

PROJECT NO.	PI	TITLE
500	Adair	Evaluation of various emulsifiers and adjuvants to increase the insecticidal performance of concentrate spray applications of petroleum oil on Asian Citrus Psyllid populations to reduce HLB transmission
501	Albrigo	Managing HLB by learning from the virulence mechanism of Las and reducing phloem plugging
502	Arnold-C	High-Throughput Screening of Transgenic Citrus for HLB Resistance
503	Atwood	The support of Citrus Research and Extension efforts by maintain and improving the Mid Florida Citrus Foundation grove.
504	Behlau	Characterization of copper resistance genes in <i>Xanthomonas citri</i> subsp. <i>citri</i> and optimization of copper bactericides for control of citrus canker
505	Belknap	Developing HLB Resistant Transgenic Citrus Using only Citrus DNA Sequences
506	Bowman-1	Increased Tolerance to HLB Through High Grafting on Resistant Rootstocks
507	Bowman-2	Elevated expression of Poncirus-related defense genes in citrus to achieve resistance to HLB
508	Bowman-3	Development of Promising Supersour Rootstocks for Florida Citrus
509	Bowman-4	Production and Testing of Transgenic Rootstocks For Resistance to HLB by Incorporation of AMPs
510	Brown-1	Linking psyllid vector functional genomics with molecular and cellular pathways to reveal key anatomical interfaces with <i>Ca. Liberibacter</i>
511	Brown-2	Elucidating key links between Lib infection of the psyllid gut and salivary glands via co-opted nutrient pathways during early stages of infection and multiplication prior to transmission.
512	Brown-3	RNASeq analysis for time course acquisition-access to probe adult- and nymph-Liberibacter organ and vector specificity
513	Chen-1	Identification and validation of functional resistance genes in citrus genomes for resistance breeding
514	Chen-2	Comparative proteomics between tolerant and susceptible citrus varieties for early biomarkers and resistance breeding
515	Dandekar	Defining the biology of HLB disease in citrus by functional mapping of host and pathogen responses
516	Dawson-1	Develop citrus resistant or tolerant to HLB using the CTV vector and transgenic approaches
517	Dawson-2	Determine the time and location of sources of inoculum of trees after visit of infected psyllids
518	Dawson-3	Examination of poncirus genes for tolerance of sweet orange to HLB
519	Dewdney	Strobilurin (QoI) resistance and the potential for resistance development to the newly introduced SDHI and DMI fungicides in tangerine-infecting <i>Alternaria alternata</i> populations of Florida
520	Doddapaneni	A multi-species citrus genome sequencing proposal to rapidly build genomics resources to combat HLB
521	Duan-1	Characterization and manipulation of the prophages/phages of 'Candidatus <i>Liberibacter asiaticus</i> ' for the control of citrus huanglongbing
522	Duan-2	Characterize and increase the basal defense resistance mediated by the flagellin receptor FLS2 in citrus plants against citrus Huanglongbing and canker bacteria
523	Duan-3	Screening and Cloning of Resistance Related Genes to <i>Candidatus Liberibacter asiaticus</i> by RNA-Seq in Huanglongbing (HLB) susceptible and resistant hosts
524	Duncan-1	Amending soils to manage insect pests
525	Duncan-2	Characterizing a new nematode pest and the prevalence of resistance breaking populations of the citrus nematode
526	Ehsani-1	Precision foliar nutrient management using real time leaf analysis and a variable rate application technique
527	Ehsani-2	Developing a low-cost, aerial multispectral and thermal sensing tool for managing stress in HLB infected orchards
528	Etxeberria-1	Relationship of <i>Candidatus Liberibacter asiaticus</i> (Las) movement in the phloem to plugging and potential recovery of HLB infected trees

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529	Etxeberria-3	Identification of key step(s) in carbohydrate metabolism affected by HLB that result(s) in carbohydrate imbalance and death of Citrus trees
530	Falk-1	Targetting Diaphorina citri using insect virus-induced systemic RNA interference
531	Falk-2	Transgenic RNAi-based psyllid control
532	Folimonova-1	A novel method for efficient inoculation of trees with the HLB bacterium
533	Folimonova-2	Deployment of a superinfecting Citrus tristeza virus-based vector in the field: a measure to effectively protect field citrus trees against HLB
534	Folkerts	Establishment of citrus mini-chromosome technology for simultaneous delivery of multiple disease and insect resistance genes
535	Gabriel	Exploiting the Las phage for potential control of HLB
536	Gmitter-2	Identification and mapping of the genes controlling tolerance to Huanglongbing (HLB)
537	Gmitter-3	Characterization of Huanglongbing (HLB) survivors in the severely infected and/or abandoned groves
538	Gmitter-4	Host genetic control of interference in Asian citrus psyllid life cycles
539	Gmitter-5	Improved Rootstocks and Scions to Overcome HLB and Canker, and for Competitive Market Advantage
540	Gottwald	Predictive mapping to inform citrus producers of HLB/ACP risk at the Statewide, CHMA and local spatial levels to improve targeting of control efforts based on repeated cycles of statewide survey.
541	Gowda-1	Functional regulation of 'Candidatus Liberibacter asiaticus' induced citrus transcriptome with hairpin RNA-mediated gene knock-outs to mitigate citrus Hualongbing.
542	Gowda-2	Enhancing resistance of citrus to HLB and Canker by increasing the activity of the oxidative pentose phosphate pathway in citrus
543	Gowda-3	Expression of HLB effectors showing tolerance and/or resistance to Huanglongbing in citrus to impart durable transgenic resistance.
544	Graham-1	Improved management of citrus canker through use of systemic acquired resistance and more bioavailable copper bactericides
545	Graham-2	Phytophthora damage to roots: a potential contributor to reduced root health and decline of HLB-affected citrus trees
546	Graham-3	Mechanisms involved in biofilm formation and infection by Xanthomonas citri subsp. citri
547	Grosser-1	Applying Advances of Juvenile Citrus Transformation Technology (Continuation of Project #87)
548	Grosser-2	Development of Transgenic Tetraploid "Tetrazyg" Rootstocks with Potential as Psyllid Barrier Row Trees
549	Grosser-3	Manipulating the Interactions of Complex Rootstock Genetics and Constant Enhanced Nutrition to Reduce the Frequency and Severity of HLB Infections in New Plantings
550	Gurley	Development of phloem and wound-inducible expression of programmed cell death effectors to engineer resistance to citrus greening disease
551	Hartung-1	Visualization and quantification of proteins produced by 'Ca. Liberibacter asiaticus' in infected sweet orange plants and vector psyllids
552	Hartung-2	HLB resistance through transgenic expression of short chain fragment variable antibodies against key Liberibacter epitopes
553	He-1	Optimizing nutritional therapies to sustain production of huanglongbing (HLB)-affected citrus groves
554	Hilf	Evaluating expression and accumulation of anti-bacterial peptides expressed from the Citrus tristeza virus (CTV) genome to combat HLB disease
555	Horvath-1	TAL effector induced resistance to Xanthomonas
556	Horvath-2	Engineering PAMP-receptor mediated broad spectrum resistance to HLB and canker
557	Kang	Development of citrus plants tolerant to Huanglongbing (HLB) by enhancement of phloem vigor
558	Killiny-5	Disrupt the bacterial growth in the insect vector to block the transmission of Candidatus Liberibacter Asiaticus to citrus, the causal agent of citrus greening disease

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559	Killiny-7	Blocking the Vector transmission of Liberibacter Asiaticus to stop the spread of Huanglongbing in citrus.
560	Lapointe-1	Application of an aggregation pheromone for management of the Diaprepes root weevil
561	LaPointe-2	Determination of attractive host plant volatiles and sex pheromones of the Asian citrus psyllid using electroantennograms and coupled gas chromatograph-electroantennographic detection.
562	Lee-1	Development of new technologies to eliminate Huanglongbing from budwood source trees
563	Lee-2	Analyzing Liberibacter isolates undetectable by standard diagnostic methods in Florida
564	Lindeberg	Expansion of online genome resources for bacterial pathogens of citrus and development of a diagnostic sequence database for Liberibacter species
565	Louzada	Development of consumer-friendly transgenic citrus plants with a potential broad spectrum resistance to HLB, Citrus canker, Phytophthora and other diseases
566	Lu	Manipulating defense signaling networks to stimulate broad-spectrum resistance to HLB and other diseases in citrus
567	Mankin	Acoustic trap for Asian Citrus psyllids
568	McCollum-1	Early Responses to Psyllid Feeding and CLas Infection in Citrus Phloem Cells
569	McCollum-2	Early Responses To CLas Infection / HLB Disease Development
570	Mizell	Using a new psyllid trap that captures and preserves vectors and Candidatus sp. for DNA extraction to better understand vector-greening population dynamics
571	Moore-2	Do citrus microRNAs transported in ACP play a part in HLB symptomology?
572	Moore-3	Study the role of basal defense and chemical treatments in the response of citrus to HLB
573	Moore-4	Use of an early flowering gene in citrus to rapidly transfer disease resistance from citrus relatives into cultivated types
574	Morris-1	An Economic Evaluation of the Effects of Citrus Health Management Areas on Tree Mortality, Grove Profitability and Grove Land Values
575	Morris-2	An Estimation of Current and Future Economic Impacts of Endemic HLB
576	Mou-1	Genetic screen for non-transgenic citrus varieties with increased resistance to citrus greening and canker
577	Mou-2	Generation of non-transgenic citrus disease-resistant varieties through two different approaches
578	Moudgil-1	Nanoengineered Particulate Coatings for Preventing Psyllid Attack on Citrus Crops
579	Orbovic-1	Citrus Core Transformation Facility as a platform for testing of different genes and/or sequences that have potential to render Citrus plants tolerant or resistant to diseases
580	Orbovic-2	The effect of arabinogalactan-proteins on regeneration potential and transformability of juvenile Citrus explants used for genetic transformation by Agrobacterium tumefaciens
581	Pelz-Stelinski-1	Key unknowns about Asian citrus psyllid biology in Florida: Overwintering sites and alternative hosts
582	Pelz-Stelinski-2	Factors influencing transmission of the greening pathogen by the Asian citrus psyllid
583	Pena	Mature citrus transformation for surviving with citrus greening
584	Powell-1	Rapid and Efficient Delivery of Effective Compounds into Citrus Phloem for treatment of HLB Bacteria
585	Powell-3	An integrated approach for establishment and maintenance of citrus plantings faced with the HLB threat
586	Reyes-3	Low-cost solar thermal treatment for in-grove reduction of CLas inoculum
587	Ritenour	Preventing Citrus Black Spot Movement: Developing Grower Tools and Disinfestation Techniques to Keep Markets Open

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588	Roberts-1	Monitoring the citrus canker pathogen for copper resistance and incorporation of two non-copper materials in management with demonstrated efficacy in reducing citrus canker severity in the field
589	Roberts-2	Continuation of diagnostic service for growers for detection of Huanglongbing in citrus and psyllids to aid in management decisions
590	Rogers-1	Enhancing psyllid control through a better understanding of the effects of pesticide applications on psyllid feeding and mortality
591	Rogers-2	Continuation of Development and evaluation of psyllid management programs from protection of resets and young tree plantings from HLB
592	Rucks	Protective Structure for Citrus Research Foundation Farm to Enhance USDA Citrus Breeding
593	Schumann-1	Advanced Production Systems (ACPS) for efficient, sustainable citrus groves
594	Schumann-2	Improving the uptake efficiency of nutrients applied to citrus foliage
595	Setamou	Development of a novel attract and kill approach for the management of Asian citrus psyllid in residential areas
596	Song	Engineering Resistance Against Citrus Canker and Greening
597	Spann-2	Evaluating the interactions of HLB infection and plant nutrition in an effort to maintain health and productivity of HLB-infected trees
598	Spann-4	Bringing young citrus trees infected with <i>Candidatus Liberibacter asiaticus</i> into production using intensive horticultural management strategies
599	Spreen	Management of HLB in Florida Citrus: The Question
600	Stansly-1	Management Tactics Based on Psyllid Movement and Distribution in Florida Citrus
601	Stansly-3	Effective and Sustainable Insecticidal Control of Citrus Leafminer, <i>Phyllocnistis citrella</i> (Stainton) (Lepidoptera: Gracillariidae) to Slow Spread of Citrus Canker Disease.
602	Stansly-4	Management of Insecticide Resistance in Asian Citrus Psyllid (ACP) Populations
603	Stelinski-1	Non-neurotoxic compounds as alternatives to conventional insecticides for Asian citrus psyllid and insecticide resistance management.
604	Stelinski-2	Influence of plant nutrient regimes on Asian Citrus psyllid biology and management
605	Stover-1	Development of Promising New Scions for Florida Citrus: Exploiting HLB Resistance and Tolerance
606	Stover-2	Production of Transgenic Commercial Scion Cultivars Resistant to HLB and Canker: Continued AMP Approaches and Novel Transgenic Strategies
607	Stover-3	A secure site for testing transgenic and conventional citrus for HLB and psyllid resistance
608	WangN-1	Characterize the effect of application of beneficial bacteria (Microbe Program) on management of Huanglongbing (HLB)
609	WangN-2	Control of citrus Huanglongbing by exploiting the virulence mechanism of <i>Candidatus Liberibacter asiaticus</i> and inducing plant resistance
610	WangN-3	Improve the management of citrus canker by protecting citrus fruits through interfering with biofilm formation and quorum sensing of <i>Xanthomonas citri</i> ssp. <i>citri</i>
611	WangN-4	Identify the causal agent of citrus blight through metagenomic approaches and characterize the effect of HLB on citrus blight diseased trees
612	WangN-5	Characterization of quorum quenching and siderophore producing bacteria for the control of <i>Candidatus Liberibacter asiaticus</i> (Las)
613	WangN-6	Blocking the translocation of <i>Candidatus Liberibacter asiaticus</i> inside the phloem from psyllid feeding sites
614	Young	Enhanced nutritional application and productivity in endemic HLB grove situations in Florida - a statistical approach to determine efficacy