

Application of OTC in Combination with Other Antimicrobials - Request for Proposals

The Mission of the Citrus Research and Development Foundation (CRDF) is to advance disease and production research and product development activities to insure the survival and competitiveness of Florida's citrus growers through innovation and scientific discovery.

Much of the reduction in citrus production in Florida over the last dozen years is because of the disease Huanglongbing (HLB), otherwise known as citrus greening. To combat the disease, insertion of the antimicrobial oxytetracycline (OTC) through a systemic delivery device (injection) was recently approved by state regulators and a label was issued for Florida citrus. It is believed that this therapy will be effective for reduction of HLB pathogen titer, recovery of HLB tree health, and increase in fruit quality and yield.

Several research questions have arisen in relation to this therapy. First, are there other antimicrobials with demonstrated activity against the Liberibacter pathogen of ACP vector that can be used in conjunction with OTC being delivered in this fashion to achieve operational synergies and reduce grower costs? Second, do these other antimicrobials - when used by themselves - work as well or better than OTC? This RFP intends to answer these questions.

To help answer these questions, CRDF is soliciting pre-proposals for research projects that will achieve one or both of these objectives: 1) reduce the damage caused by the Liberibacter pathogen to the degree that HLB is under control and/or 2) significantly suppress the pathogen transmission and/or tree damage caused by the Asian citrus psyllid (ACP) vector.

Interested researchers are invited to submit a pre-proposal for consideration by CRDF. Compounds considered for funding must have evidence of bactericidal effects against plant pathogens. Priority will be given to testing those antimicrobials that have demonstrated efficacy against the Liberibacter pathogen (CLas), especially those that have already been registered for plant use either as a spray or as an injectable.

Objectives:

1) Reduce the damage caused by the Liberibacter pathogen to the degree that HLB is under control and/or

2) Significantly suppress the pathogen transmission and/or tree damage caused by the Asian citrus psyllid (ACP) vector.

Pre-proposals should:

1. Identify which objective(s) is believed to be achieved with this research project, and why.
2. Identify whether the antimicrobial will be tested in conjunction with OTC, or will it be tested as a standalone therapy.
3. Include or cite evidence that the antimicrobial being tested has efficacy against HLB or other plant pathogens. If the antimicrobial has been shown to have efficacy against other plant pathogens but hasn't been tested against HLB, state why it is believed that this antimicrobial might have efficacy against HLB.
4. The following are issues which, if answered, would be helpful to growers, researchers, and possible manufacturers. Specify which ones will be evaluated in the proposal:
 - 1) Potential for interactions with OTC
 - 2) Compatibility
 - 3) Effective dose
 - 4) Phytotoxicity
 - 5) Mobility in the tree
 - 6) Longevity in the tree
 - 7) Will it be found in the juice and/or peel? (which means testing for it)
 - 8) If an antimicrobial, is it being used clinically?
 - 9) Data needed to get it registered
 - 10) Seeking a potential registrant

Pre-proposals chosen will be invited to submit a full proposal. After review by the Scientific Advisory Board, ad hoc reviewers, the CRDF Research Management Committee, and the CRDF Board of Directors, projects may receive funding up to one year for the purpose of proving the concept of project hypothesis or hypotheses. If the concept proves worthwhile, subsequent years of funding will be considered depending on the scope of the project.

PRE-PROPOSAL INSTRUCTIONS

Pre-proposal Submission

The first step in the RFP is the submission of a pre-proposal. Pre-proposals forms are to be submitted by email at catp@citrusrdf.org, and are **due by 5:00 p.m. Eastern time on Monday, March 13, 2023.**

The Pre-proposal form can be downloaded from the following link <http://citrusrdf.org/wp-content/uploads/2022/12/Preproposal-form-rev-12-2022.pdf>

Complete all fields of the Pre-proposal form. Responses to each section must fit into the viewable space.

I. Non-Technical Abstract

For this *non-technical* abstract, please summarize the following information relative to this project:

- A. What is the purpose of this proposed project, which objective(s) in the RFP does it address, and how does it address such objective(s)?
- B. What is the practical application of this project's outcomes and how will they benefit the citrus industry? It is not necessary to describe the importance of HLB to world citriculture or how HLB has affected Florida citrus.

II. Objectives and Approach

In the non-technical abstract described above, you listed which objective(s) of the RFP was being addressed in the proposed project. This section of the pre-proposal asks that you list your work objectives with the corresponding hypothesis(es) to be tested.

- A. Briefly describe each work objective and the experimental approach to meeting each, including methods, assays and technologies.
- B. Briefly summarize the body of knowledge in the literature as it relates specifically to the project objectives.
- C. Describe ongoing or recently completed significant research related to the work project objectives, especially referencing research accomplishments of co-PIs and collaborators.

III. Commercialization Potential, anticipated benefit to growers, or expected results

Provide the following information:

- A. What are the anticipated deliverables of this project in terms of knowledge, recommendations and/or products?
- B. How will the results from this project be applied for the management of citrus, HLB or other relevant diseases?

IV. Timeline and Milestones

- A. Provide a timeline for work objectives and milestones and show how progress for each will be determined.
- B. If subsequent work objectives rely on the success of a prior work objective, describe if/how subsequent work objectives can be investigated if early work objectives are not met.

V. Expertise

List:

- 1) the technical requirements and expertise needed to accomplish the project objectives,
- 2) each investigator's expertise/experience, and
- 3) the available resources/facilities to accomplish the objectives.

Save the .pdf file, naming it: *LastName.Initial_Preproposal.pdf*, i.e., *Jones.J_Preproposal.pdf*

Email completed Pre-proposals to catp@citrusrdf.org on or before 5:00 p.m. Eastern time on Monday, March 13, 2023.

All questions should be emailed to catp@citrusrdf.org

The list of Pre-proposals invited to submit Full Proposals will be posted to the citrusrdf.org web page on April 26, 2023.

INSTRUCTIONS FOR FULL PROPOSALS:

Invited Full Proposal Submission

Only complete, invited full proposals will be accepted for funding consideration.

The deadline to submit invited Full Proposals is 5:00 p.m. Eastern time on Friday, May 26, 2023. No full proposal Project Narrative may be longer than 7 pages in length, with one-inch margins, and no font smaller than 12 may be used.

Content Full Proposal Submission:

All documents described below are required. However, it is not anticipated that testing antimicrobials as described in this RFP will be particularly onerous, complicated, or time-consuming, so do not feel compelled to use all of the allotted space to describe your project proposal.

The following documents comprise the Full Proposal package:

1. **Full Proposal Cover Page and Budget** - Form CB-22 -link to download form:
<http://citrusrdf.org/wp-content/uploads/2022/12/CB-22-Cover-Page-and-Budget.pdf>
(5 pages; pdf file. CB-22 does not count in the 7-page limit).
2. **Budget Justification** (Word file; does not count in 7-page Narrative limit)
3. **Project Narrative – 7-page limit of no smaller than 12 font** (Word file)
4. **Subcontract Budget, if applicable** - Form SC-22 -link to download form:
<http://citrusrdf.org/wp-content/uploads/2022/12/SC-22-Subcontract-budget.pdf> (4 pages; pdf file. SC-22 forms do not count in the 7-page limit) - complete if applicable, using a separate form for each proposed subcontract. See detailed instructions later in this file.
5. **Appendices** as outlined below (do not count in the 7-page Narrative limit)

CB-22 Full Proposal Cover Page and Budget Instructions: Form CB-22 does not count towards the 7-page limit of the body of the proposal.

CB-22 Page 1 - Complete all fields on the first page of Form CB-22, accessed from the link above.

Biohazard Regulation/DNA: If you are working with regulated agents or materials and have an approved IBC plan, check “Yes” to indicate that you are in compliance with their guidelines. Otherwise, check “No.”

Today’s Date: Enter the date on which you completed and submitted your proposal.

Project Title: Enter the title for your project (from invited pre-proposal).

Principal Investigator: Enter a single point-of-contact for the Principal Investigator who will be heading the project.

Project #: As shown on posted list of invited pre-proposals.

Email: Use a valid email address for your point-of-contact; this will be the primary means of communication.

Phone: Include your phone number, along with country and city codes.

Organization: Enter the name of the organization through which you are working on this project.

Co-PIs and Collaborators: Enter the names and affiliation of Co-PIs and primary collaborators. Secondary collaborators may be included here if there is sufficient space. A Co-PI is anyone who has a separate budget under the project or otherwise has a significant role in completing the proposed work.

A collaborator may provide advice or materials, or receive materials for analysis.

Collaborators cannot have a budget in the project and they also have no contractual obligation.

Section 11.b (detailed later in the instructions) outlines the Personnel Allocation requirements, which lists the PI, Co-PI’s and Collaborators and each of their roles by Objective; this spreadsheet is not counted in the 7-page limit.

Address: Enter your physical mailing address. This will be a secondary means of contact.

Project Duration (years): Enter the duration of your entire project in years (no more than 2 years).

Total Funds Requested (total project): This field populates automatically from page 2 of Form CB-22. Verify the accuracy of the total funding for your project factoring all years included in Project Duration in US\$. **CRDF does not allow inclusion of indirect costs in project budgets.**

Year 1 Funding Request: This field populates automatically from page 3 of Form CB-22. Verify the accuracy of the Total Direct amount from Page 3 of 5 representing funding you are requesting for the first year of the project in United States currency.

Abstract: Briefly summarize your project (approximately 500 words), including objectives and sufficient detail that will allow reviewers to have a clear idea of your project design and anticipated benefits. Content must fit in the allotted space without scrolling.

CB-22 Instructions for Project Budget Forms Pages 2-5: The Budget pages should be completed along with the Full Proposal Cover page 1. Beginning with the Year 1 Budget on page 3, complete the budget form for each year of the project as designated on Pages 3 to 5. These amounts automatically populate to Page 2 (the cumulative budget for all years of the project). Budget forms do not count towards the 7-page limit of the body of the proposal.

When completing entries for personnel to be employed under this project, consider shifting the salary request to the 2nd quarter of the first year of the project if an employee is a new hire. This will more realistically reflect actual employee costs in the first year of the project. Reasonable cost of living increases may be included in personnel entries in the budget and should be described in the budget justification. NOTE: Stipends for graduate student involvement in the project should be included as part-time OPS, not staff. In addition, tuition waiver for graduate students is not a personnel expense but, if requested, should be included under “Other Direct” costs.

Requests for travel expense should consider costs of travel related to conducting the research, as well as reasonable expenses related to presenting project results to peers and stakeholders. Details of proposed travel should be provided in the budget narrative. CRDF wishes for the researchers it funds to be part of the national and international research communities and understands that being a part of these communities involves a certain amount of face-to-face interaction. However, international travel is discouraged except in unique circumstances that will be considered on a case-by-case basis. With travel to national conferences, CRDF will consider whether the project will have resulted in data which is mature enough to be shared by the PI in a presentation, and whether more than one person needs to attend when considering such requests.

Do not include purchase of gasoline or vehicle maintenance as travel costs. Instead, include them as Supplies/Materials expenses.

If applicable, the Form SC-22 Subcontract Total Direct (line 21) must be completed for each year of the project. All individual Form SC-22 amounts must be added together and manually inserted into pages 3 to 5 of the Project Budget Forms under Subcontracts (line 17 on CB-22). Verify that all amounts are correct, including Subcontractor total on page 2.

Do not leave any fields blank. Be sure to complete all three yearly budget forms, adding zeroes in any years of the form if needed. This will allow the forms to properly function in calculating sums and transferring values to the composite forms.

Budget Justification (narrative): This is a Word file, saved as a PDF and combined with Form CB-22 (does not count in 7-page Narrative limit). Provide a brief statement that details the following expense categories:

Personnel: Their role and specific responsibilities in the project. Please be certain to rely on your current institutional fringe rates when calculating personnel costs. Except for PI and Co-PI's, list specific position titles instead of employee names unless the individual is critical to the project. Replacement of personnel listed in this section must be pre-approved by CRDF. **NOTE:** Stipends for graduate student involvement in the project should be included as part-time OPS, not staff. In addition, tuition waiver for graduate students is not a personnel expense but, if requested, should be included under "Other Direct" costs.

Supplies/Materials: Provide general details of types of supplies and materials that will be utilized for the project and are included in the budget request. This description should demonstrate the need for these expenses to complete the objectives of the proposed research.

Travel: Provide details for in-state and out-of-state travel and purpose of the travel for each trip. Include the number and duration of trips, etc. Do not include fuel or maintenance expenses in in-state travel; move these expenses to the **Supplies/Materials** category.

Subcontracts: Summarize the participation of other institutions or entities that will participate in the project and their required budget. (A separate Form SC-22 [see 8, below] must be completed and submitted for each entity. Each subcontractor should also complete a budget justification.)

Other Direct: Provide justification of all costs shown.

Equipment: Provide details for equipment with cost in excess of \$500. Define the value of the equipment to completion of the project objectives. A specific quote should accompany the proposal.

Project Narrative:

Items 1 – 6 of this section comprise the Narrative and are subject to the 7-page length limit. Submit this document as a PDF file.

1. Current Situation/Literature Review:

- a. What is the purpose of this proposed project and how does it address Objective 1 or 2 of the RFP?
- b. Summarize the evidence that the antimicrobial you will be testing has efficacy against CLas or other systemic plant bacterial pathogens.
- c. Describe preliminary work pertinent to the proposed work. Attach important preliminary data as **appendix i**; appendices will not count towards the 7-page limit.

2. Objectives:

- a. List specific work objectives to be accomplished, including the overall goal of the project.
- b. Do subsequent work objectives rely on the success of a prior work objective? If so, how will this affect the project and how will this be managed?

3. Project Deliverables:

- a. What knowledge, information, recommendations, products, or tools will result from this research?
- b. How and when will the results of this research be communicated to growers?
- c. Describe any potential pitfalls and contingencies to achieving progress.

4. Experimental Approach: Provide a description of the project's experimental design.

- a. Non-plant improvement projects that include field trials are required to clearly state:
 - i. Experimental design: Plot size, layout, treatments, blocks, and replications of the sampling unit.
 - ii. Site description, including the number of sites and criteria for site(s)
 - iii. Application methodology (equipment, coverage, etc.) and timing
 - iv. Data collection: What will be measured, how will it be measured, and how often data will be collected.
 - v. Permitting or crop destruction requirements.

5. Project Timeline: Timeline of the project with objective and specific project accomplishments as milestones, including subcontractor milestones.

6. Cost/Benefit of Proposed Intervention

7. Bibliography of Literature Cited in the Project Narrative (not included in 7-page limit)

8. SC-22 Subcontract Budget Forms (if applicable):

- a. **Subcontract Budget (Form SC-22)** -link to download form: <http://citrusrdf.org/wp-content/uploads/2022/12/SC-22-Subcontract-budget.pdf> If you have co-PIs (consultants, professional services or institutions) who will receive funds from your project, complete a separate Form SC-22 for each subcontractor from another entity (the budget of cooperators from your own institution

should be included in the main budget). Please complete pages 2-4 of these forms for each year of the subcontract; the cumulative budget will automatically populate on page 1 of SC-22. A budget justification (narrative) for each subcontract budget should be prepared and attached. (These forms are not included in the 7-page limit).

NOTE: The total for each year (1, 2 and 3) of all subcontract budget forms must be added and entered manually into the subcontract field of the project budget (CB-22) form for each corresponding year. If there is more than one subcontractor, verify that all are included in the single Subcontract Total for each year on the CB-22 form. The Subcontract total on page 2 of Form CB-22 should calculate automatically.

NOTE: While many pdf forms can usually be combined into one form, each Form SC-22 must be saved as a separate file to avoid fields being overwritten. Name each file with your name and proposal number, i.e. **lastname_23-###_SC22[a, b or c as applicable if multiple forms].pdf**

- 9. Regulatory & Commercialization Considerations:** This section is required for all projects developing research concepts, products or tools that are regulated by any state or federal agency and/or have commercialization needs. Applicants must provide evidence that state and federal regulations have been considered and a plan has been developed to improve the likelihood of successful regulatory compliance. The pathway to commercialization of products and tools must also be described to give evidence for the feasibility of commercialization. Please provide the following as **Appendix ii**; this document will not count towards the 7-page limit.
- a. Describe the regulatory requirements of the concept, product or tool during the research and development stage and for implementation.
 - b. Describe how this proposal accounts for regulatory considerations, including:
 - i. Acquisition of necessary permits for material movement and trial work.
 - ii. SOPs for all pertinent agencies to ensure compliance.
 - c. Identify institutional experts, relevant state and federal agencies or regulatory consultants that have been engaged to discuss the regulatory aspect of this research concept.
 - d. Describe what will be required to achieve commercialization of project deliverables.
 - e. Identify collaborators or consultants who have been engaged with demonstrated expertise in product development and commercialization of this research concept.
 - f. Describe intellectual property status including any tools used to develop the product that may affect commercialization.
 - g. Describe plans and processes to communicate technology status in reports, presentations and publications without compromising the ability to secure the appropriate patent protection.

Questions regarding regulatory issues may be addressed to aescars@freshfromflorida.com. Commercialization questions should be addressed to institutional offices of technology transfer.

- 10. Summary of previously CRDF-funded work** – If the proposed project is a follow-up to a previous CRDF-funded project, please summarize the following as **Appendix iii**, which will **not** count

towards the 7-page limit: Include only work accomplished by you in a previously funded CRDF project.

- a. Title and CRDF number of previous project(s)
- b. Objectives of previous project(s)
- c. Significant results of previous project(s), including publications.

Please note that PIs with any current CRDF funding must be up to date on required project reporting, including quarterly and annual reports, at the time of full proposal review to be considered for new project funding.

11. Current/Pending and Personnel Allocations (*Appendix iv*)

a. **Current and Pending Support** -link to download forms: http://citrusrdf.org/wp-content/uploads/2022/11/Personnel-Allocations_Current-and-Pending-appendix-iv.xls This excel spreadsheet follows project budget information and is used by reviewers to provide context (and funding detail) of ongoing research by the PI as well as other pending proposals from the team. The purpose of this form is to provide an overview of funding available to the PIs, and to communicate current and planned research that may be related to that proposed to CRDF. The form should be completed with information for each of the PIs who are contributing to the proposal.

b. **Personnel Allocations Spreadsheet**- link to download forms: http://citrusrdf.org/wp-content/uploads/2022/11/Personnel-Allocations_Current-and-Pending-appendix-iv.xls Like the current and pending form, this spreadsheet information is useful to project reviewers and to CRDF to assess level of effort and expertise to meet objectives. List all participants, including the PI, Co-PIs and Collaborators shown on the CB-21 and each of their roles by objective.

Save BOTH tabs of the spreadsheet as a pdf file named as follows:

lastname.23-XXX.appendix iv.pdf

12. Brief resumes with only relevant publications are required for all key personnel. Do not list all your publications; full CVs are not required. Brief resumes should outline the capabilities of those doing the work. Collaborators should be included in key personnel. (**Appendix v**)

13. Institutional Authorization (*Appendix vi*) -link to download form:

<http://citrusrdf.org/wp-content/uploads/2019/05/Institutional-Authorization-appendix-vi.docx>

This is typically the routing form used by institutions to document review and approval of project proposals prior to their submission. Where available, a copy of the completed institutional authorization form (e.g. UF, IFAS DSR-1) should be included here. All USDA-ARS applicants must submit an approved ARIS form. If your institution does not use such a form, a generic authorization form is provided for your use in the column at the upper left of this page.

14. **Letter of authorization** from each institution for which a Subcontractor Budget form has been completed (**Appendix vii**). This statement allows CRDF to know that subcontractors have agreed, if the project is approved, to complete the objectives with the budget details as provided in the proposal.
15. **Provide a statement of commitment** from each Co-PI and Collaborator (**Appendix viii**).
16. **Other relevant information** regarding this proposal should be included here (**Appendix ix**).

Appendices:

Preliminary Data (see 1d)

Regulatory and Commercialization Considerations (see 9)

Summary of previously funded CRDF Projects (see 10)

Current and Pending Support and Personnel Allocations (see 11)

Resumes (see 12)

Institutional Authorization form (see 13)

Authorization Letter from each Subcontractor (see 14)

Statement of commitments from each Co-PI and Collaborator (see 15)

Other Relevant Information (see 16)

Full Proposal Layout Details

Full Proposals should be written in English and submitted as email attachments in Adobe PDF format. Page margins should be one inch on all sides. Use Times New Roman or a similar typeface set to 12-point font and single-line spacing.

Page numbers should be placed on the lower right-hand corner with the Principal Investigator name and the page number (e.g., Robins-2).

Each file submitted as a component of your full proposal should be named with the Principal Investigator name and CRDF-assigned project number and form identifier (e.g., **Jones_23-0##_proposal, Jones_23-0##_CB22, Jones_23-0##_SC22**). When naming files to be included in your Full Proposal submission, avoid using special characters (! @ # \$ % &) in the filename.

Invited Full Proposal packages should be emailed to catp@citrusrdf.org by 5:00 P.M. Eastern Time, **Friday, May 26, 2023.**

All questions should be emailed to catp@citrusrdf.org