

CITRUS RESEARCH AND DEVELOPMENT FOUNDATION, INC.

Minutes of the

Research Management Committee Meeting

Wednesday, February 12, 2020

A meeting of the Research Management Committee of the Citrus Research and Development Foundation, Inc. was held on Wednesday, February 12, 2020. The meeting was properly noticed and recorded. The meeting was called to order at 9:35 a.m. by Chairman Pat Ouimet. Roll was called and a quorum was present. Committee members participating were Bobby Barben, Tim Dooley, Steve Farr, David Howard, Sean McCoy, Tom Obreza, Pat Ouimet, Daniel Scott (by telephone), Joby Sherrod (by Zoom), Wayne Simmons, Jim Snively, Buddy Strickland, and Forest Taylor (by telephone).

Also participating were Rick Dantzler, Steve Futch, Jim Graham, Alec Hayes (by Zoom), Audrey Nowicki, Brandon Page, Jim Syvertsen, John Updike, Jr., Tripti Vashisth, Rosa Walsh, and Deidra Whatley.

Dr. Ouimet opened the meeting with discussion of committee members' term limits which expired at the end of June 2019. Mr. Dantzler stated that Mr. Snively, Mr. Farr, Mr. Scott, and Mr. Sherrod are the committee members whose terms have expired; each has been contacted and Mr. Farr, Mr. Sherrod, and Mr. Snively have requested to be reappointed. Mr. Scott added that he too would like to continue serving on the Research Management Committee. Dr. Ouimet asked for questions or discussion. There being no discussion, Mr. Simmons made a motion to reappoint Mr. Farr, Mr. Scott, Mr. Sherrod, and Mr. Snively to the Research Management Committee for another term. The motion was seconded by Mr. Snively and, with no discussion, the motion passed unanimously.

Mr. Snively made a motion to approve the minutes of the September 19, 2019 RMC meeting. The motion was seconded by Mr. Barben and passed unanimously.

Dr. Ouimet opened the discussion of the final report from the Select Committee on Plant Improvement, and more importantly, the delivery, setup, and organization to allow the citrus growers and industry to provide feedback into the plant breeding program. Dr. Ouimet invited the Select Committee Chair, Jim Snively, to discuss further. Mr. Snively requested that Mr. Dantzler provide a brief review of the history of the Select Committee on Plant Improvement and resulting report. He then thanked the plant improvement teams from UF and USDA for their participation and collaboration in the process.

Mr. Dantzler called attention to page D-23 of the Select Committee report, to begin review of the resulting questions. The primary recommendation is to **create a working group/standing committee comprised of industry representatives, funders of citrus research, and University and USDA plant improvement researchers to oversee plant improvement efforts**. This group will facilitate communication between the breeders and the growers to achieve the maximum results as quickly as possible, and have the industry more involved. Mr. Dantzler explained the success of the Florida

Sugar Cane model, a model that might have application for the citrus industry. Comparing statistics between trees bred by the University vs USDA, questions arose on the results realized from the funds expended on the breeding programs. The creation of a working group would allow both the industry and the breeders to communicate and work more closely to achieve the goal of greening resistance. Mr. Barben asked if rootstocks were being included and Mr. Dantzler answered that they were. Discussion continued on the balance between rootstock production and scion breeding project funding; the working group will include representatives to voice the growers' requests. Mr. Dantzler said that by institutionalizing quarterly meetings between the industry and the breeders, answers to issues and questions can be achieved more quickly.

The working group can also assist with resolving issues such as the 10,000 trees which were propagated by Rucks Nursery at the request of the breeders for a MAC trial without complete knowledge of where they would be planted. The working group could help the breeders find grower cooperators and other means to ensure success.

Jim Snively spoke to the success of the Sugar Cane model in which the ultimate decision is not made by the breeders, it is made by the growers as it what is going to move on and move out. Mr. Dantzler said a citrus model in between the fast-track program and the conventional breeding program, which may take 20 years, is where the mark needs to fall. Somewhere between those two ends, there should be a way to standardize criteria for measurement of the trees and get plants out to growers to more quickly.

The last question in the Report states: **How can CRDF assist in the quicker delivery of plant material for larger field trials?** There is potential for a non-certified material "dirty" house to process non-certified trees. The University breeders felt this could accelerate the process by two years. While funds were previously allocated for a dirty greenhouse to be located outside of Citra, it never came about. This could this be a viable option for getting prospective cultivars in the hands of growers sooner.

Mr. Dantzler stated that he didn't expect the committee to come to a conclusion on the recommendations in the report, but procedurally he wanted to go through each recommendation and determine if the report should be advanced to presentation to and consideration for action by the Board. If the Board acts to establish the Standing Committee, it would address all these action items.

Mr. Dantzler then moved on to the topic of getting plant material quickly in the hands of the growers, which was number seven on the list: **How can CRDF assist in furthering Dr. Dawson's Alternating Temperature Growth Chamber?** This is a technology which the committee believed was worth pursuing where the temperature of a tree is raised and lowered numerous times with such intensity to bring the plant out of juvenility more quickly; a process which normally takes 2 years through this alternating temperature chamber would be reduced to three to four months.

Dr. Ouimet asked Dr. Graham if there was the possibility of using molecular markers as an opportunity to expedite choosing the traits the industry is looking for in citrus. Dr. Graham responded that the UF breeding program has been looking at QTL traits for some time and now the sequence searches are

being targeted for resistance. Dr. Ouimet noted that she is supportive of the sequencing project, but was inquiring as to the markers in the sequence for the favorable traits for breeding.

A motion was made by Mr. Strickland for a recommendation to the Board of Directors to establish a Standing Committee on Plant Improvement. The motion was seconded by Mr. Farr. There was discussion of the CHAMP program and the possible integration with the Standing Committee on Plant Improvement. Dr. Ouimet restated the motion to clarify the motion is a recommendation to the Board of Directors for the creation of a Standing Committee on Plant Improvement for the items solely outlined in the CRDF Report on Plant Improvement by the Select Committee and does not include CHAMP. Without further discussion the motion passed unanimously.

Mr. Dantzler directed attention to number three: **Should CRDF continue funding Dr. Gmitter's sequencing project?** Mr. Dantzler gave a background of the approved funding of project #18-010 and status of where the funding stands today. The Board has requested Dr. Gmitter to come and present at its next meeting, and at the same time address questions regarding timelines and reports.

Mr. Dantzler noted the second recommendation in the report: **Should CRDF allocate an annual sum to support plant breeding programs?** While the committee deferred and felt this matter should be decided by the Board of Directors, it was pointed out that success will only be achieved with a long-term, sustained programmatic effort.

Recommendation four, **IFAS is hiring a new Assistant Professor for the Citrus Genetic Improvement Horticulturist. How should CRDF interact with this person, and should this person be invited to be a part of the standing committee on plant improvement, if one is created?** The list of candidates has been narrowed down to four persons and interviews will begin in April 2020. This individual will be addressing many issues that CRDF has discussed for the last year and a half. Mr. Dantzler visions this person as an integral part of the standing committee.

Recommendation five: **Should a third party-perhaps CRDF- collect field trial data in the latter stages of trials?** The Select Committee deferred to the standing committee to adopt operating protocols.

Recommendation six: **How can CRDF assist in the process of importing seed material of promising rootstocks from Argentina?** There is no need for CRDF to intervene at this time. Dr. Grosser discussed the protocol for seed importation from Argentina and obtaining USDA certification of the materials to guarantee no seed transmitted diseases.

Recommendation eight: **How can CRDF assist researchers in finding grower-cooperators to place the nearly 10,000 trees developed for field trials that have not yet found a home?** Some of these trees have been purchased. While sometimes breeders encounter circumstances out of their control, these are matters the standing committee could assist with.

Mr. Dantzler once again thanked Dr. Steve Futch for putting together the first draft of the report.

Dr. Ouimet noted recommendations have been received from the Nutrition Working Group and requested that Mr. Dantzler expound on them. In the 2019, RFP three proposals were received that focused on nutrition. Since the committee felt that they were missing the mark on the nutrition-related questions that growers had, a recommendation was made to create a working group of growers to meet with the researchers to narrow their research-related questions into more targeted priorities. Their Nutrient Management Concept Questions were included with the meeting materials. Staff then summarized the document even further into a staff recommendation, which Dr. Graham explained further.

Dr. Graham explained at the January Board retreat that there was a discussion on putting out a more directed RFP covering all topics, not specifically nutrition. The Nutrition Concept Questions became the foundation for the Staff Recommendation and will become the basis for the 2020 RFP.

The first topic, **Nutrient application to soil vs. foliage application**, has been an on-going issue, determining which is better: micronutrients or macronutrients or both? The second topic is **Mode of fertilization to soil**: This priority compares fertigation vs controlled-release vs conventional dry fertilization and the method or combination of methods that are most effective, including the new conception of oak leaf extracts and their containment of organic acids which could facilitate the uptake of nutrients.

Topic three: **Nutrient impact on fruit quality**. We know nutrients affect fruit size and fruit quality, as outlined in a table provided by Dr. Obreza, which was referenced as well. This is paramount in minds of growers and needs to be researched more in depth in the HLB era.

Dr. Graham went on to discuss that nutrition has always been a topic in the forefront of researchers' minds but how much is optimum, and what is deficient in these trees in the HLB era. Nutritional efforts should be tracked seasonally, rather than an annual sample being taken. There needs to be tracking in spring, summer, fall, and winter. An effort of how and what to sample has begun through the Extension Agents; results are still pending.

Dr. Graham also spoke to the nutrition question of the relationship between fruit size vs fruit quality and fruit drop; CRDF is currently funding a study being conducted by Dr. Tripti Vashisth.

Dr. Obreza spoke to nutrition work that has been conducted for the past 80-90 years and referenced a bulletin from 1954 titled "How to Fertilize a Citrus Tree". While some nutritional work is the same regardless of health tree vs HLB infected tree, he wanted to ensure that the nutrition research priorities haven't already been studied and we move toward researching a newer concept.

Mr. Updike mentioned the round-table discussion with the junior researchers from USDA and University of Florida, which was discussed at the Board Retreat, and noted that he is still interested in bringing these researchers together to also look at the Nutrition Concept Questions. Mr. Dantzler said that he is in conversation with Dr. Mastrodicasa in the hope of facilitating this action. Mr. Dantzler also said the Staff Recommendation will be distributed to the different Grower groups to provide input.

Dr. Grosser discussed his work on supplementing soluble dry programs with slow released bio-nutrient packages, noting that not only is he seeing exceptional tree performance, but there is excellent impact on bacterial titer. Dr. Obreza stated the same detailed study already published data in 1988.

Mr. Dantzler then moved onto the Bayer update, and gave a brief history of the project, including financials. CRDF has asked the Citrus Research Board (CRB) to co-fund the continuing the project. He and CRB have had several discussions regarding their co-funding commitment. The contract will read that CRDF, CRB, Coca-Cola, and PepsiCo will equally share the funding responsibility of the project from July 1, 2020 through December 31, 2020. He explained the six-month period will be a scaled down project by eliminating one of the large-scale field trials. Each entity will contribute up to \$421,000.000 for the six-month period to keep the project progressing until the results of a USDA NIFA grant application is known.

Mr. Dantzler discussed the status of the Research Director. Although the void has been filled adequately with the three contracted Project Managers, the Board feels it would be beneficial to fill the position. There have been two interviews with a prospective candidate, the second was completed the weekend of February 7, 2020.

Mr. Dantzler touched on the new MAC application language. The USDA has asked the three Citrus Mutual's (Florida, Texas, and California) to be involved in the review of the proposals. CRDF may suggest that PIs on certain projects apply for MAC funding instead of CRDF funding.

Finally, in 2019 the Board approved the RMC recommendation of a project by Dr. Ritenour to develop a machine for sorting greening affected fruit from non-affected fruit. He purchased the equipment with CRDF funds and has prepared his MAC application for submission once the process is open for submissions.

New business, Mr. Barben asked about the oak extract topic. Mr. Dantzler noted it is being added to the nutritional priorities for the RFP and asked Dr. Syvertsen to speak further on the matter. Dr. Syvertsen stated that the thought is oak extract exudes organic acids, which could help. Unfortunately, since researchers did not accurately document the nitrogen, potassium, or phosphorus content, the nutritional aspects of the oak extract are unknown, but the HLB infected trees in the greenhouse did show increased growth and leaf nutrition and decrease of titer.

Wayne Simmons asked about the status of culturing of HLB and Mr. Dantzler stated that Dr. Nabil Killiny is part of the project at Washington State University actively working on the culturing of the disease.

Mr. Dantzler reported the legislative budget request is \$8 million and that \$3 million would more than likely be earmarked for CRAFT.

With no further business, the meeting was adjourned at 11:38 a.m.

Minutes submitted by Deidra Whatley