Florida Citrus Advanced Technology Program

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

Instructions Complete the fields based on your project specs. When finished, save the form to your local disk using a unique name. Then, go to **http://research.fcprac.com**, and log in with your user name and password using Researcher Login in the lower left. Find this project title and click on **Submit a Report**. Update your profile information if needed, then upload this report as directed.

2009-2010 REPORT	CATEGORY (drop-down)	TODAY'S DATE (m/d/yr)
○ *Quarterly Report* ◉ *Annual Report* ○ *Final*	Management	1/14/10

WHAT IS THE "HEADLINE" FOR THIS REPORT (e.g. a one-sentence "newspaper headline" describing what you accomplished)

Several soil applied SAR inducers are effective for canker control on young non bearing and bearing trees in Florida

TITLE and CONTACT INFORMATION

Proposal Title Soil applied Systemic acquired resistance (SAR) for control of citrus canker on young trees

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Organization UF, Citrus Research and Education Center	*Total Direct Funds (current year)* $101,664

REPORT UPDATE (650 words; provide details about your headline)

Objective 1: Potential for soil application of the neonicotinoids, imidacloprid (Admire) and thiamethoxam (Platinum), and acibenzolar-s-methyl (Actigard), to provide long-lived SAR control of canker was evaluated in a trial of 4-yr old grapefruit trees in Ft. Pierce, FL. Despite above average rainfall in May, the disease on the spring flush that emerged in March when it was dry was free of canker. In contrast, spring-summer flushes evaluated in September had 62% incidence of canker diseased leaves. Several of the SAR treatments significantly controlled disease but not as well as with Kocide 3000 and Firewall (streptomycin) sprays at a 21 day interval. SAR treatments that failed to significantly reduce foliar disease were the two applications of Actigard, Platinum split rate and isonicotinic acid treatments. Incidence of canker on the spring-summer-fall flushes evaluated at the end of the season in November had a slightly higher canker incidence than on the earlier set of flushes. By this time all the SAR treatments significantly reduced disease compared to the non-treated check. The most effective treatment was 4 applications of Actigard at 2 oz and least effective treatment was 2 applications of Actigard at 1.0 oz. The best treatment matched the control on the flushes attained by the 11 sprays of Kocide 3000 and/or Firewall. The 4-yr old trees produced enough fruit to evaluate canker incidence. Effectiveness of treatment on incidence of canker fruit varied from moderate for the 4 applications of Actigard at 2 oz, Platinum and Admire to ineffective for isonicotinic acid and Actigard at lesser rates and applications. Kocide 3000 and Firewall were significantly more effective than SAR treatments for reducing fruit disease. Harvestable fruit was reduced by canker–induced premature fruit drop. The non-treated check had the lowest fruit harvested per plot while the 4 applications of Actigard at 2 oz had the highest number of fruit. The number of fruit harvested was significantly negatively correlated with the incidence of disease on the spring summer-fall flush disease, but was not correlated with fruit disease incidence. Control of canker on the leaves apparently reduced the inoculum available for early season infection of fruit. Based on the trial results, Syngenta the manufacturers of Actigard are supportive of seeking a label for soil application of Actigard for SAR control of canker on non-bearing citrus.

Objective 2 Integration of soil applied SAR inducers with foliar applications of copper sprays for control of canker on grapefruit was evaluated in the 4 yr-old grapefruit trial above, the best control was Admire applied once at the beginning of the season followed by 11 Kocide 3000 sprays. A trial in 4 yr-old fruiting Hamlin trees was set up in Arcadia, FL to compare trunk and soil applications of Admire at 3x the label rate to account for effect of the larger tree volume. SAR control of canker on foliage and fruit was equal to that of six 21 day sprays of Kocide 3000 starting in March. This suggests that SAR and copper could be used in an integrated program for augmenting canker control for young fruiting trees. However, it is unlikely that either neonicotinoid will be approved for use on bearing trees due to potential risks of increasing rates of soil application leaching into groundwater and residues in the flowers. Because the best SAR treatment for fruit disease control in 4-yr -old tree trial was the 4 applications of the 2 oz rate of Actigard, trials of this SAR treatment for young bearing trees are planned.

Objective 3 is to evaluate of the complementation of the use of Actigard and neonicotinoids Platinum and Admire to increase and/or extend canker control in 1-yr-old grapefruit trees. Canker was first observed in the trial area in September 2009 after a very high rainfall period in August (17 inches). The pattern of disease spread was across the trial area from southwest to northeast. Incidence of trees with canker was 56% in the non-treated check trees, whereas in most of the SAR treatment combinations the incidence was less than 10%. This trial will continue in 2010.