CITRUS ADVANCED TECHNOLOGY PROGRAM

QUARTERLY & FINAL REPORTS: Control of Citrus Greening, Canker & Emerging Diseases of Citrus

▶ INSTRUCTIONS

(●) *Quarterly Report* ( ) *Annual Report* ( ) *Final*

Required: What is the "headline" for this report (e.g. a one-sentence "newspaper headline" describing what you accomplished)

Initial conditions and Imidcloprid soil degradation established

Proposal Title

Effect of application rate, tree size and irrigation scheduling on leaf Imidacloprid concentration, psyllid populations and soil leaching.

Today's Date	Sponsoring Organization (drop-down)	Category (drop down)
2/1/12	Citrus Research and Development Foundation	Vector Management

REPORT UPDATE (500 words; summarize your accomplishments)

The present study was established in the spring of 2012 at the Southwest Florida Research and Education Center (SWFREC), of the University of Florida, in Immokalee, Collier County. The study will be conducted on citrus experimental groves, of Valencia orange of one and two years old, 5 to 6 years old and 8 to 10 years old. Field work is going to be concentrated on the spring and summer months, because IMD is applied during the peak production of new leaves (also refer to as "new flush"), which occur during the onset of rains (spring) and heavy precipitation months (summer). The soils in the SWFREC are poorly drained, with sandy textures, and they developed in 'Flatwoods' vegetation.

Initial characterization of experimental plots was done in two steps: (i) Disturbed and undisturbed soil samples using bucket augers and core-sampler from five depths (0-15 cm, 15-30 cm, 30-45 cm, 45-60 cm, and 60-75cm) for describing the basic soil chemical and physical properties: organic carbon content, pH, cation exchange capacity (CEC), particle-size distribution, wet bulk density, dry bulk density, saturated hydraulic conductivity, and moisture release curves. These samples represent initial conditions before the application of IMD and Br treatments. (ii) After the initial application of IMD treatments and the Br tracer (using KBr) were take disturbed soil samples using bucket augers at the five depths mentioned above. The frequency of sampling will be ruled mainly by precipitation events and irrigation scheduling. The traditional 'batch' or 'slurry' technique will be used to determine the partition coefficient (KD) in soils. Five levels of IMD standard solutions (0, 2, 4, 6, and 8 mg L-1) were prepared in deionized water with a supporting electrolyte (0.01 M CaCl2). Air-dried soil samples from 0-15, 15-30 and 30-45 cm depth were used to determine adsorption equilibrium was attained by shaking 24 hours. IMD equilibrium concentrations (Ce) were determined using an Agillent HPLC with UV detection.

The extraction procedure for IMD in soils that we have used for Florida was developed using 10 g of equivalent dry soil and 10 ml of HPLC grade acetonitrile and water (80:20). The degradation or disappearance rates for IMD in Florida soils are unknown. Soil samples were analyzed for moisture content, in order to spike samples triplicates with an initial concentration of 10 µg of IMD per gram of dry soil (based on recommended application rates in citrus groves of Florida). Each set of spiked samples (from 5 depths, 3 replicates per depth) 10 g of equivalent dry soil were maintained in centrifuge tubes with a constant gravimetric moisture content of 0.1. A parallel set of autoclaved samples (120 ºC, 30 min) were spiked as mentioned, 1 replicate per depth (n = 5) per extraction date, and frozen. The extracts were analyzed immediately using HPLC with UV detection, following the conditions mentioned. Mass balance was calculated for the parent compound. The first-order degradation rate equation will be used to calculate the half- life in soils (t1/2).

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Organization University of Florida

Contract Number

Project Duration (years) 2 *Year of Project* 1

Total Funds (current year) $99,612.50

SUBMIT REPORT

CITRUS RESEARCH AND DEVELOPMENT FOUNDATION, INC.