



DRAFT FOR DISCUSSION

**Board Meeting
CRDF Planning Project Review**

December 8, 2015



Reflections on CRDF team

“I have never worked for a group that has worked harder than this [CRDF] group. They know how big a deal this is, and everyone has been so committed”

“Greening has not been solved in over 100 years. This group has come the furthest of any organization globally in tackling HLB”



CRDF planning project approach

- Understand evolving industry dynamics, funding landscape and HLB disease mitigation progress
- Assess current CRDF planning process, capacity and role
- Conduct extensive interviews with internal and external stakeholders to inform CRDF evaluation and recommendations
- Review of relevant industry best practices



Develop an updated and vetted process to define CRDF focus, planning, budget allocation, organization and stakeholder engagement for the next six years

CRDF Planning Project stakeholder interviews: Conducted and planned



CRDF

External stakeholders

Completed by 12/3:

- Bobby Barben (Barben Fruit)
- Larry Black (Peace River Packing)
- Dr. Jackie Burns (Univ. of Florida)
- Joe Davis, Jr. (Davis Citrus Mgmt.)
- Tom Jerkins (Premier Citrus)
- Ricke Kress (Southern Gardens Citrus)
- Ben McLean III (Uncle Matt's Organic)
- Jerry Newlin (Orange Co.)
- Wayne Simmons (LaBelle Fruit)
- Bob Stambaugh (Sharit, Bunn & Chilton)
- Hugh Thompson III (Cutrale Citrus Juices)
- Tom Turpen (TIG)

- Tim Anglea (Coca Cola)
- Bill Barber (Lykes Brothers)
- Bob Behr (Florida's Natural)
- Maury Boyd (McKinnon)
- Dennis Broadaway (Haines City Citrus Growers Association)
- Aedan Dowling (Tropicana)
- David Howard (Graves Brothers)
- Dr. Mike Rogers (Univ. of Florida)
- Susan Logue (PepsiCo)
- Charles Lucas (Consolidated Citrus)
- Brian Scully (US Dept. of Agriculture)
- Mike Sparks (Florida Citrus Mutual)

In process:

- Jim Dukowitz (TIG)
- Dan Hanson (TIG)

- Juliano Ayres (FundeCitrus Brazil)
- Peter McClure (Evans Properties)
- Greg Nelson (DNE World Fruit)
- Shannon Shepp (FL Dept. of Citrus)

Key review areas for evaluating CRDF planning process



Industry and Stakeholder Situation

- Disease progress and industry impact
 - Local and global progress on disease
 - Industry economics and practices
- Political and funding environment
 - Political
 - Regulatory
 - Funding for CRDF and other HLB research actors
- Stakeholders
 - Internal at CRDF comprised of industry players and growers
 - Industry dependent on Florida fruit, including processors, fragrance and trucking, and consumers more broadly
 - Other actors such as universities, agro tech companies, national and global researchers and agricultural players

CRDF Planning and Role

- CRDF R & D Process
 - Focus areas given industry needs and research progress
 - Process and criteria for evaluation
 - Project management
 - Relevant industry best practices
- CRDF Organization
 - Roles & responsibilities
 - Capabilities
 - Governance
 - Board and committee composition
- CRDF Roles and Partnerships
 - Stakeholder engagement
 - Political and regulatory participation
 - Grower and industry influence

Industry and Stakeholder Situation:

Clear pressure to change current process



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| <p>Disease progress and industry impact</p> | <p><i>HLB disease has progressed faster than expectations with potential “cure” solutions beyond the horizon of a sustainable industry at current rates of decline</i></p> | <p>Local and global progress on disease has not yielded sustainable disease eradication</p> <ul style="list-style-type: none"> Discovery process has not yielded viable solutions and the Florida industry continues to decline with >80% of trees infected and the projected production for 2015/16 is 74M boxes in oranges (less than half of the 1990’s peak) expected to drop further Some progress has been made slowing down tree decline and the most promising results are from bridge measures (e.g., bactericides, thermal treatment) Any potentially permanent solution (e.g., GMO, selective breeding, host intervention) is at least 7-10 years away or longer from large scale adoption and commercial viability <p>Industry economics and practices point to need for immediate, cost effective solutions</p> <ul style="list-style-type: none"> Bridge solutions have driven cost of production up by 2.5x Consumers are price sensitive and largely unaware of HLB problem Processing and grove maintenance economics challenging as production declines Groves in Florida feeling pressure and close to reaching break-even points |
| <p>Political and funding environment</p> | <p><i>Production driven funding could be at risk while new federal funding support focused on long term basic research</i></p> | <p>Funding tied to production at risk; new funding coming in to address long term basic research</p> <ul style="list-style-type: none"> Political support for Florida citrus industry remains strong from USDA, FDA, Florida Department of Agriculture with add’l federal & state funding coming online; negligible private sector donations <ul style="list-style-type: none"> CRDF at ~\$17M per year, dependent on box tax (25%) at risk as production declines and grower frustration grows, state budget (24%), Department of Citrus (18%) 25% national funding support appear stable New Farm Bill funding: 5 year \$125M focused on basic research New USDA funding: 2 year \$21M focused on research with some flexibility <p>Regulatory process bottleneck in proposed solutions, but strong commitment to support</p> <ul style="list-style-type: none"> Support for moving solutions such as bactericides through regulatory processes Leverage of existing approvals to apply to the citrus industry Engagement with bodies such as USDA, EPA, FDA and CDC is part of the commercialization process |
| <p>Stakeholders</p> | <p><i>Growing interest in industry consortiums and wider stakeholder engagement; limited agro tech involvement</i></p> | <p>CRDF currently comprised primarily of growers and researchers</p> <ul style="list-style-type: none"> CRDF comprised of industry players, but member participation is low and frustration is growing Universities (U of Florida, Texas, California) and global researchers have a long HLB history Agencies similar to CRDF (California CRB and Texas CPB) collaborating on research <p>External stakeholders increasingly impacted by higher prices, lower yields and fruit quality</p> <ul style="list-style-type: none"> Players such as processors, fragrance and citrus oil companies growing involvement Support for industry consortiums from large brands that to date have had limited involvement Consumers unaware of the HLB problem while demand is declining and highly elastic to price <p>Large agro tech companies (e.g., Monsanto, Syngenta, Bayer, CropScience) on the sidelines</p> <ul style="list-style-type: none"> Industry cost/benefit economics and risk keep large agro tech companies uninvolved |

CRDF Planning & Role: Emerging hypothesis includes focus, acceleration and broader industry engagement



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| R & D Process | <p><i>CRDF's wide net approach to solutions and focus on discovery and basic research should be revamped to focus on short term and commercially viable solutions</i></p> | <p>Historical CRDF focus on research</p> <ul style="list-style-type: none"> CRDF has focused on discovery research, shepherding hundreds of projects in collaboration with California Research Board (CRB), Texas Citrus Producers Board (TCPB) and Universities Historically, high support for shotgun approach to investing in wide array of projects and crowdsourcing of projects to increase likelihood of solutions to be found Initial review of current ongoing projects indicate ~110 projects split between basic research (~74 projects with ~\$27MM in funding) and product development (~37 projects with ~\$8MM in funding) It appears that progress has been made on projects CRDF has funded. Promising developments and excitement around antimicrobials, zincicide, and RNAi. However, extent of actual progress is not known given lack of communication and updates on progress <p>Current and Future focus on bridge solutions</p> <ul style="list-style-type: none"> Overall, a sustainable solution has not materialized and since industry is continuing the decline, CRDF has need to develop bridge solutions that can address tree decline while longer term solutions are sought Therefore, in the past 1-2 years, CRDF started implementing changes to move away from funding basic research to product development Nevertheless, despite noticeable trend towards applied and commercial solutions, most stakeholders feel that an inventory of projects and further consolidation and focus is critical |
| | <p><i>Committed project team to consider adjustments</i></p> | <ul style="list-style-type: none"> CRDF has outsourced program management function to the Technology Innovations Group (TIG); overall committed team with focus on moving research forward but perceived by stakeholders to have challenges Concern that Commercial Product Development staff may not be sufficiently qualified for the kind of work that CRDF needs to do going forward; potential to improve outreach and communications |
| Organization | <p><i>Overall oversight/org is strong but limited commercialization on experience & capacity</i></p> | <ul style="list-style-type: none"> The CRDF 13 member board is primarily comprised of citrus growers and industry representatives Current structure is supported by key committees focused on governance, industry research coordination, research management and commercialization Commercial Product Development committee might need additional expertise to clear regulatory hurdles, contract manufacturing, and work through product development issues Current board and committees of academics, researchers & growers unlikely to be able to support this focus |
| Roles & Partnerships | <p><i>CRDF should expand stakeholder engagement</i></p> | <ul style="list-style-type: none"> To date, CRDF has mostly engaged with researchers and select growers; a need has been identified to broaden industry participation and engagement CRDF should consider improving communications, education and potentially regulatory/political support Explore broader role for CRDF to lead industry consortiums and engage with larger agro companies |

Select interview quotes

CRDF

"The driving principal should be to now focus on solutions and just push as hard as we can"

"Need to know when to pull the plug on projects. There is not a real scientific review process on when to call it quits. We need more coordination and objectivity"

"Educate the industry over the next 2-3 months in what has been done, how CRDF will streamline, focus on delivery and explain the next phase"

"I think we need a very intense project management over certain areas. We have started down that path but not as aggressively as I think we need"

"Expedite registration process, lobbying effort, bringing in elected officials into the process"

"Composition of the board needs to be considered. Most from grower community. Greater participation of processors and others needed given broader perspective and deep reach"

External stakeholders

"If we don't fix this short term, growers won't be here"

"How can we make sure that growers continue to plant trees until solution is found"

"We are in an emergency situation and we should all be beyond hurt feelings"

"When you work on a disease the you can't even culture in a lab...this alone causes research not to happen quickly"

"I think we are at a breaking point if we haven't passed it already"

"Could we get a directory review for every research project? Sit down with the research committee and get a 10 min overview on each project"

CRDF needs to coordinate with industry, coordinate with regulatory bodies, work closer with growers, and educate consumers"

R & D Process

Key planning questions



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| <p><i>CRDF Focus areas and evaluation process</i></p> | <ul style="list-style-type: none">▪ Summary and evaluation of current CRDF projects<ul style="list-style-type: none">– Should CRDF undertake an inventory of these projects and what would be the process?▪ Longer vs. short term solutions and research breakthroughs<ul style="list-style-type: none">– What is the most effective way to bring about research breakthroughs? Is it through structured KPIs and fast kill/no kill decisions, or giving space to the scientists to be creative and invest in home run solutions? Is there a middle ground?– Which “bridge” solutions (e.g., bactericide, thermal treatment, antimicrobials) should CRDF prioritize to maintain crop yields? If so, what are the highest probability bridges, which ones should be deprioritized (e.g., thermal treatment if not commercially viable)? Should timing (e.g., bridges for 2-3 years, bridges for 5-7 years) be defined?▪ Lessons from private sector and other agricultural challenges<ul style="list-style-type: none">– What R&D/commercialization lessons can be learned from private sector (e.g., Chorus Labs, 3M)?– What lessons learned can CRDF glean from other agricultural precedents (e.g., extinction of popular banana strain, acceptance of GMO papaya)?▪ Changes in CRDF process<ul style="list-style-type: none">– What is the process for CRDF to change its approach from a wide reaching R&D process to a razor sharp focus on the most promising and viable projects?– What is the pathway to identify technologies that warrant the most significant investment? What is the process to determine investment amounts? |
| <p><i>Project manage- ment and organiza- tional capacity</i></p> | <ul style="list-style-type: none">▪ Program management at CRDF<ul style="list-style-type: none">– Does TIG project management need to be more aligned to short term breakthroughs?– Do new researchers need to be brought into the fold from ag-chem companies, other universities?– Are there education and communications challenges? (perception vs actual)▪ Commercial Product Development re-alignment<ul style="list-style-type: none">– What are the ways the committee can be more aligned to commercialization requirements?– Are there alternatives and/or additions to current staff?– What would be the expectations of CRDF’s R&D process under different Product Dev solutions? |

Organization, role and partnerships

Key planning questions



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| <p><i>Organization (non-R & D specific recommendations)</i></p> | <ul style="list-style-type: none">▪ CRDF grower engagement<ul style="list-style-type: none">– What actions are needed to better engage growers to gain their support, and engage them in the solution-finding process? Should CRDF lead this?– How much of CRDF’s efforts should be focused on maintaining its relevancy, and improving trust and participation among members and stakeholders?– To what extent should CRDF focus on incentivizing replanting with more tolerant varieties?▪ Industry wide communications and PR<ul style="list-style-type: none">– How does communication to all stakeholders need to improve, and how can this be facilitated?– What role should CRDF play in shaping public perception on HLB, GMO, bactericides, etc.?▪ Regulatory and political participation<ul style="list-style-type: none">– To what extent should CRDF get involved in regulatory process? In the political support process?▪ Board and committee composition and capabilities<ul style="list-style-type: none">– Does CRDF have the right capabilities and connections on the board and committees? If not, what changes can be made and by whom? |
| <p><i>Partnerships</i></p> | <ul style="list-style-type: none">▪ Stakeholder engagement<ul style="list-style-type: none">– How should CRDF collaborate and involve other stakeholders such as industry consortiums (e.g. growers, PEP, COKE, fragrances)? Should CRDF be leading an industry consortium?– Can CRDF have the most impact by redirecting a high % of its financial and human resources from its existing work (investing in basic research and product development projects) to playing a leading role in elevating the HLB issue to a national and/or global level, making the case for others to get involved, educating all relevant stakeholders (e.g., companies that directly and indirectly need oranges, government, limes, lemons, consumers), and coordinating efforts?▪ Engagement of new players and additional financing<ul style="list-style-type: none">– How does CRDF bring in key players/large R & D agro companies who not only have the resources and clout needed, but also the economic need for this problem to be solved? What is the incentive structure?– What are the ways that CRDF can engage ag-chem companies? What outreach can be done now?– Are there financial solutions to secure more funding and creative solutions from other industries? |



Project objectives and output

Output

15-20 page CRDF revised planning document including investment allocation and commercialization process, stakeholder engagement, possibly updated organization

R&D process

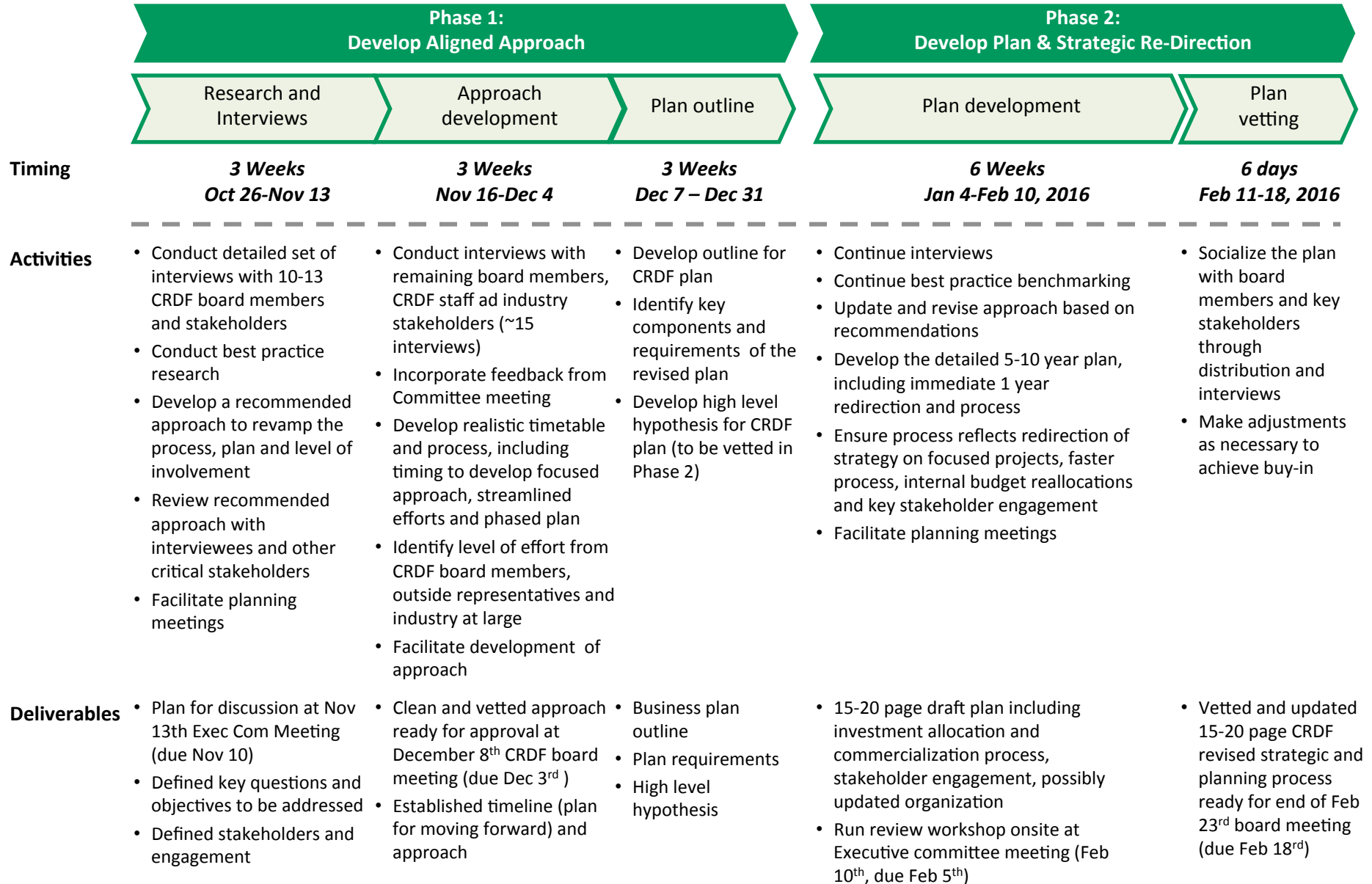
- Develop a strategy, process and possibly revamped organization for CRDF to redirect from discovery to focused intervention
- Determine a planning process that has a greater probability of achieving viable solutions in a faster timeframe
- Identify an approach that buckets investment priorities and timelines that better utilize industry resources
- Identify key projects to be prioritized over others and redirect resources accordingly

Organization and Role

- Develop a plan to align the Program Management function and Commercial Product Development functions to have a revamped and more focused process
- Identify organization and budget allocation that supports the updated planning process
- Create clarity of CRDF role in communications and broader industry issues
- Develop an engagement/incentive plan for the industry and stakeholders
 - With global players, industry consortiums, regulators and large agricultural companies
 - CRDF members and growers including better communication, aligning incentives, and clarifying goal possibilities
- Communicate and get buy-in on new strategy from CRDF committees and stakeholders in time for 2016 Q2 planning



Project workplan





Team and proposed steering committee

Proposed steering committee

CRDF

- Harold Browning
- Tom Jerkins

External

- Tim Anglea, Coca Cola
- Susan Logue, PepsiCo

BTG

- Alice Gugelev (alicegugelev@gmail.com) - *please contact with any questions*
- Mark Gomez

Process

- Meeting schedule: Every two weeks
- Topics: Review progress and materials, discuss roadblocks, identify people to interview

Consulting Team

- **Alice Gugelev:** Project lead. Alice is a strategy consultant with over 15 years of strategic planning experience and strong knowledge of the agricultural sector and the HLB challenge in particular
- **Mark Gomez:** Project support. Mark is a former Bain strategy consultant with experience in in strategic planning, global organizational redesign, and operational improvement where he has worked across such industries as CPG, Technology, and Non-Profit