Antimicrobial Strategies

Conventional Antibiotics

NuFarm New Project Proposals

- 2 proposals presented by Bob Bruss, NuFarm Technical Services Manager
  - Project one: Mycoshield Field Trials
  - Project two: Mycoshield Residue Study

NuFarm Proposals

- Project one: Mycoshield Field Trials-G2a1-1
  - One round orange site and one grapefruit
  - 13 treatments examining:
    - Application volume (2 rates)
    - Foliar vs. trunk application
    - Surfactants and penetrants
    - SAR product
  - Evaluation
    - PCR
    - Roots, canopy, "tree health"
- **One year field trial cost: $25,000/site = $50,000**

NuFarm Proposals

- Project one: Mycoshield Field Trials
  - Project manager's review of proposal for CPDC (1/9), updated proposals in materials (1/21)
    - At this time, no data from year one of trial
      - Not resolved in updated proposal
    - Change in treatments, funding essentially is for one year of a new trial
      - Not resolved in updated proposal
    - Unknown surfactants & penetrants, phytotoxicity?
      - Not resolved in updated proposal

NuFarm Proposals

- Project one: Mycoshield Field Trials
  - Project manager's review of proposal for CPD, updated proposal in materials
    - Incomplete evaluation methods
      - Not resolved in updated proposal
    - No fruit drop or quality evaluation
      - Not resolved in updated proposal
    - Size of trial, within 10 acre limit?
      - Resolved in updated proposal
    - Crop destruct provision
      - Resolved in updated proposal

NuFarm Proposals

- CPDC recommended approval of this project pending agreement with staff on design

NuFarm Proposals

- **Project two: Mycoshield Residue Trials**-G2a2-1
  - Conducted by Carringer Agricultural Research Service
  - For registration on any citrus crop
  - **Cost of study: $291,370 requested from CRDF**

NuFarm Proposals

- Project two: Mycoshield Residue Trials
  - Project manager's review of proposal for CPDC(1/9), updated proposal in materials(1/21)
    - What is the field use pattern?
      - Not resolved in updated proposal
    - How will the budget be used
      - Resolved
    - What is the investment by NuFarm
      - Resolved

Likely to start late in year one, bridging two FYs

NuFarm Proposals

- CPDC recommended approval of this project pending agreement with staff on design
  - Field trial budget: $25,000 each for a total of $50,000
  - Residue study budget: $291,370
  - Total requested: $341,370
  - **Questions?**

NuFarm requests the same level of confidentiality of project details as the other registrant

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Candidate Matrix-G2b-1

- A method of prioritizing candidate antimicrobial therapies
- Ranks materials within the categories: conventional antibiotics, agricultural antibiotics, biopesticides, new molecular entities and GRAS-like compounds
- Score materials based on:
  - Bactericidal effect based on assay results
  - Barriers to production for agriculture (IP, cost etc.)
  - Regulatory feasibility
  - Time to market
  - Market adoption

Amended Gonzalez Flush Assay RSA

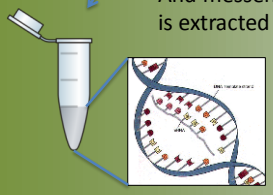
Within Year Renewal-G2c-1

Infected flushing leaves

Material being tested

Leaf sections are cut out, freeze dried and pulverized

And messenger RNA (a nucleic acid like DNA, but with a rapid turnover rate) is extracted



qPCR to test for suppression of mRNA in three bacterial genes.

Amended Gonzalez Flush Assay RSA

Justification for assay

- We need an assay to test materials against CLas in a relatively short period of time
- This assay provided information on dose response and phytotoxicity that the L crescens assay cannot
- The whole plant assay, if funded, will reduce the need for this assay in the future, but there is a lag time before infected plants are available.

Amended Gonzalez Flush Assay RSA

Funding Summary

- Direct cost per assay: $2,718.90 + 25% indirect cost = $3398.63
- Total indirect cost of 30 assays:$81,567+25% indirect cost
- Total Requested:$101,958.75
- Recommended by CPDC for approval

Materials to be tested

- 7 UF PERC Essential Oil Formulations
- 2 Company B Essential Oil Formulations
- 3 Zinc Based Products
- 2-3 TBD

These will be tested at multiple rates

Questions?

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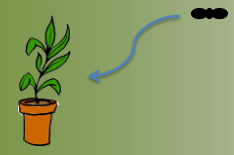
Whole Plant Greenhouse Assay

New Proposal-G2d-1



Trees are inoculated by “hot” psyllids and incubated for 2-4 months

Materials sprayed on 25 trees
(20 infected, 5 healthy)
or infused through roots

Leaves sampled for live/dead qPCR 7 & 30 days post treatment

Data collected: titer, phytotoxicity, dose response

Each assay = one application rate

Whole Plant Greenhouse Assay

Justification for assay

- Test ability to translocate within plant phloem
- Determine the effective dose
- Test bactericidal (kill) effect vs. bacteriostatic (inhibit growth/reproduction)
- Test for phytotoxicity
- Test efficacy of foliar application
- Shorter term than trunk injection assay or field trial
- Provides more data than the flush assay

Whole Plant Greenhouse Assay

Funding Summary

- Direct cost per assay: $2012.76 + 25% indirect cost = $2515.95
- Total cost of 50 assays:$100,637.87 + 25% indirect cost
- Total requested:$125,797.33
- Recommended by CPDC for approval
- **Questions?**

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Partnering to Advance Product Development

Florida Fertilizer & Agrichemical Association

- Introduction to CRDF at 2 meetings
  - Board meeting
  - Winter business meeting

Stepwise Assay System