

Spreadsheet for Priority Development

Contents:

- Original grower priorities from Feb. RMC, GCGA and workshops
- Grower Priorities (April meeting outcome)
 - Yes = green, based on committee recommendation elements may have been removed, added or modified
 - No = red
- Product of March CPDC/RMC
 - Reworded priority as requested by committees during March meetings
- New recommendations/ideas
 - National Academy study recommendations (in green text)
 - UF IFAS research ideas (dark blue text)
 - USDA-ARS research ideas (dark blue text)

Spreadsheet for Priority Development

- Organization:
- New ideas/recommendations
 - Matched to original grower priorities
 - Orange/brown text are similar to the original priority, but introduce a new element (for discussion and decision)

Grower Priorities: Asian Citrus Psyllid	Product of March CPDC	NAS Recommendations	UF IFAS Research Topic Ideas	ARS Research Topic Ideas
<p>Alternative products are needed to protect against ACP</p> <ul style="list-style-type: none"> • Barriers to prevent feeding (reflective mulch, kaolin clay...). • Can Kaolin clay be improved to increase rainfastness? • Can essential oil products or biopesticides be used (are they effective) in combination or rotation with conventional insecticides? • What other materials can be brought into use? • Are time-release insecticides a possibility? • What role might aldicarb play in managing ACP and HLB and can CRDF play a role? 	<p>2. Improve Asian citrus psyllid (<i>Diaphorina citri</i>) management tools and strategies</p> <p>A. Investigate barriers to prevent psyllid feeding and how to improve their use (e.g. rainfastness of kaolin clay products).</p> <p>B. Investigate biopesticide products (including botanical oil products) as complements to conventional insecticides.</p>	<p>Pg 9: Explore strategies for physical protection of trees against ACP, including repellents, mulches and screens.</p> <p>Pg 10: Explore the effectiveness of new pesticidal chemicals, particularly those providing ACP repellency or having minimal effects on biocontrol agents, on HLB incidence.</p>	<p>5) c. o Total cost and benefits of reflective mulch use.</p> <ul style="list-style-type: none"> ▪ E.g., material, equipment, labor, expertise, nutrient management, yields <p>o Factors affecting adoption</p> <ul style="list-style-type: none"> ▪ Benefits and barriers ▪ Willingness-to-adopt survey <p>f. Investigate implementation of young tree protection with protective netting. How to manage secondary pest community within these exclusion nettings. Adjustment of other management practices.</p>	<p>Use of Deltamethrin impregnated screens to improve ACP management and compliment protected citrus production systems.</p>

Priorities for CPDC-18

In materials: CPD-D6d

Five priorities:

- 1. Determine the best use of bactericides in citrus**
- 2. Improve Asian citrus psyllid (*Diaphorina citri*) management tools and strategies**
- 3. Plant Improvement**
- 4. Horticultural practices to rehabilitate declining trees**
- 5. Other Citrus Disease Management**

CPDC passed motion to recommend approval of priorities to be included in the CPDC-18 RFP

Commercial Product Delivery Committee Final Research Priorities for CPDC-18 RFP

1. Determine the best use of bactericides in citrus

- A. Develop effective and best use of bactericides in citrus
 - i. Investigate the effect of registered or novel bactericide treatments on bacterial titer and tree health, including root health and regeneration, at various levels of tree decline.
 - a. Identify the optimal seasonal use pattern of bactericides, including material rotation.
 - b. Determine if effective bactericide treatments are feasible based on established fruit residue tolerance levels.
- B. Investigate the effect of bactericides in new citrus plantings as preventative or therapeutic treatments.
- C. Investigate the dynamics of bactericides within the tree
 - i. Investigate the systemic movement of bactericides within the phloem
 - ii. Improve methods for tracking and quantifying oxytetracycline and streptomycin in the tree.
- D. Optimize delivery of bactericides
 - i. Determine which adjuvants (penetrants, surfactants and water conditioning agents) most efficiently facilitate uptake of oxytetracycline and streptomycin.
 - ii. Determine if tank mix components (including copper) affect the efficacy of oxytetracycline and streptomycin.
 - iii. Can non-conventional application technologies improve uptake of bactericides?
 - a. Determine if effective methods are feasible based on established fruit residue tolerance levels.

2. Improve Asian citrus psyllid (*Diaphorina citri*) management tools and strategies

- A. Investigate barriers to prevent psyllid feeding and how to improve their use (e.g. rainfastness of kaolin clay products, netting, reflective mulch, etc.).
- B. Investigate biopesticide products (including botanical oil products) as complements to conventional insecticides.
- C. Revise ACP control strategies (IPM, CHMAs) to improve ACP management, including in young trees.
- D. Implement effective pheromone tools and acoustic technology in citrus groves for ACP control.
- E. Investigate the role of repeated feeding and inoculation by ACP on disease development and tree decline.

3. Plant Improvement

A. Field Trial Data Collection

- i. Collect standardized data on existing field trials to evaluate citrus scion and rootstock response to HLB, other pests and diseases, horticultural performance, fruit and juice quality including flavor profile. The PI should describe existing field trials as described in the appendix of the RFP guidelines.
 - ii. Evaluate horticultural performance in existing commercial plantings and field trials of Vernia, Parson-Brown, Sugar-Belle, OLL-4, OLL-8 and mandarins and other varieties that appear to maintain productivity with HLB infection, as described in the appendix of the RFP guidelines.
- B. Establish field trials of new HLB resistant or tolerant varieties for both scions and rootstocks as described in the standardized methods in in the appendix of the RFP guidelines.
 - C. Evaluate rootstock performance derived from tissue culture compared with conventional propagation materials.

4. Horticultural practices to rehabilitate declining trees

- A. Develop economical seasonal recommendations for optimum micronutrient and macronutrient levels in leaves and/or roots in HLB diseased trees?
 - i. Examine if nutrient therapies effect CLas titers, ameliorate root dieback, and improve tree health and yield in HLB diseased trees.
 - ii. Investigate how water quality and soil-applied, carbon-based materials may impact nutrient uptake, root/tree health and yield in HLB diseased trees.
 - iii. Investigate how plant growth regulators and may stimulate root growth, reduce fruit drop and/or affect plant defenses.

5. Other Citrus Disease Management

- A. Investigate chemicals, tools or cultural practices, and incorporate all available post-bloom fruit drop management experience and knowledge from other citrus growing regions, to economically improve management of PFD in Florida.
- B. Investigate non-copper treatments for citrus canker including streptomycin and oxytetracycline, and investigate copper use in rotation with non-copper treatments.
- C. Investigate the susceptibility of released rootstocks to nematodes and other root pathogens.

6. Service and Support Funding (outside of RFP)