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*	HLB Pathology	6/30/10

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

Inhibition of photosynthetate export from citrus leaves infected with Liberibacter

TITLE and CONTACT INFORMATION

Proposal Title Correlative microscopic and molecular characterization of the microbiome in the citrus phloem tissue

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Phone 352-846-0952	*Project Duration (years)* 2 *Year of Project* 1
Organization University of Florida	*Total Direct Funds (current year)* 109,211

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

From our microscopy imaging research, we discovered that excessive callose is deposited at the plasmodesmata in the phloem tissue of leaves infected Liberibacter. Callose is an important structural element of plasmodemata surrounding the desmotubules and it is well known that permeability of plasmodesmata is regulated by contolling synthesis of the callose. For instance, levels of plasmodesmata callose incresease in response to viral infection and the increase in callose reduces transport efficiency of solute through the plasmodesmata, which blocks passage of viral RNA molecules.
HLB symptomatic leaves accumulate massive amount of starch and we have shown that phloem loading is inhibited in such leaves. These data suggest that the abnormal starch accumulation is caused by photosynthetate export inhibition. We examined export efficiency of HLB leaves by C14 labeling experiment. We labeled photosynthetate for 2 hrs with 14CO2 and monitored export of radioactive carbon over 4 days. Approximated 50% more radioactive carbon is retained in the HLB leaves than healthy leaves. Therefore, it is likely that callose overaccumulation in the phloem cells induced by Liberibacter leads to inhibition of carbohydrate export.