracted with methanol and analyzed using High Performance Liquid Chromatography (HPLC) with an ultra violet detector with a reporting limit of 0.05 µg per sample.

Tank Sampling

Tank samples were collected during the application. The samples were collected from the spray gun into a 500-mL nalgene® container. Tank samples were stored separate from other samples on wet ice until delivery to the lab for analysis. The tank samples were extracted with methanol and analyzed using HPLC with an ultra violet detector.

Leaf Sampling

Leaf samples were collected in front and back yards of the monitoring sites. Foliage was sprayed by the same application tank from which the tank sample was collected. Samples consisted of 40 one-inch-diameter leaf punches collected into a 4-ounce glass jar and sealed with a Teflon®-lined lid. Two samples at each site were collected: one before application to the foliage (background) and the other after spray had dried, which was one hour after the application ended. Before- and after- treatment leaf punches were collected from the same plants. Samples were stored on wet ice and delivered within four hours to CDFA Center for Analytical Chemistry, and analyzed for dislodgeable foliar residue. Samples were washed with Surten® surfactant, extracted with ethyl acetate, and analyzed using HPLC with a fluorescence detector. The limit of quantification was 2 µg/sample (0.0098 µg/cm2).

Weather

The weather was generally clear, sunny, on the application day. On August 24, 2006. temperatures ranged from 51 to 86°F with a daily average wind speed of 4.4 miles-per-hour (CIMIS #132, Morgan Hill).

Results and Discussion

Air

A total of six air samples were analyzed for imidacloprid. All air samples had no detectable amount of imidacloprid at a reporting limit of 0.05 µg/sample, which corresponds to 0.019 µg/m3 to 0.29 µg/m3, depending on sample run time.

Tank Mix

The tank samples had concentrations of 0.0063% and 0.0085% A.I. of imidacloprid. The applicator mixing rate for Merit® 75 WP (75% A.I. of imidacloprid) was two ounces of product per 150 gallons of water for use on trees and ornamentals. Theoretical calculation of percent A.I. was 0.00749% A.I.

Leaf Samples

Leaf punch samples were collected from monitoring sites. The background samples had no detectable amount of imidacloprid. The post application samples had residues of 0.12 and 0.13 µg/cm2 of imidacloprid.

Figure 1. Treatment area and sampling locations.

Treated Area
Sample Locations