Introducing CRAFT Cycle Two
Participant Workshop

June 23-24, 2020

CRAFT Cycle Two: General Session

Overview of the CRAFT Foundation & CRAFT Program

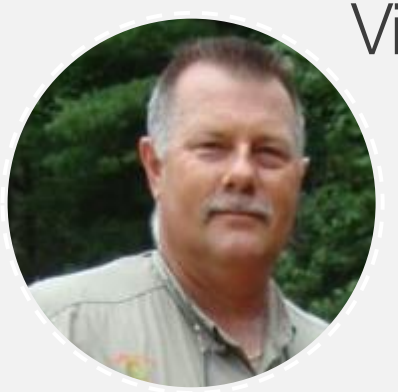
CRAFT Board of Directors

Glenn Beck, President

Mark Wheeler, Vice President

Tom Mitchell, Treasurer

Dr. Harold Browning



Phillip Rucks

Dr. Trevor Smith

John Updike

CRAFT Technical Working Group

Dr. Patricia Ouimet, Chair -Tropicana

Dr. Ozgur Batuman - UF

Mr. Tim Eyrich – Independent consultant

Dr. Jim Graham - CRDF

Dr. Greg Hodges - FDAC

Mr. Jason Johnson - FDAC

Dr. Kelly Morgan - UF

Dr. Juan Carlos Motamayor – Coca-Cola

Mr. Brandon Page - CRDF

Mr. Timothy Riley - USDA

Dr. Tim Rinehart - USDA

Dr. Michael Rogers - UF

Dr. Brian Scully – USDA/ARS

Dr. Robert Shatters – USDA/ARS

Dr. Tim Widmer - USDA

Jason Johnson - FDACS

CRAFT Program Aims & Requirements

- Cooperative Relationship with USDA/APHIS and FDACS/DPI
- CRAFT Foundation, Inc. is a Direct Support Organization (DSO) of FDACS to support DPI and execute the CRAFT mission
- Field trials and demonstrations of multiple potential HLB mitigation strategies implemented as a system compared to grower standard practice
- CRAFT is aimed at planting 5,000 acres of new citrus trees (including a percentage of resets) over two years, which will be used as experimental models for various HLB mitigation strategies and caretaking programs to counter the harmful effects of citrus greening. CRAFT will compensate growers on a flat rate to conduct field trials over the course of six years.
  - Citrus includes fresh and juice oranges, mandarins and grapefruit
  - Direction was to have a 90/10 split representing Florida production practices 90 Juice/10 Fresh

Program Funding with Public Funds Brings Requirements and Accountability…

- USDA has granted FDACS two years of funding in the amount of $6.2M for CRAFT for period October 1, 2019 – September 30, 2021

- State of Florida gave CRDF $2M for large-scale field trials (CRAFT) through June 30, 2020

- Cycle One Payments = $3,400/acre over two years for solid set; $1,050/acre over two years for resets. Money comes from both Federal and State sources.

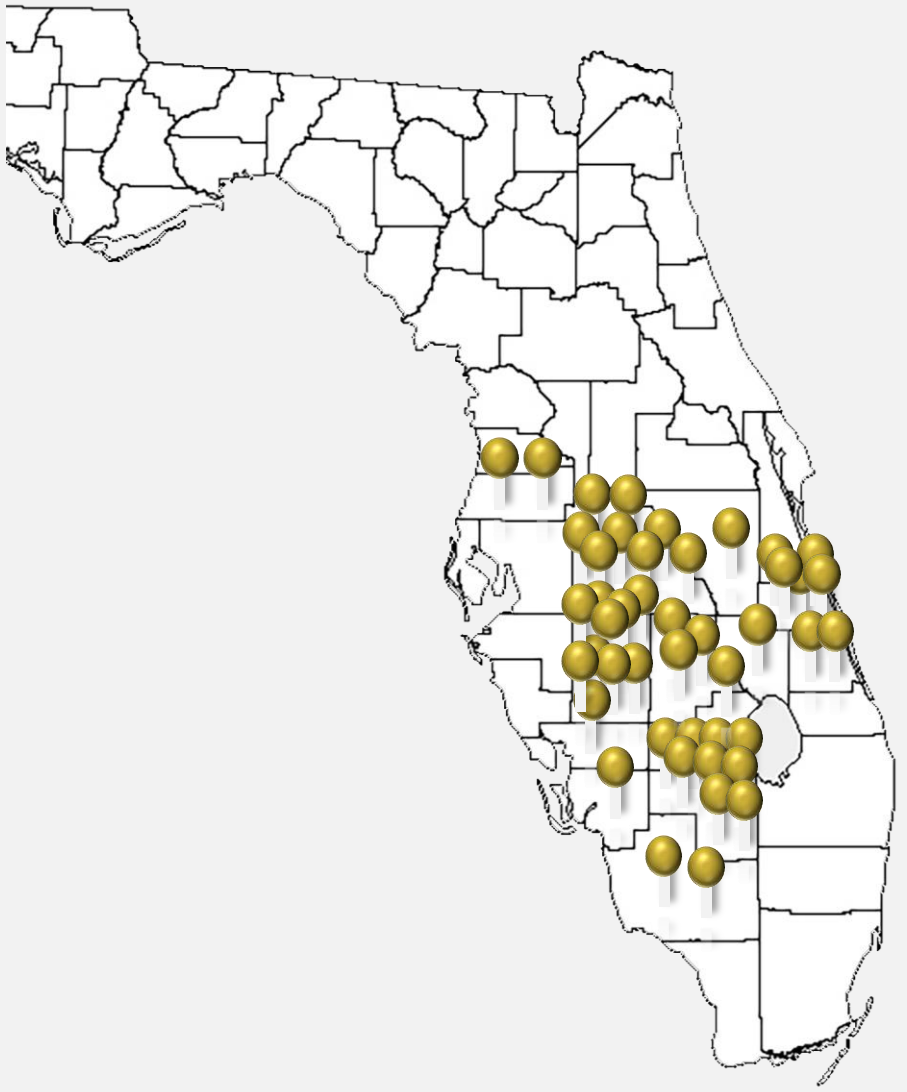
Program Aims & Requirements

- Outreach and Communication
  - Public Meetings
  - Comprehensive Communications Plan which includes this workshop, Citrus Industry Annual Conference, articles, etc.

- Governance and Financial Accountability
  - Financial Processes
  - Audits
  - Ethics/Conflict of Interest Policies

Cycle One Participation

- 46 applications
  - 2,032 acres
    - 1,641 solid set acres
    - 392 reset acres in established groves
  - 14 counties
    - Represents all major citrus-growing regions in the state



CRAFT Cycle Two: General Session

Why Should I Participate in the CRAFT Program?

Why Should I Participate in the CRAFT Program?

- Purpose of CRAFT

- Types of CRAFT Projects I can run on my land

CRAFT Cycle Two: General Session

Testimonial from CRAFT Cycle One Grower

Ted Schrader,
Winter Haven CGA

CRAFT Cycle Two: General Session

Your CRAFT Project Design

Brandon Page

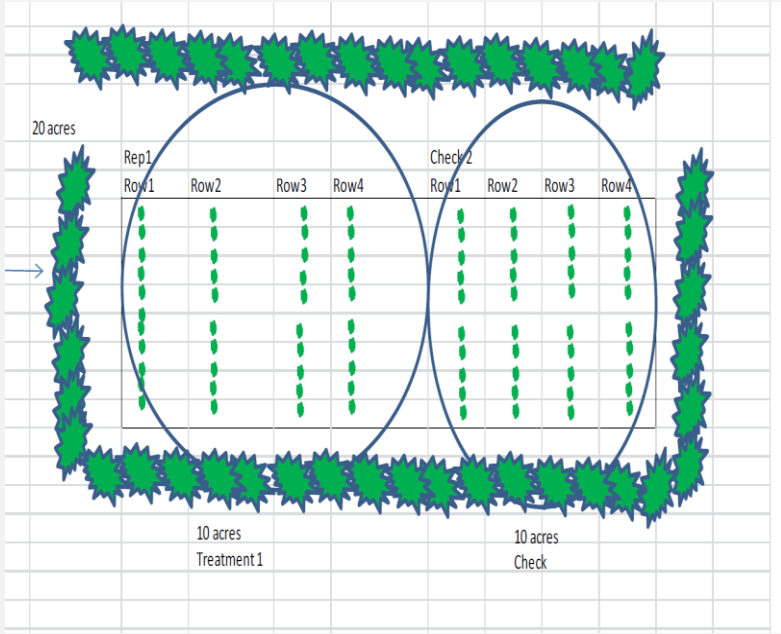
Your CRAFT Project Design

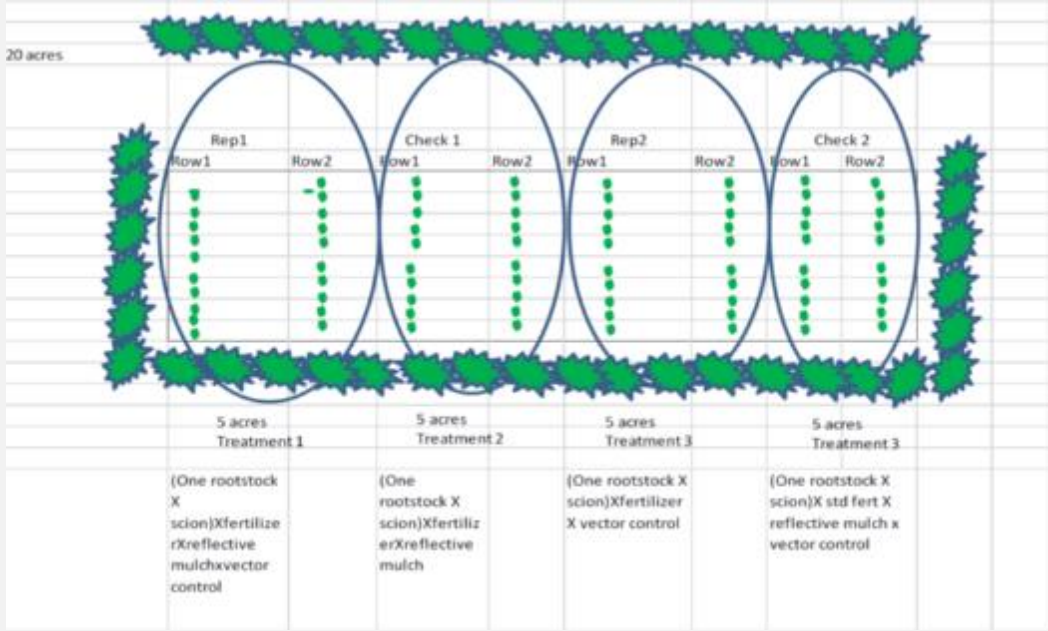
- Where do I start?

- What is a demonstration and how is it different than a field trial?

Organization and Selection of Research

- With USDA and grower input, TWG decided on design models for replication and USDA accepted
  - Aim was to enable growers to be able to execute the trials with regular growing practices and which supplied scientific valuable information
  - Research had to represent diversity of Florida growing regions and grower practices





The CRAFT Project and Me…What Growers Need to Know about their Role in a CRAFT Project

- Minimum Requirements – Why can't I just grow citrus the way I want?
- What happens when a plot in my project is underperforming?
- What happens to my fruit when it is time to harvest?
- How will CRAFT collect yield data?
- Who should I expect to enter my property from the CRAFT program?

CRAFT Cycle Two: General Session

Group by Group

The CRAFT Program – Group by Group

- Factors to be tested were broken down into groups with each assigned a sub-committee. Every grower project has a group assignment and their own volunteer leader to contact.
  - Resets – Dr. Brian Scully, USDA/ARS, Fort Pierce
  - Group 1: Rootstock/Scion – Mr. Brandon Page, CRDF/IFAS, Lake Alfred
  - Group 2: Tree/Soil Nutrition – Dr. Jim Graham, CRDF/IFAS, Lake Alfred
  - Group 3: Pest Management – Dr. Ozgur Batuman, UF/IFAS, SWFREC
  - Group 4: Biostimulants – Dr. Robert Shatters, USDA/ARS, Fort Pierce

CRAFT Cycle Two Research Overview

For Cycle Two, CRAFT has an interest in certain types of projects– particularly in filling research gaps left in Cycle One.

The CRAFT projects that follow will appear as options for your to consider in the application process.

CRAFT Cycle Two: General Session

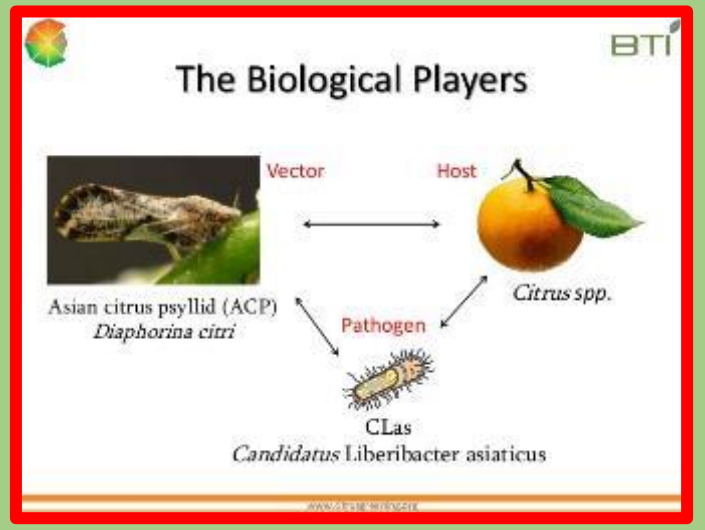
Reset Group

Dr. Brian Scully, USDA/ARS

Working Group: CRAFT Reset Sub-Group

Brian Scully, Brandon Page & Bob Shatters

CRAFT
CITRUS RESEARCH AND FIELD TRIAL FOUNDATION, INC.



Reset Group Overview

Overview: The "Reset Project" is a specialized effort to rehabilitate an existing grove while concurrently retaining and improving the productivity of that grove. It transitions a grove incrementally to new cropping practices, technologies along with elite scion/rootstock replacements

Essentially, Redefine/Re-Invent the Citrus Cropping System

While maintaining profit and productivity without a "break-in-service" for the land

Reset Objectives

Whole Grove Performance

- To monitor the productive of the whole grove using a time series analysis that simple compares annual yield and quality prior to participation (five seasons) in the program to grove performance upon entry into the program
- These practices can be applied across both mature and young trees with appropriate controls for comparison.

Reset Performance

- To compare the productivity & performance of a group or cohort of reset trees subjected to various treatment regiments

Reset Group: 4 Priorities

- Acidified Irrigation H_2O
- Protective Tree Covers
- Organic Matter/Compost
- "Reflective Donuts (New)

Individual Protective Tree Covers (IPC'S)

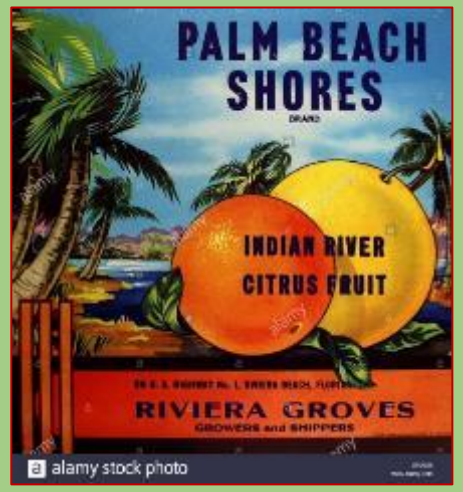
Acidified Irrigation Water

Compost for Resets

Metalized Reflective Donuts

Further Reset Guidelines

Group 4: Reset Group	Factor to be Tested	Rootstock/Scion preference	Location Preference	Potential Focus Factors
Reset Group Project 1	Use of Acidified Water	Any	Any	Acidification vs no acidification
Reset Group Project 2	Compare IPC projects not including bactericides	Any	Any	Comparing different IPC designs
Group 1 Project 3	Compare use of compost treated with untreated	Any	Any	Comparison of soil amendments and probiotics
Group 1 Project 4	Reflective donuts on individual trees vs no donuts	Any	Any	Evaluation of reflective mulch in reset setting


PALM BEACH
SHORES
INDIAN RIVER
CITRUS FRUIT
RIVIERA GROVES
GROWERS and SHIPPERS
alamy stock photo


EUREKA
BRAND
Florida
CITRUS
FRUIT
PRODUCE OF U.S.A.
THE TURNER FRUIT CO.
OCALA, FLORIDA


BLUE LAKE
INDIAN RIVER
FRUIT
WINTER HAVEN
FRUIT SALES CORP.
WINTER HAVEN
FLORIDA


BEACH LAKE
BRAND
PRODUCE OF U.S.A.
LAKE COUNTY
Famous Citrus Fruit
CARTER FRUIT CO., GROVELAND, FLORIDA

CRAFT Cycle Two: General Session

GROUP ONE
ROOTSTOCK/SCION

GROUP ONE: Cycle 1 Projects

- Cycle 1 TWG Subgroup 1 plant material
  - 6 scion – Early Pride, Bingo, Star Ruby, Flame, Vernia, Valencia
  - 12 rootstocks - Sour, SuperSour 3, UFR 4, UFR 6, X 639, C 54, C 146, US 802, US 896, US 897, US 942, US 1281
- Valencia on 9 rootstocks - C 54, C 146, UFR 4, UFR 6, US 812, US 897, US 942, US 1281, X 639
- Star Ruby on SuperSour 3, US 802, US 897, US 942
- Flame on SuperSour 3
- Vernia on X 639, US 942, UFR 4
- Early Pride on Sour
- Bingo on Sour

GROUP ONE: What is missing? What can we get?

#1 Multilocation trials with the same plant material

- Missing
  - Early / Mid varieties
    - Hamlin
    - EV 1 or EV 2
    - Valquarius
    - Vernia
  - OLL varieties
  - Fresh fruit scions
  - Rootstocks
    - The most popular selections are well represented in cycle 1 projects
    - UFR 5, UFR 17, Traditional rootstocks

- Setting up Cycle 2
  - We will likely have a similar selection process as in Cycle 1.
    - "What plant material do you have on order with the nurseries?"
  - Plant material that would be used for CRAFT Cycle 2 is likely already being built in the nurseries.
  - Different scions with similar maturity on a single rootstock
  - Early/Mid Scions on multiple rootstocks

GROUP ONE: Gaps Identified by CRAFT TWG

- Scions were the primary gap in the TWG subgroup 1 trials
  - Valencia is well represented in the Cycle 1 trials
- The TWG discussed the need for more process varieties in Cycle 2 plantings
  - OLL 20
  - Valquarius (in multiple locations)
  - Vernia
- LB8-9 was mentioned as a group 1 candidate
- The TWG agreed that Sun Dragon would be worthy of study
  - USDA indicated the variety was commercially available.
  - It could be interesting to compare Sun Dragon to established varieties

GROUP ONE: Rootstock Gaps

- The only traditional rootstock in subgroup 1 is sour orange.
  - There is a need to have the new generation of rootstocks compared to traditional rootstocks.
  - Swingle, Cleo, Carrizo, etc could be compared to newly release rootstocks

CRAFT Cycle Two: General Session

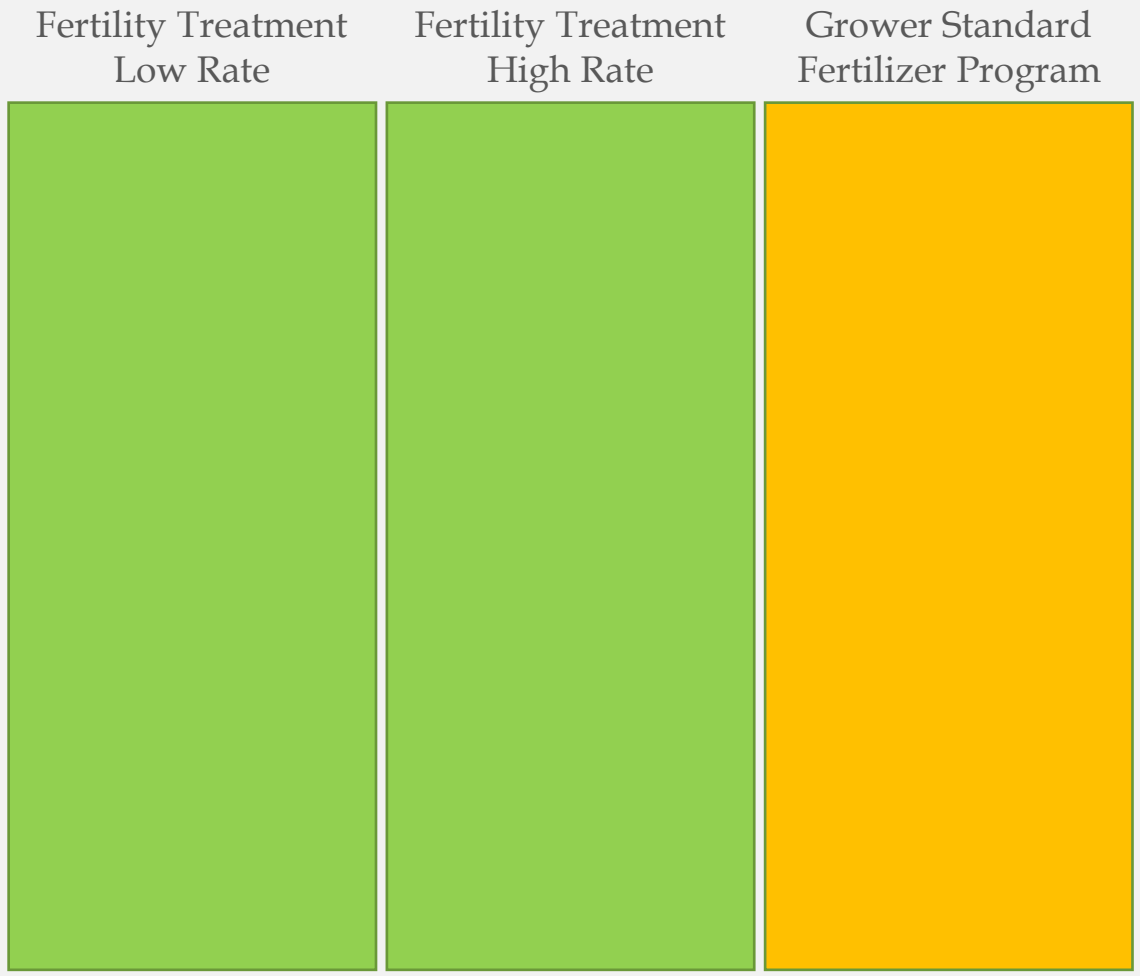
GROUP TWO

TREE/SOIL NUTRITION

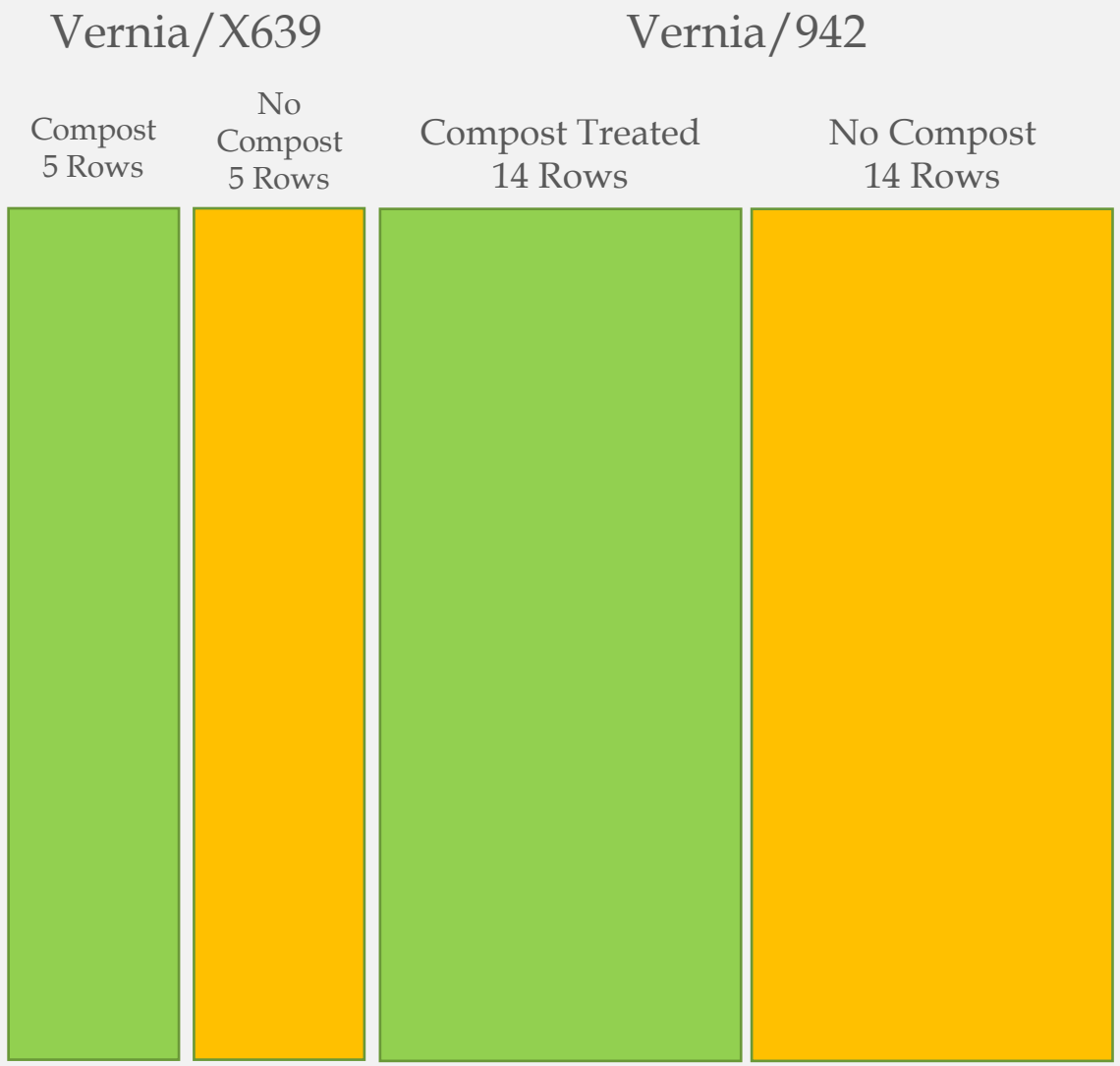
GROUP TWO

Group 2: Nutrition/ fertilization	Factor to be Tested	Rootstock/Scion preferences	Location Preferences	Side by side plots in one location
Group 2 Project 1	Compare rates of soil application for Ca,Mg,Zn,Mn	US942 or X639 Vernia or OLL8	Ridge or Indian River	yes
Group 2 Project 2	Compare 1/3 foliar 2/3 soil with soil only	any	any	yes
Group 2 Project 3	Compare w/ and w/out compost	US 942 or X639	any	yes
Group 2 Project 4	Compare woven ground cover w/no cover	US 942 or X639	Indian River w/ Diaprepes risk	yes

GROUP TWO: Example of Planting Plan and Experimental Design (Fertility rates)



GROUP TWO: Example of Planting Plan and Experimental Design (Rootstock/Compost)



GROUP TWO: OLL-8 on US942 Planted in the Indian River Ecoregion

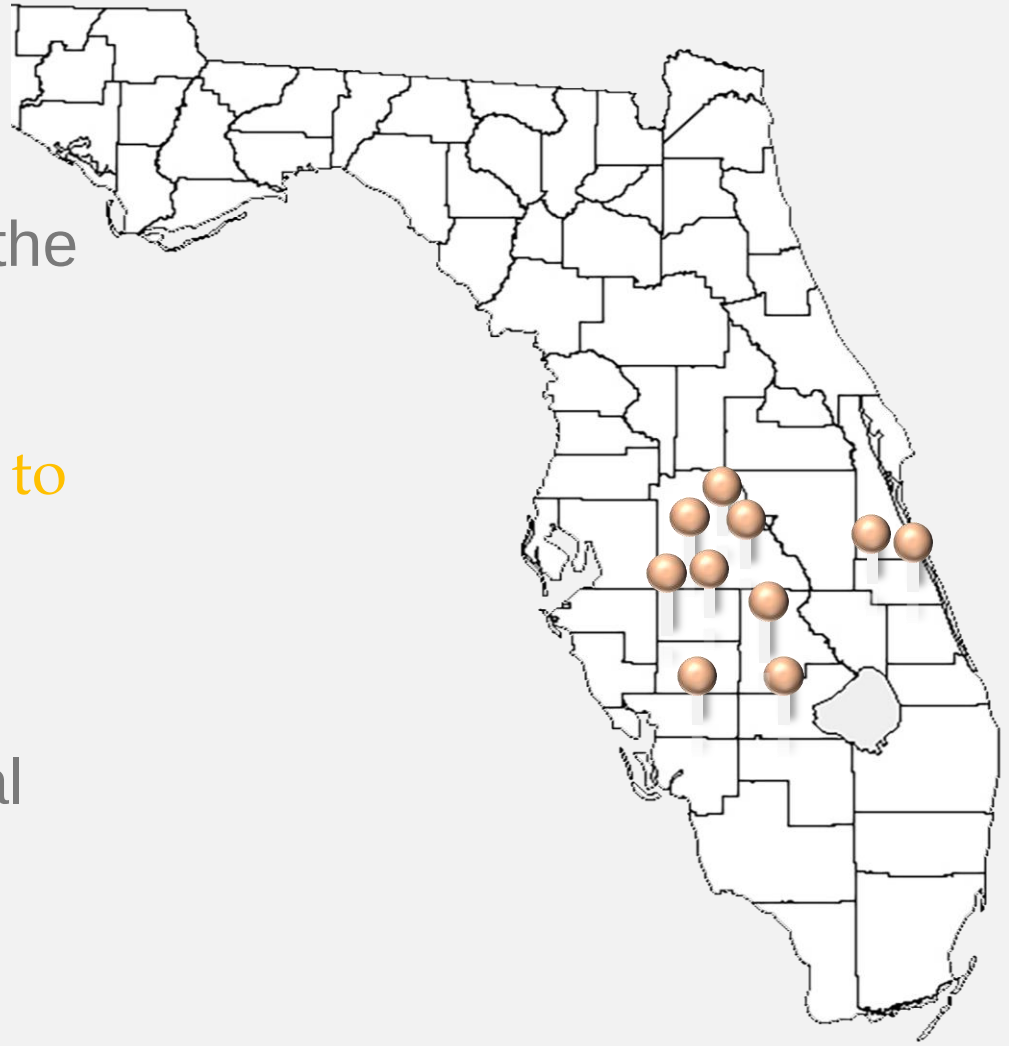
CRAFT Cycle Two: General Session

GROUP THREE

PEST MANAGEMENT

GROUP THREE: Program Participation

- There were 10 CRAFT projects participating in the Pest Management Group in ‘cycle one’.
- All projects were aiming to test novel strategies to control Asian citrus psyllids (ACP) in solid set groves.
- All projects in this group finalized in terms of trial design and contract agreement.



GROUP THREE: Factors Tested

Three novel ACP control strategies are being tested:

- Individual Protective Cover (IPC); 6 participants
- Kaolin Clay Spray; 2 participants
- Reflective/woven Mulch; 2 participants

APPLICATION NUMBER	FACTOR(S) TESTED	COUNTY	ACRES
CRAFT-2019-021S	Kaolin Clay	CHARLOTTE	32
CRAFT-2019-024S	Woven mulch	INDIAN RIVER	40
CRAFT-2019-029S	Reflective Mulch	POLK	10+10
CRAFT-2019-036S	IPC	POLK	27
CRAFT-2019-037S	IPC	POLK	20
CRAFT-2019-038S	IPC	GLADES	32
CRAFT-2019-039S	IPC	HARDEE	20
CRAFT-2019-042S	IPC	INDIAN RIVER	20
CRAFT-2019-049S	Kaolin Clay	HARDEE	20
CRAFT-2019-052S	IPC	HIGHLANDS	42
		Total	**266**

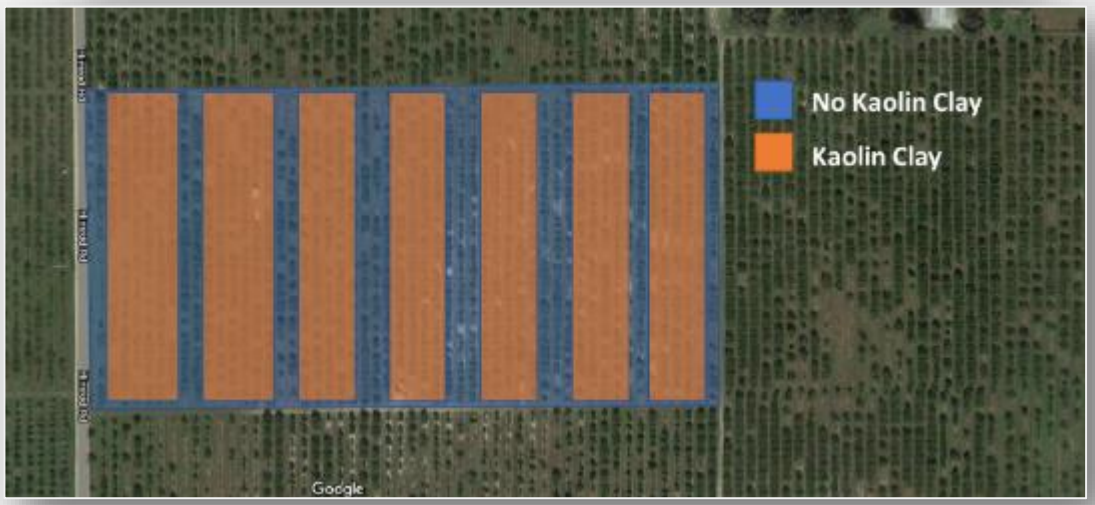
GROUP THREE: Factors Tested

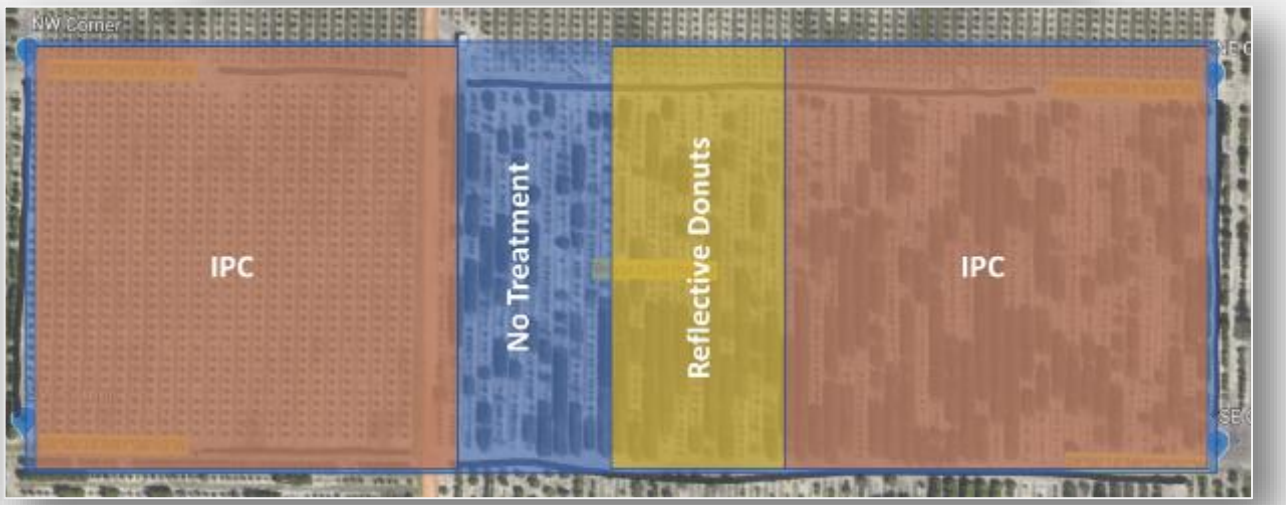
- Three novel ACP control strategies are being tested:
  - Individual Protective Cover (IPC); 6 participants
  - Kaolin Clay Spray; 2 participants
  - Reflective Mulch; 2 participants

- Rationale:
  - HLB management currently heavily rely on chemical control of ACP in citrus groves
  - Repetitive use of insecticides is not sustainable and selects insecticide-resistant ACP populations
  - Effective and alternative ACP control strategies are urgently needed in Florida.

GROUP THREE: Trial Design Examples

GROUP THREE: Trial Design Examples





GROUP THREE: Gaps and Possible New Areas to Explore in Cycle Two

- Main Gap: Integration of strategies
  - Use of multiple strategies in combination to control ACP as well as improving plant health (nutrition, irrigation and IPM).
    - For example: Use reflective mulch but also consider using compost, balanced nutrition regiments and/or slow-release fertilizer as well as protect your trees from other pests and pathogens with timely pesticide applications.

GROUP THREE: Gaps and Possible New Areas to Explore in Cycle Two

New/potential areas to consider in 'Pest Management' group
ACP **Chemical, biological & physical controls:** • **Parasitic wasp** • **Diatomaceous earth**
HLB • **Use of antimicrobials, plant defense or systemic acquired resistance (SAR) inducer compounds** • **Use of novel therapeutic delivery techniques**
SECONDARY PESTS • **Canker, PFD, CBS and Phytopthora etc.** • **Foliar fungicides and bactericides** • **Citrus tristeza virus (CTV), and Aphid control etc.**

GROUP THREE: Gaps and Possible New Areas to Explore in Cycle Two

Any other Suggestions?

1. Trials are in only 7 counties; how about in other counties or on different scion/rootstocks?
2. ??
3. ??

scion	rootstock
Vernia	802
Star Ruby	942
Page	802
Vernia	639
Valencia	Rough Lemon
Vernia	942
Vernia	802
Flame	Sour
Valencia	942

CRAFT Cycle Two: General Session

GROUP FOUR

BIOSTIMULANTS

Working Group: CRAFT Biostimulant Sub-Group

Bob Shatters, Brian Scully, & Brandon Page

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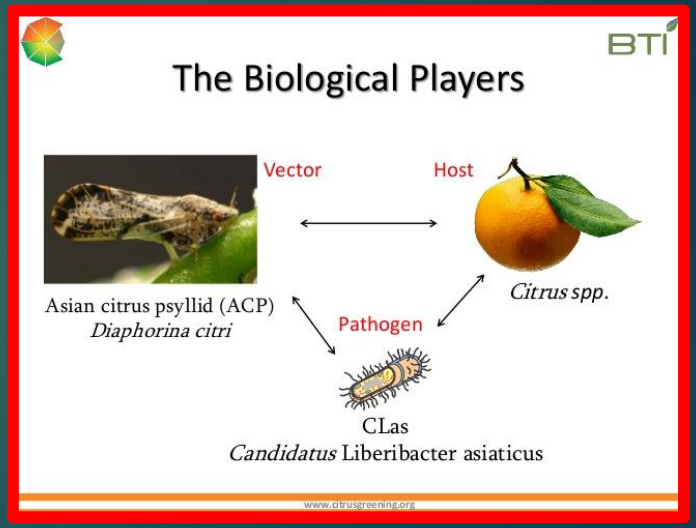


Biostimulant Group Overview

BIOSTIMULANT DEFINITION:
“substance(s) and/or microorganisms that when applied to plants or the rhizosphere stimulate natural processes to benefit nutrient uptake, nutrient efficiency, tolerance to abiotic stress, and/or crop quality, independent of their nutrient content.” (www.biostimulantcoalition.org)

Group 4 bio stimulants	Factor to be Tested	Rootstock/Scion preference	Location Preference	Potential focus factors
Group 4 Project 1	**Plant growth regulator (i.e Giberillins etc.) effect on tree growth**	Any	Any	Evaluate influence of PGRs on plant canopy structure and tree development/vigor/health
Group 4 Project 2	**Humic/fulvic acid**	Any other than Valencia and grapefruit	Any but not SE FL	Compare with vs without treatment on new plantings
Group 4 Project 3	**Seaweed and other extracts**	Any	Any	Compare with vs without treatments on new plantings - tree health stimulator
Group 4 Project 4	**Probiotic Soil amendments and combinations with organic substrates (biochar, ASD etc.)**	Any	Any	Does additions of organic substrates influence effectiveness of probiotic amendments
Group 4 Project 5	**Brassinosteroids**	Any	Any	Can they impact Candidatus Liberibacter asiaticus titer in the plant, improve plant health and vigorous young plant growth
etc	**Other treatments containing amino acids, chitosans, silicon, organic molecules nutrient chelates (i.e. organic acid nutrient chelates)**	Any	Any	

BIOSTIMULANTS

Citrus Industry December 2017

Plant biostimulants — snake oils or beneficial substances?

By Ute Albrecht and Sarah Strauss

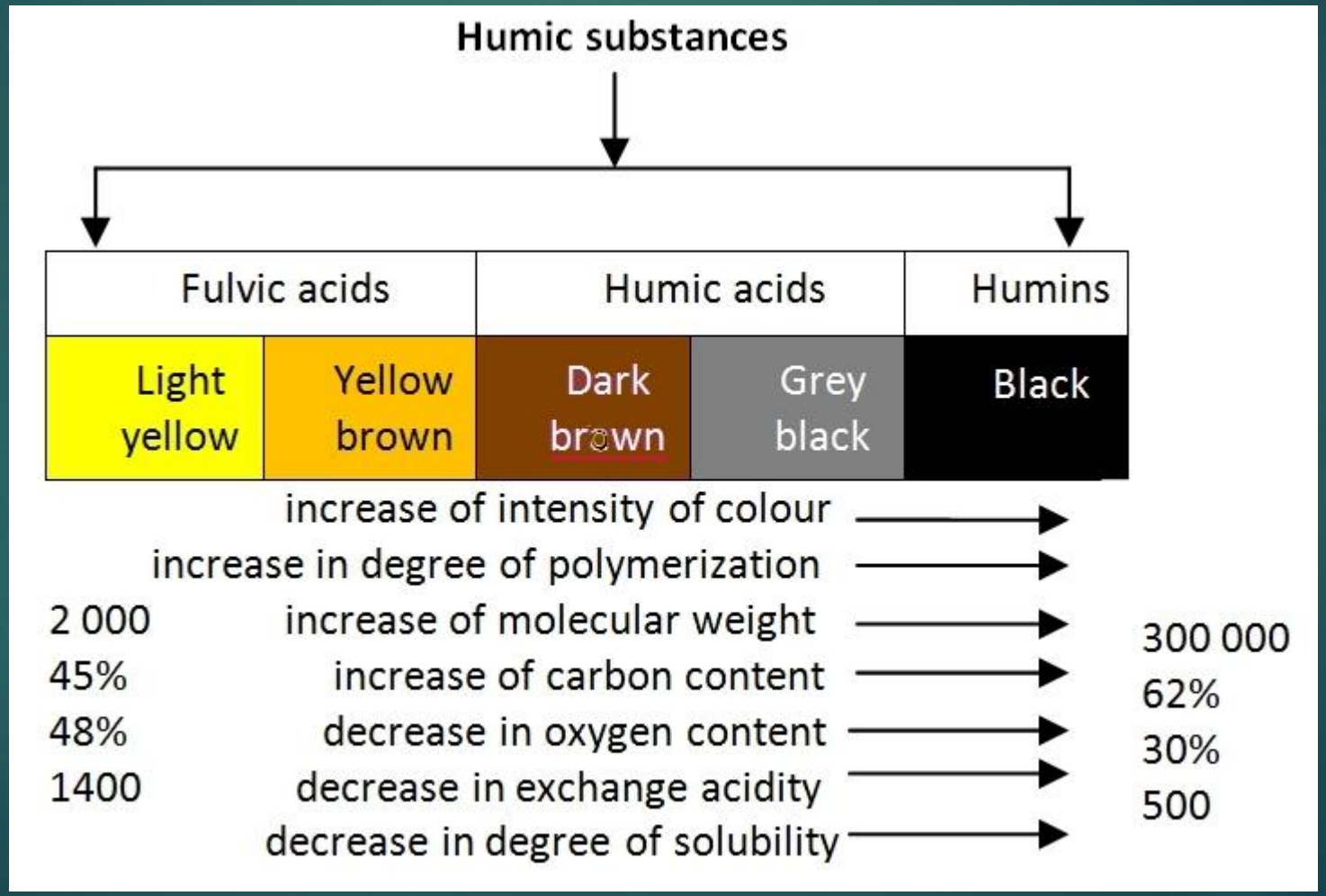
BIOSTIMULANT DEFINITION:

- "substance(s) and/or microorganisms that when applied to plants or the rhizosphere stimulate natural processes to benefit nutrient uptake, nutrient efficiency, tolerance to abiotic stress, and/or crop quality, independent of their nutrient content." (www.biostimulantcoalition.org)

QUOTE FROM DR. ALBRECHT:

- "Biostimulants come in a wide range of different products" including beneficial soil bacteria, beneficial fungi, humic substances and seaweed extract, Albrecht says. She says research indicates the biostimulants "have positive effects on plant growth and also on crop yields."

Humic and **Fulvic** acids are the final break-down constituents of the natural decay of plant and animal materials

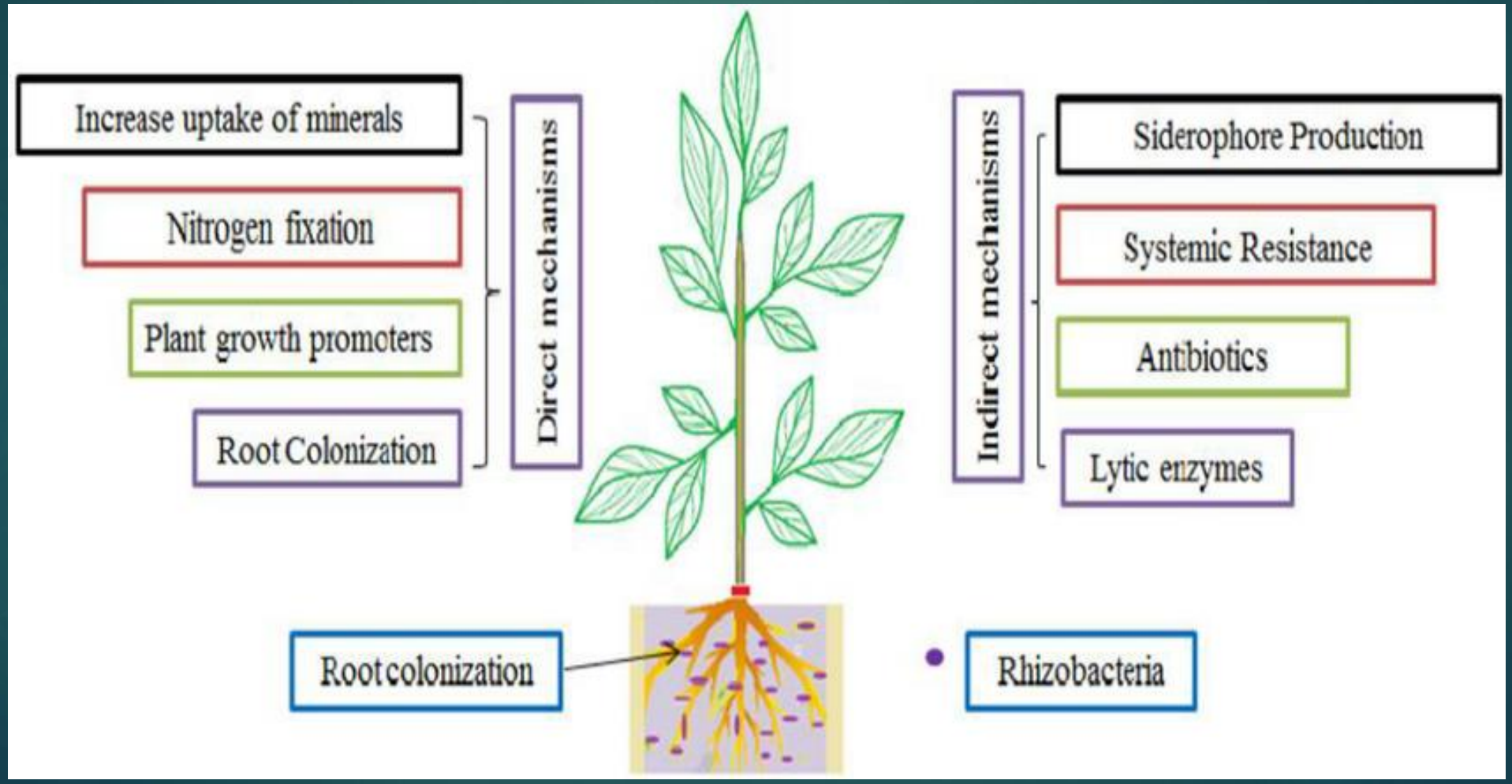


Benefits of Humic and Fulvic Acids

- Major benefits:
- Applied in irrigation line: Improves root nutrient uptake
- Foliar spray – can function as adjuvant and improve foliar nutrition uptake.

PGPRs- Plant Growth Promoting Rhizobacteria

- PGPRs- basically beneficial bacteria that imrpove plant health through many direct or indirect mechanisms.
  - Many flavors



Seaweed Extracts

plants

MDPI

Review

Trends in Seaweed Extract Based Biostimulants: Manufacturing Process and Beneficial Effect on Soil-Plant Systems

Mohammed EL Mehdi EL Boukhari [1,2], Mustapha Barakate [1,2], Youness Bouhia [1,2] and Karim Lyamlouli [1,*]

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2 Faculty of Sciences Semlalia, Laboratory of Microbial Biotechnology, AgroSciences and Environment, Cadi Ayyad University, Marrakesh 40000, Morocco

* Correspondence: Karim.LYAMLOULI@um6p.ma

Fruit quality

Hydrophilic antioxidant activity (+)
Vitamin C (+)
Total Phenols (+)
Total soluble solids (+)
Fructose (+)
Sucrose (+)
Anthocyanins (+)

Plant physiology

Chlorophyll content (+)
Photosynthesis rate (+)
Stomatal conductance (+)
Electron transfer rate (+)

Phytohormones

Gibberellin (+)
Cytokinin (+)
Auxin (+)

Shoot growth

Leaf surface area (+)
Shoot length (+)
Yield (+)

Soil activity

Hydrogenase activity (+)
Invertase (+)
Urease (+)
Proteinase (+)
Phosphatase (+)
Microbial activity (+)
Soil texture and water retention (+)

Root growth

Root elongation (+)
Root architecture modulation (+)

Available nutrients (P, N, K, Cu, ...) (+)
Nutrient use efficiency (P, N, K, Cu, ...) (+)

UF | IFAS Extension
UNIVERSITY of FLORIDA

CMG17

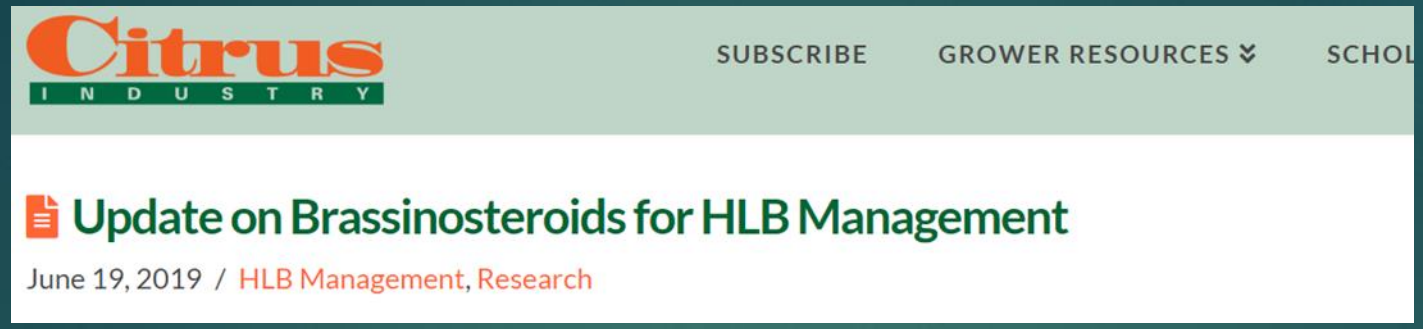
2019–2020 Florida Citrus Production Guide: Plant Growth Regulators[1]

Tripti Vashisth, W. Chris Oswalt, Mongi Zekri, Fernando M. Alferez, and Jamie D. Burrow[2]

- Gibberellic acid (GA) is used in citrus orchards to manipulate flowering and fruit development and reduce the incidence and/or severity of some physiological disorders that occur due to environmental conditions.
- However, Application to new plantings may also influence plant health and growth architecture.

BRASSINOSTEROIDS

Brassinosteroids (BRs) are a class of polyhydroxylated steroidal phytohormones in plants with similar structures to animals' steroid hormones. Brassinosteroids regulate a wide range of physiological processes including plant growth, development and immunity.



- Biweekly treatments: water (control), 0.01 micrometer (μM) HBr (low concentration, 18.6 milliliters/100 gallons) and 1 μM HBr (high concentration, 186 milliliters/100 gallons).
- Central and southern Florida citrus-producing regions
- After 10 months:
  - no reduction in bacteria population
  - However, some interesting physiological effects were found that are indicative of better tree health: earlier blooming date by 10 days, acceleration of fruit maturation and higher fruit yield.
  - Similar results in second year.

All Other

- **Combinations of the above:**
- **For example, combining beneficial bacteria (probiotics) with soil amendments such as humic/fulvic acid formulations, biochar, anaerobic soil disinfestation (ASD) to promote bacterial growth.**
- **Other treatments containing amino acids, chitosans, silicon, organic molecules nutrient chelates (i.e. organic acid nutrient chelates)**

CRAFT Cycle Two: General Session

Data Collection

Data Collection Overview

- CRAFT growers will collect data for input in to USDA portal
- FDACS/DPI
- Third-party tree measurements

Why are We Collecting Data?

- CRAFT's funding agreement with USDA requires it
  - Funding agreement outlines what CRAFT needs to do
  - Specifies protocols – but not locked in granite
- CRAFT Participant contracts
- Data to be available to public for research purposes
- Data will help correlate HLB mitigation practices to outcomes (ie. Tree health/tree loss)

Grower-Collected Data Under CRAFT Agreement

- Site preparation such as wind-breaks, irrigation design, bedded rows, pre-plant herbicide, pre-plant compost/mulch (pre-audit)
- Precentage Dead Trees – in quarterly reports
- Annual Production costs

CRAFT Cycle Two: General Session

Data Collection Partners – FDACS/DPI

Jason Johnson,

FDACS/DPI

CRAFT Data Collection

Collected By FDACS

Jason Johnson

CRAFT ACP Monitoring

Five points consisting of 10 trees per point that are tapped.

Five points consists of the NE, NW, SE, SW corners and the center of the block.

Trees are GPS and psyllid counts are taken from each of the 10 trees, for a total of 50 numbers.

Trees will be tapped once every four weeks.

Sampling

- Leaf Sampling
  - Nutrient Sampling
  - HLB Sampling

Nutrient Sampling

- Once per year during the months of July-August leaf samples will be pulled on sentinel trees.
- Sampling protocol is randomly selecting leaves around the quadrant of the sentinel trees totaling 80 leaves per 40 sentinel tree plots.
- Leaves will be pulled from flush that is four to six months old and must be hardened off. (Youngest mature leaves.)
- Samples to be sent to lab specified by CRAFT Foundation.

HLB Sampling

- Once per year during the months of January-February leaf samples will be pulled on sentinel trees.
- Sampling protocol is 12 leaves per tree totaling 480 leaves per sentinel tree plot.
- Sample will consist of both symptomatic and non-symptomatic leaves base on visual tree expression of the youngest mature leaves per tree that are hardened off. Sampling will be done once per year.
- Samples will be sent to Southern Gardens Lab for diagnostic testing.

Survey Functions

- **Site verification**
  - At time of planting and will include tree counts, spacing, variety and rootstock, notation of windbreaks, and GIS of the block/blocks and sentinel trees.
- **Multi Pest Survey**
  - All trees will be surveyed looking for any or new disease/pest issues.
  - Any samples taken for verification of disease will be processed through the DPI lab in Gainesville.
- **Citrus Black Spot Survey**
  - All trees are surveyed once trees start bearing and at color break based on variety.
  - Any samples taken for verification of disease will be processed through the DPI lab in Gainesville.
- **Grower Request Survey**
  - Should the grower need help with identifying an issue we are available for their request.

CRAFT Cycle Two: General Session

Data Collection Partners

Third-Party Tree Measurement

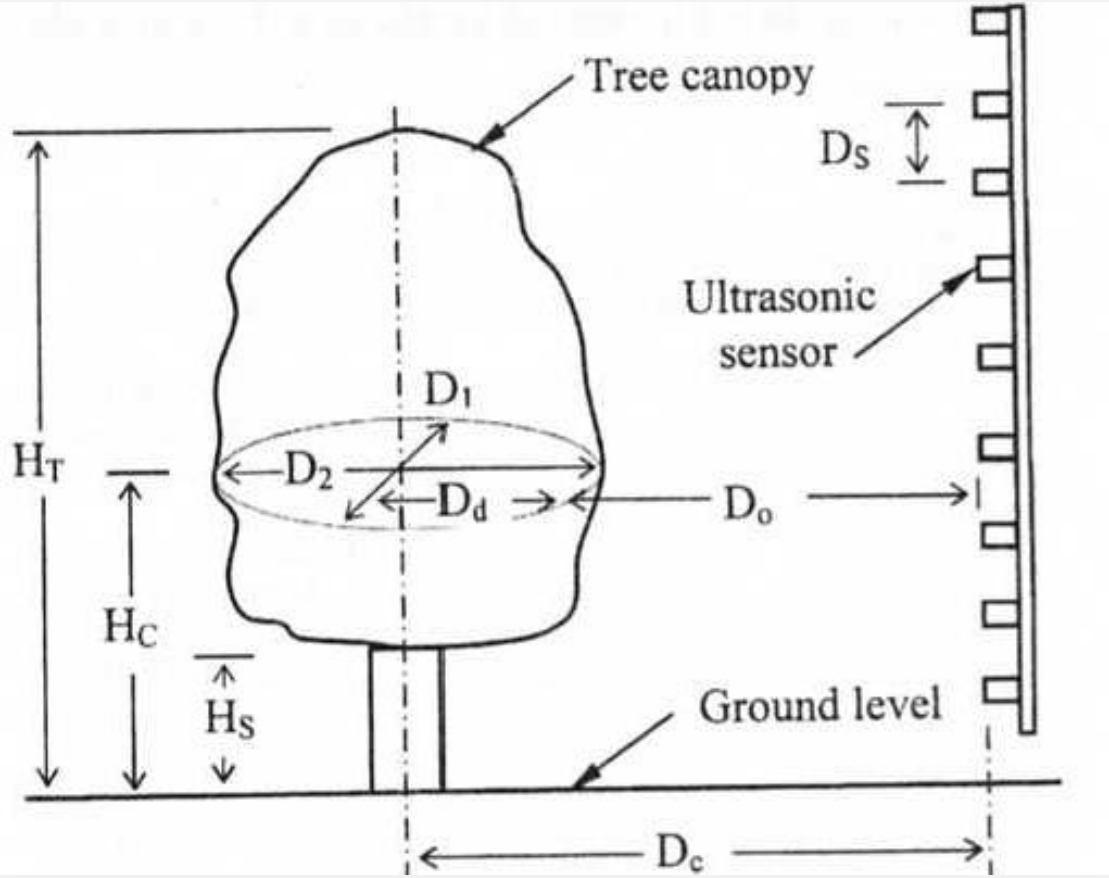
Data Collection Partners

- Tree Measurement – using a third-party contract vendor
- Vendor selection in progress
  - Tree health
  - Biomass
  - Tree canopy volume
  - Measuring trees with IPCs
  - Sentinel tree location

Data Collection Partners

- Tree Measurement – using a third-party contract vendor
- Vendor selection in progress
  - Tree health
  - Biomass
  - Tree canopy volume
  - Measuring trees with IPCs
  - Sentinel tree location

Data Collection Partners



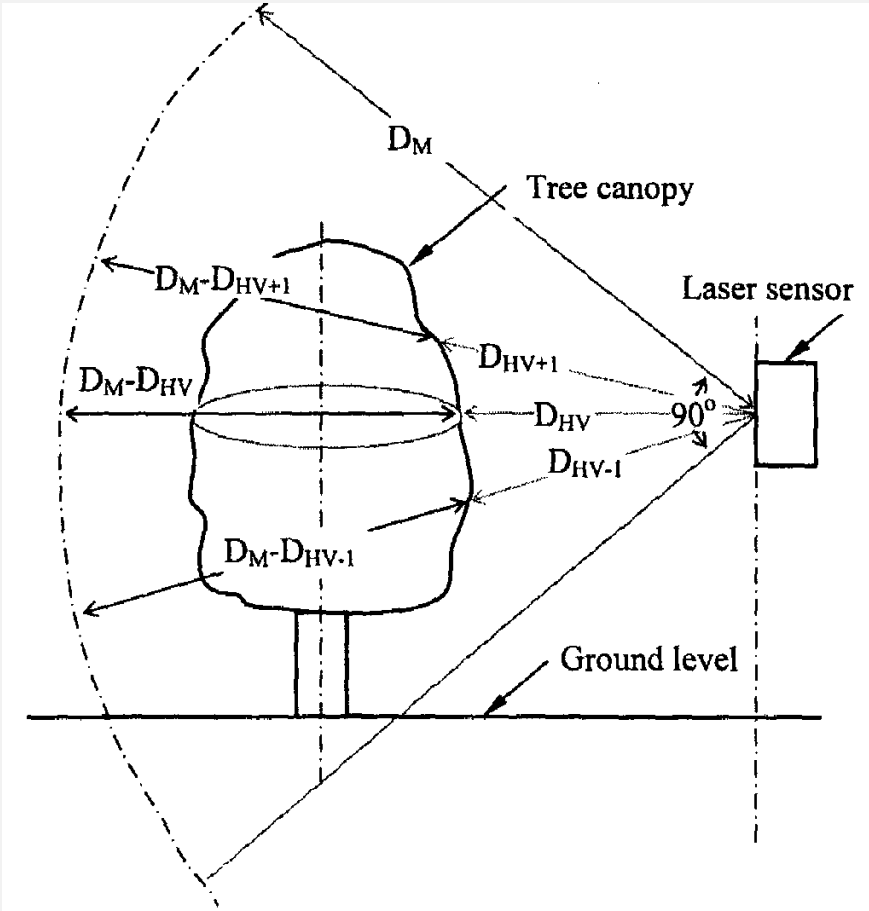


Figure 3. Schematic view of laser setup and parameters that were considered in computing laser canopy volume indices.

CRAFT Cycle Two: General Session

Data Collection Partners

Pre-Audits

Duke Chadwell


2019 028S

CRAFT Pre-Audit

- **Contact CRAFT participants to discuss and schedule the Pre-Audit site visit.**
- **Prior to site visit, participants receive the *Craft Cycle One Contract Pre-Audit Checklist and Work Sheet* and the *Information for CRAFT participant from Pre-Audit* forms.**
- **During site visit:**
  - **Participant explains their project and may provide data, photos, and other pertinent information.**
- **Auditor confirms:**
  - **the project in the field matches what has been approved by CRAFT,**
  - **the Participant has information needed to fulfill the CRAFT contract requirements,**
  - **the overall project and tree health,**
  - **that Participant understands use of USDA Portal and gives CRAFT permission to use and publish photos, data, and research.**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CRAFT Cycle Two: General Session

The CRAFT Data Portal

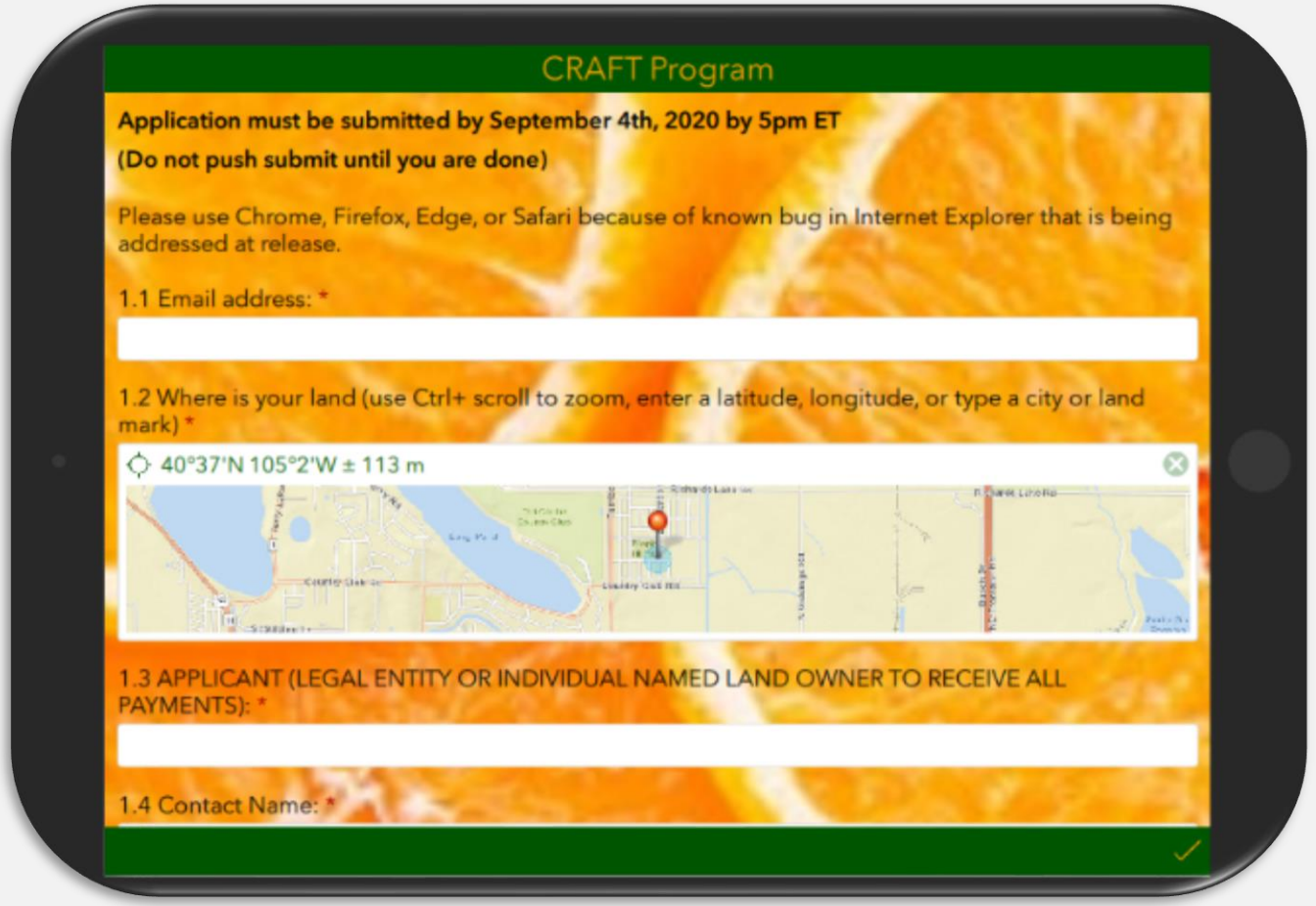
Bruce Vandenberg & Caryn Nezat, USDA/ARS

CRAFT Application Process

- Application will be open from July 20th through September 4th, 2020
- Link to application will be available on the CRAFT website – www.craftfdn.org
- Paper template will be available for printing to assist with preparation

CRAFT Online Application

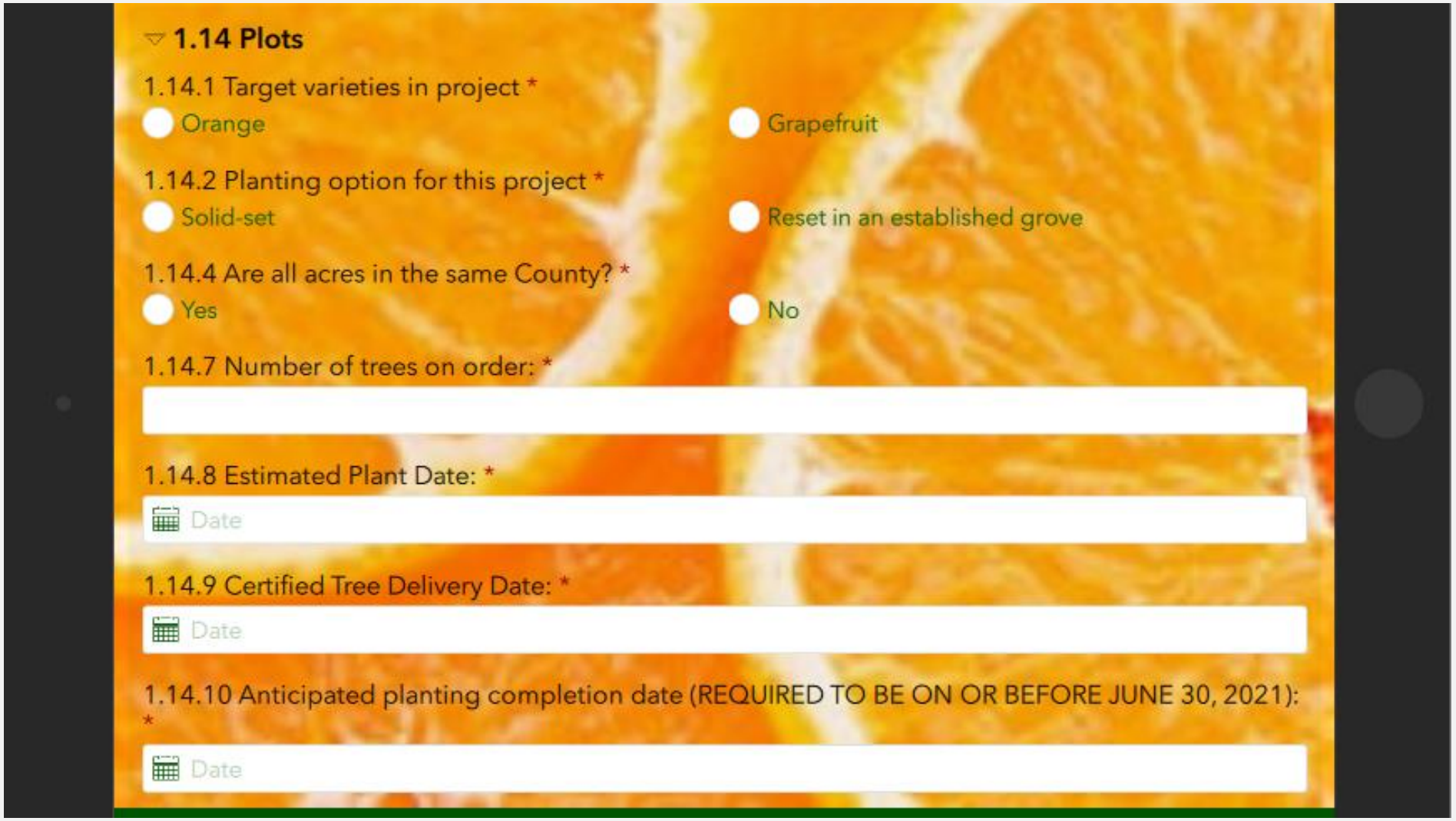
- Application can be completed on mobile device or desktop
- Application needs to be completed before submitted
- Information should be gathered prior to starting



What Do You Need?

- Valid email address
- Land owner information and location of parcel
  - latitude/longitude, parcel ID and county
- Contact name, phone number and EIN or last 4 of SSN for individual
- Information on planting practices and nursery
  - guidelines available online
- Irrigation information

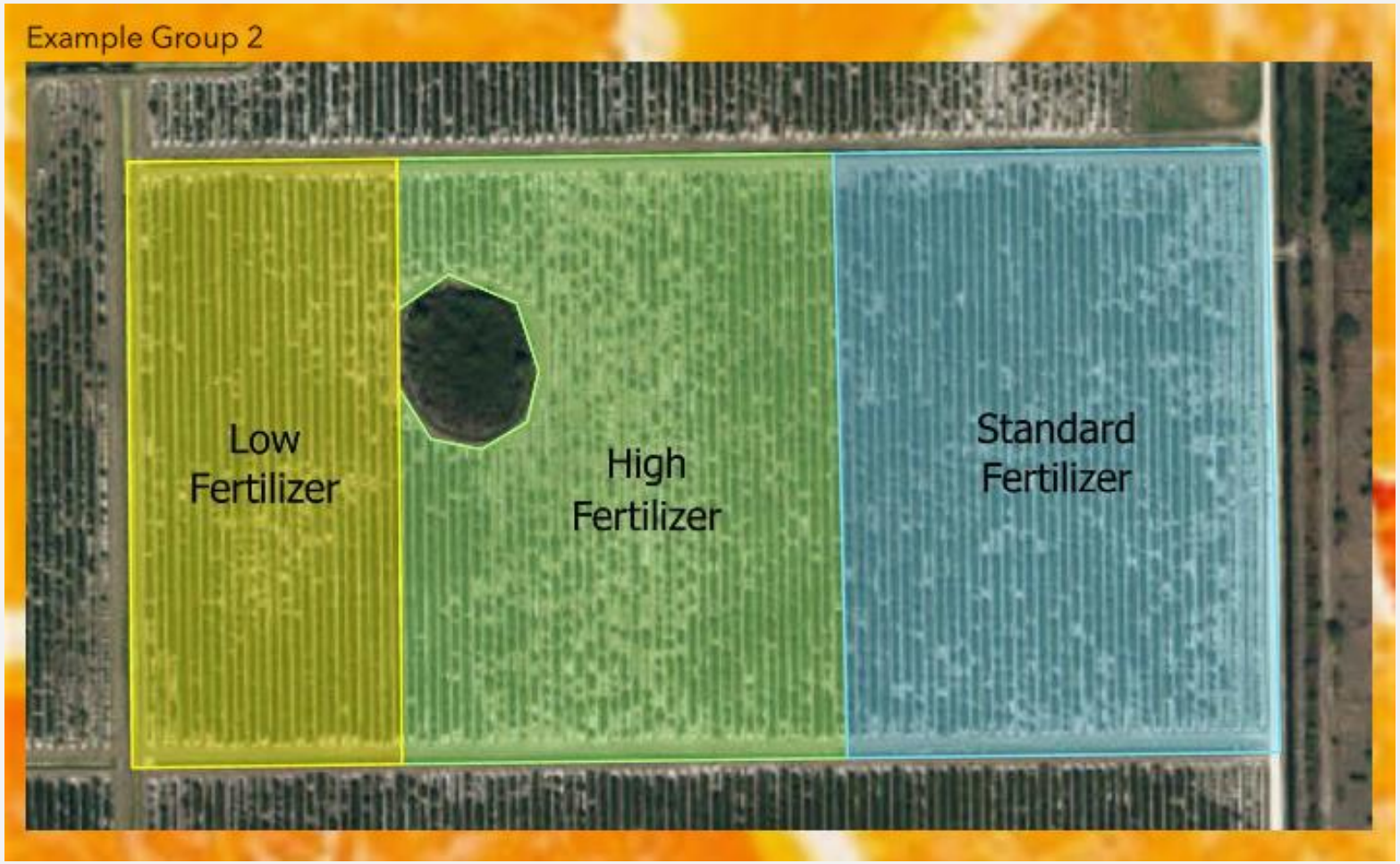
CRAFT Online Application



Group 1: Rootstock and Scion Comparisons

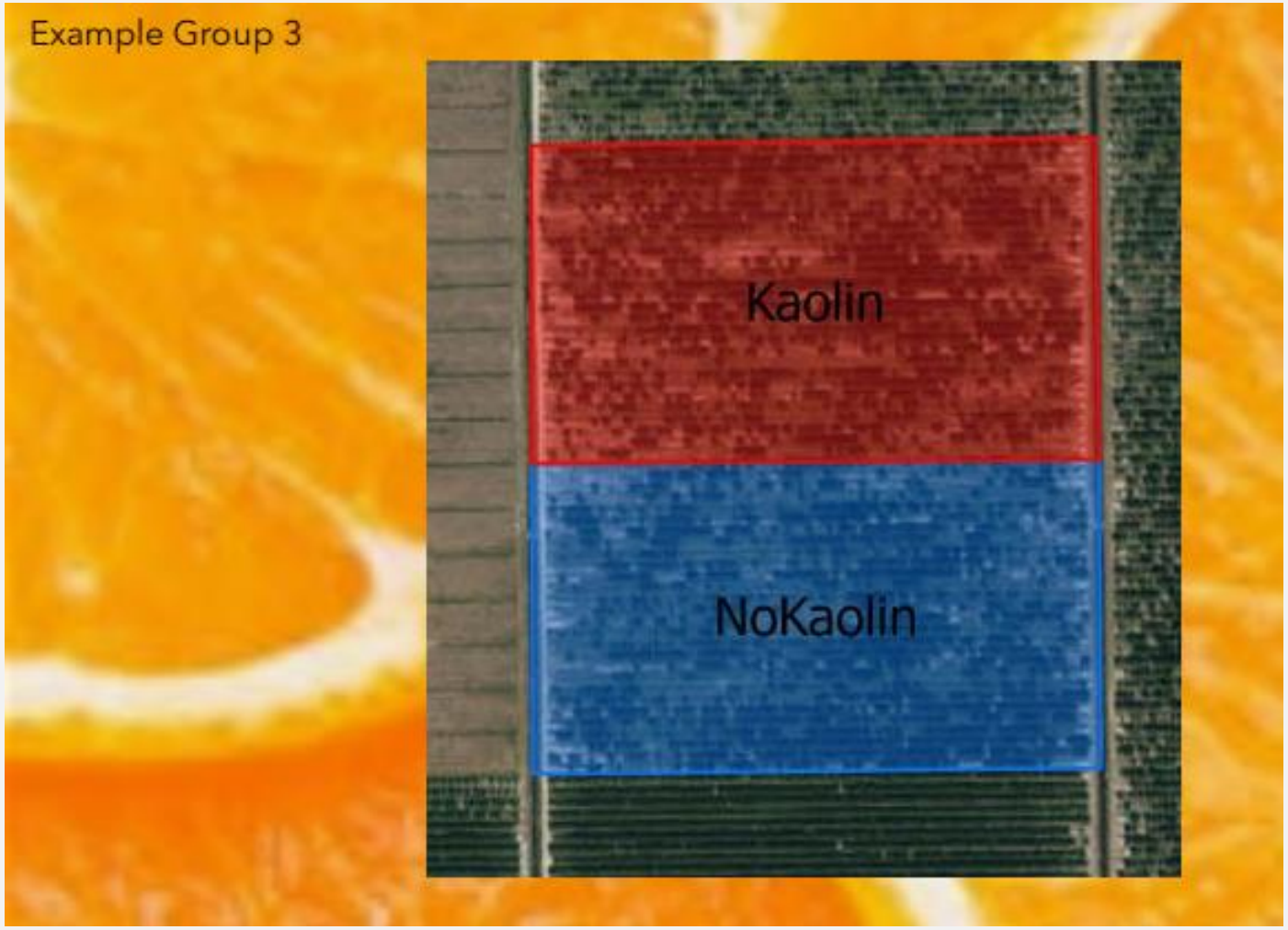
- Hamlin
- EV 1 or 2
- Vernia
- Valquarius
- OLL varieties
- US 942
- Swingle
- Cleo
- Star Ruby
- Flame
- UFR 5
- UFR 17
- Carrizo
- Super Sour

Group 2: Fertilizer and Nutrition Treatments



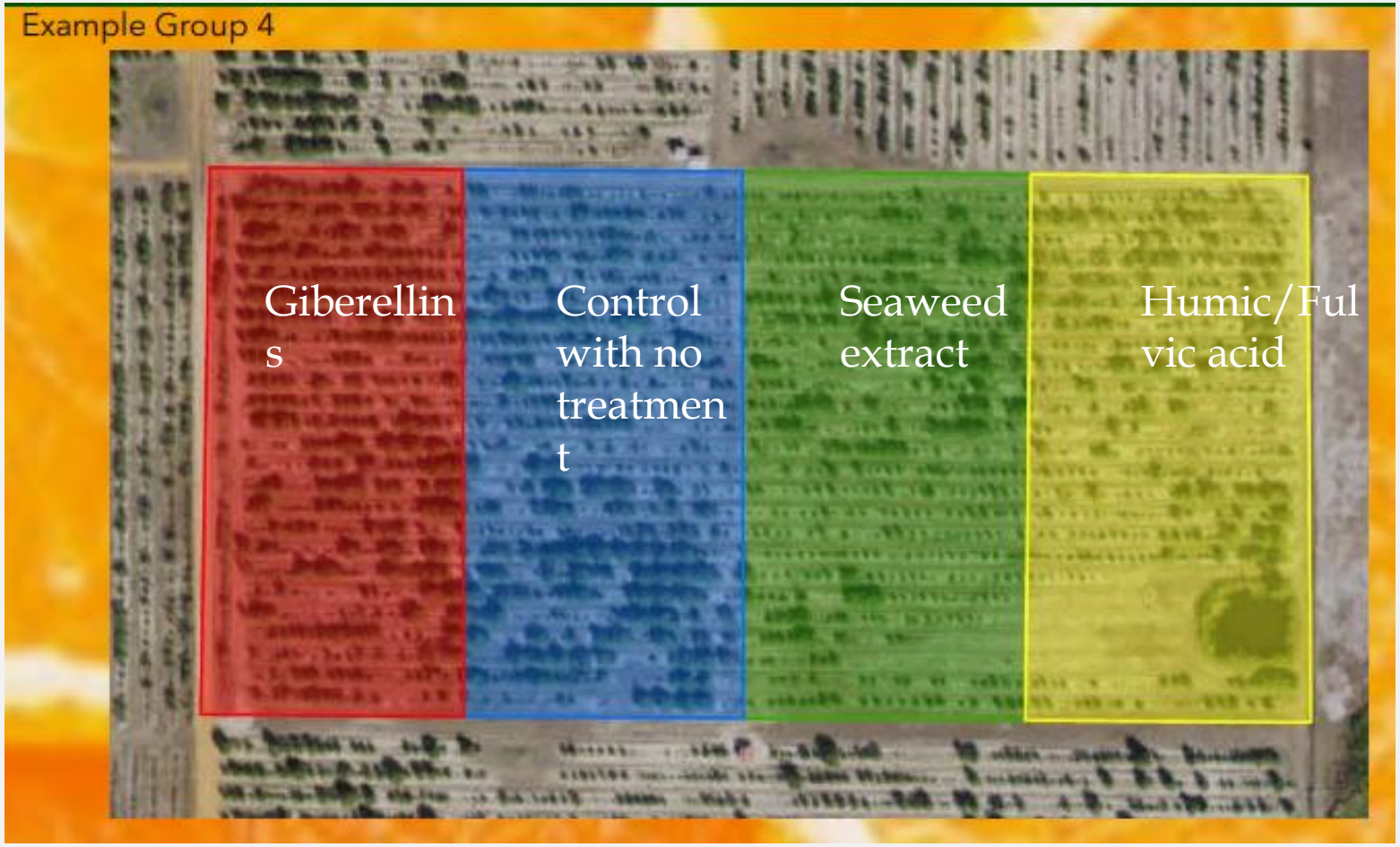
- Rates of application
  - Ca, Mg, Zn, Mn
- Foliar and soil application vs. soil only
- Compost applications
- Ground cover
- Other

Group 3: Pest and Disease Management



- Individual Protective Covers
- Kaolin
- Reflective Mulch/Donuts
- ACP physical, biological or chemical controls
- Canker
- HLB
- Novel pest management

Group 4: Biostimulant Practices



- Gibberillins
- Humic/Fulvic acid
- Seaweed extracts
- Probiotics
- Organic substrates
- Brassinosteroids
- Organic chelates
- Chitosans
- Amino acids
- Silicon

Group 5: Planting Density and Resets

- Acidified irrigation water
- IPC layouts
- Compost
- Reflective donuts
- Standard planting density
- High planting density

Choose Options or Your Own Design…

Planned Management Practices

Planned Management Practices

- Percent of fresh and juice produced
- Rootstock choice
- Soil quality and type
- Irrigation method and scheduling/management
- Water source
- Water quality and analysis

Planned Management Practices

- Product guaranteed analysis
- Application rate
  - Pounds/acre/year
- Soil amendments
- Biostimulants

Vector Management and ACP Controls

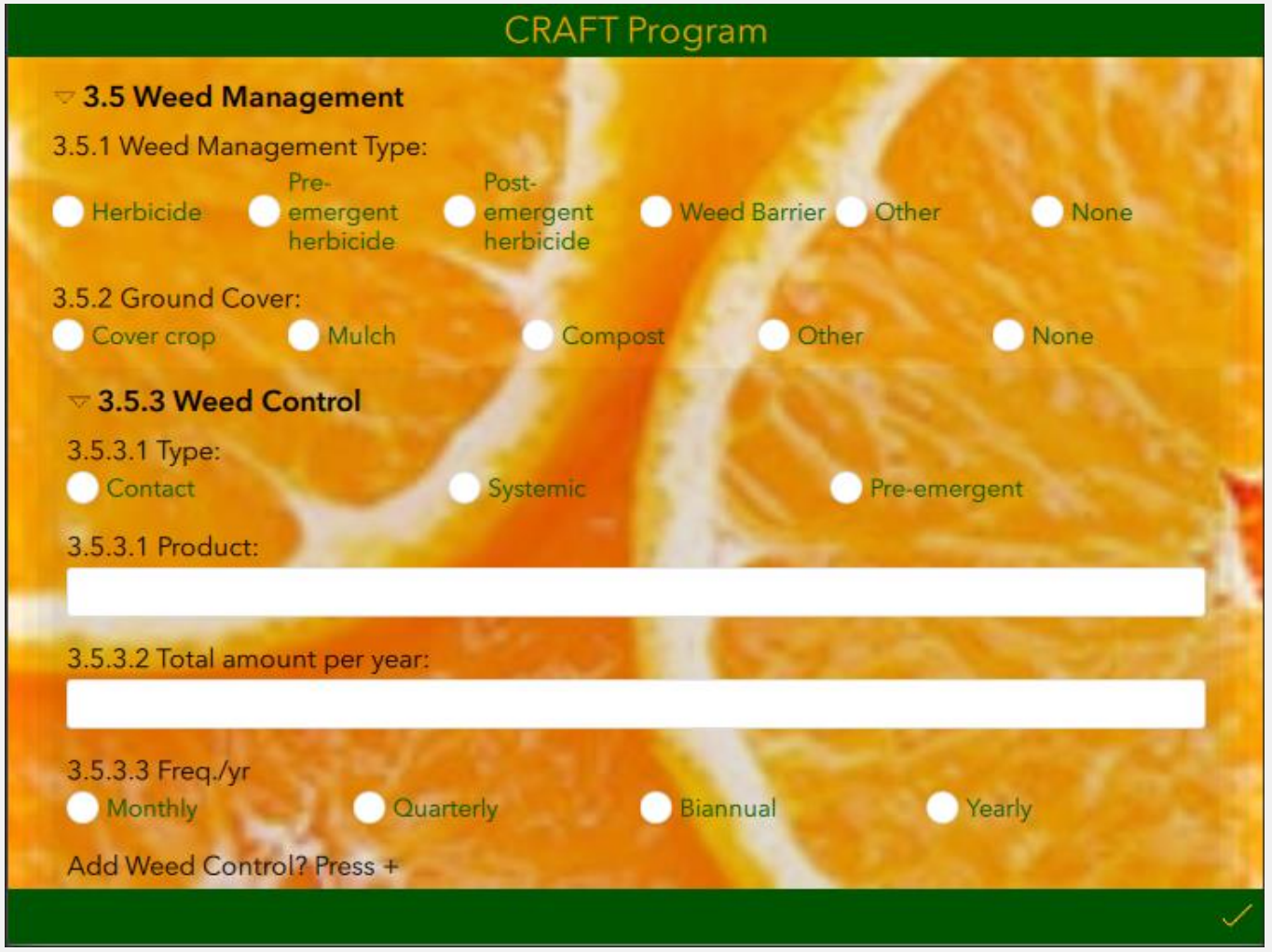
- Insecticides
- Biocontrols
- Physical Barriers
- Reflective Mulch
- IPC
- Clay
- Traps
- Target pests

- Scouting method and frequency
- Secondary pests

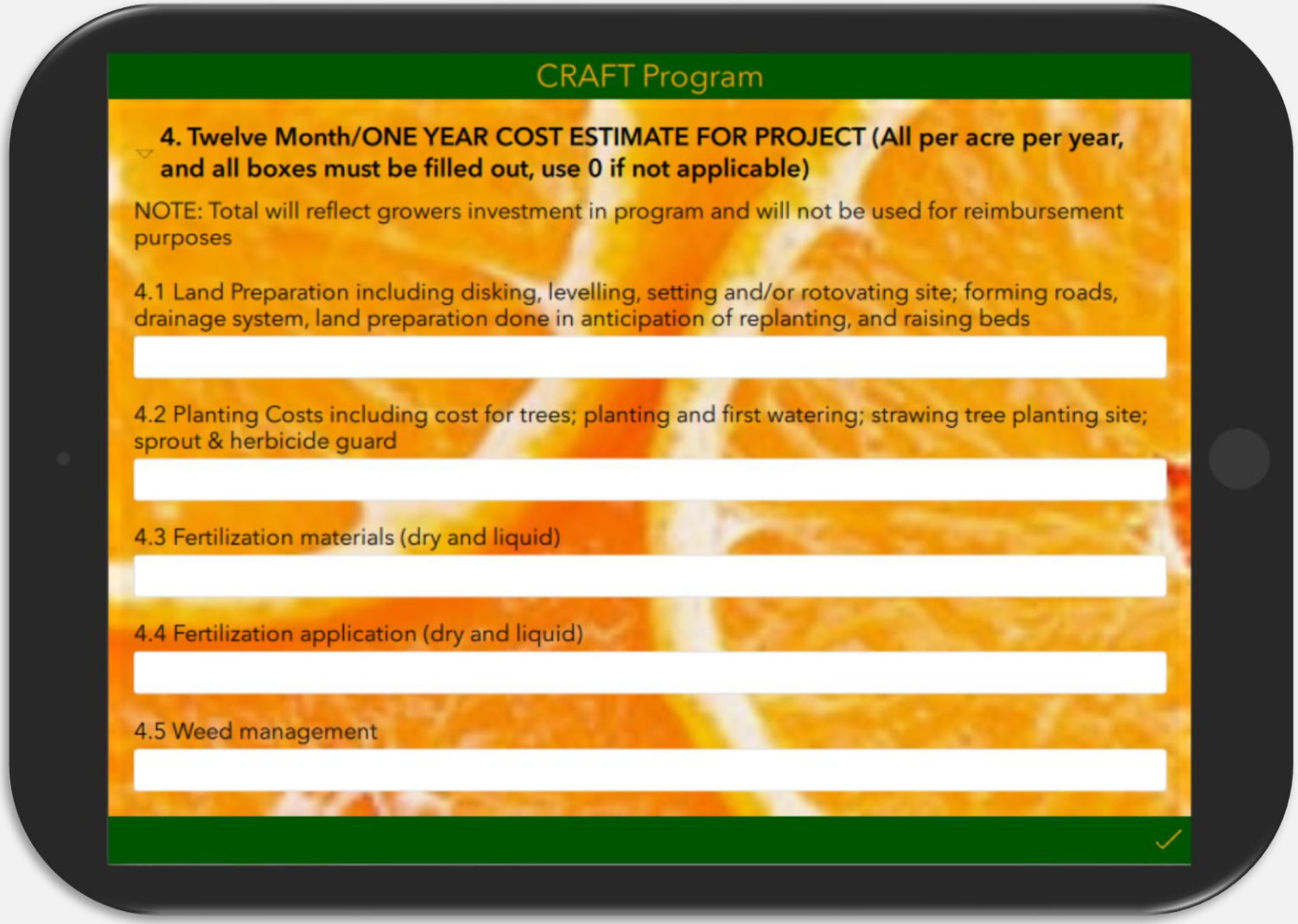
Disease Management and Secondary Pests

- **Products used**
- **Application frequency**
- **Total amount used per year**
- **Pest and diseases treating**
- **Additives or Adjuvants**

Weed Management

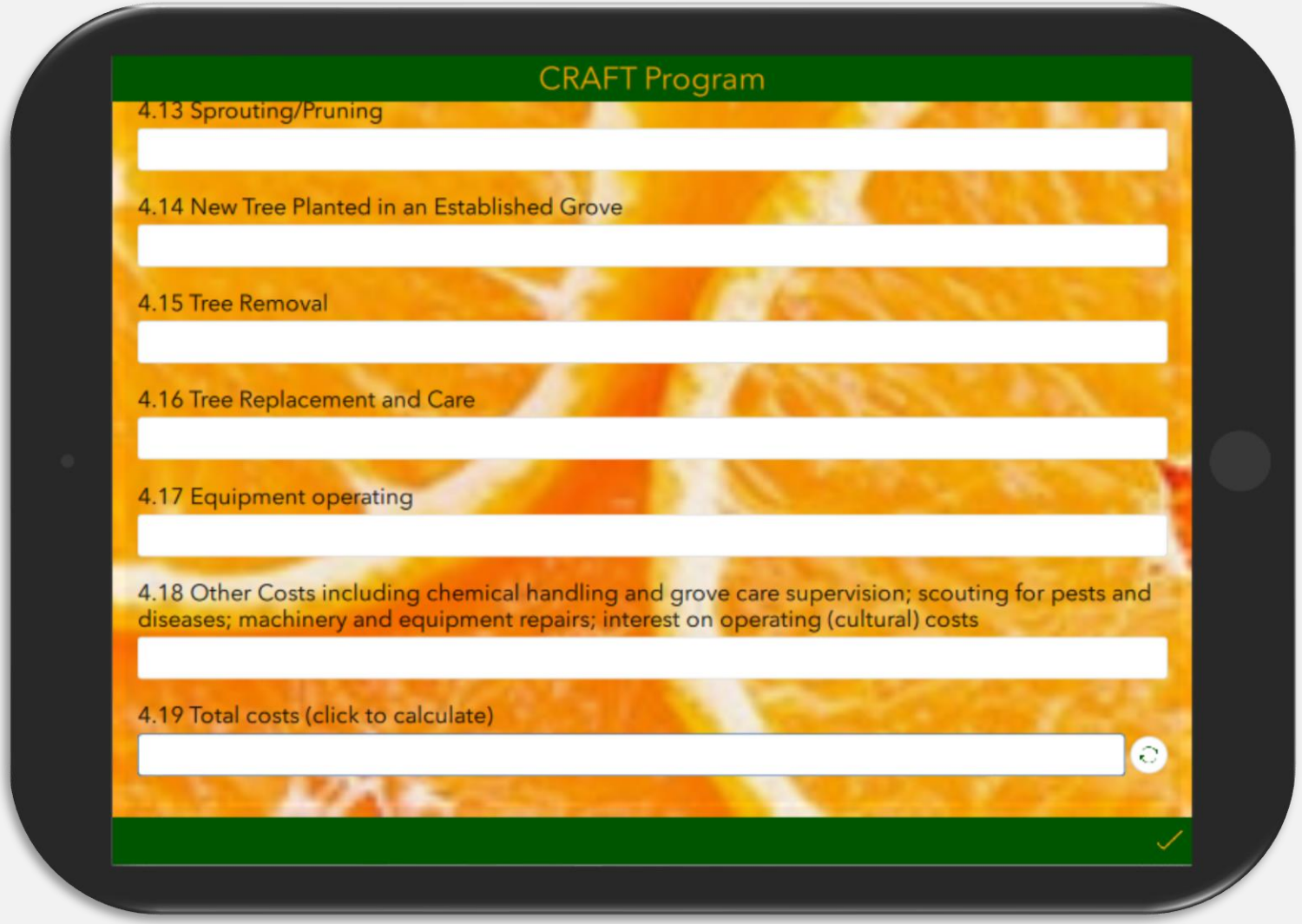


Estimated Annual Cost Analysis



Estimated Annual Cost Analysis

Estimated Annual Cost Analysis



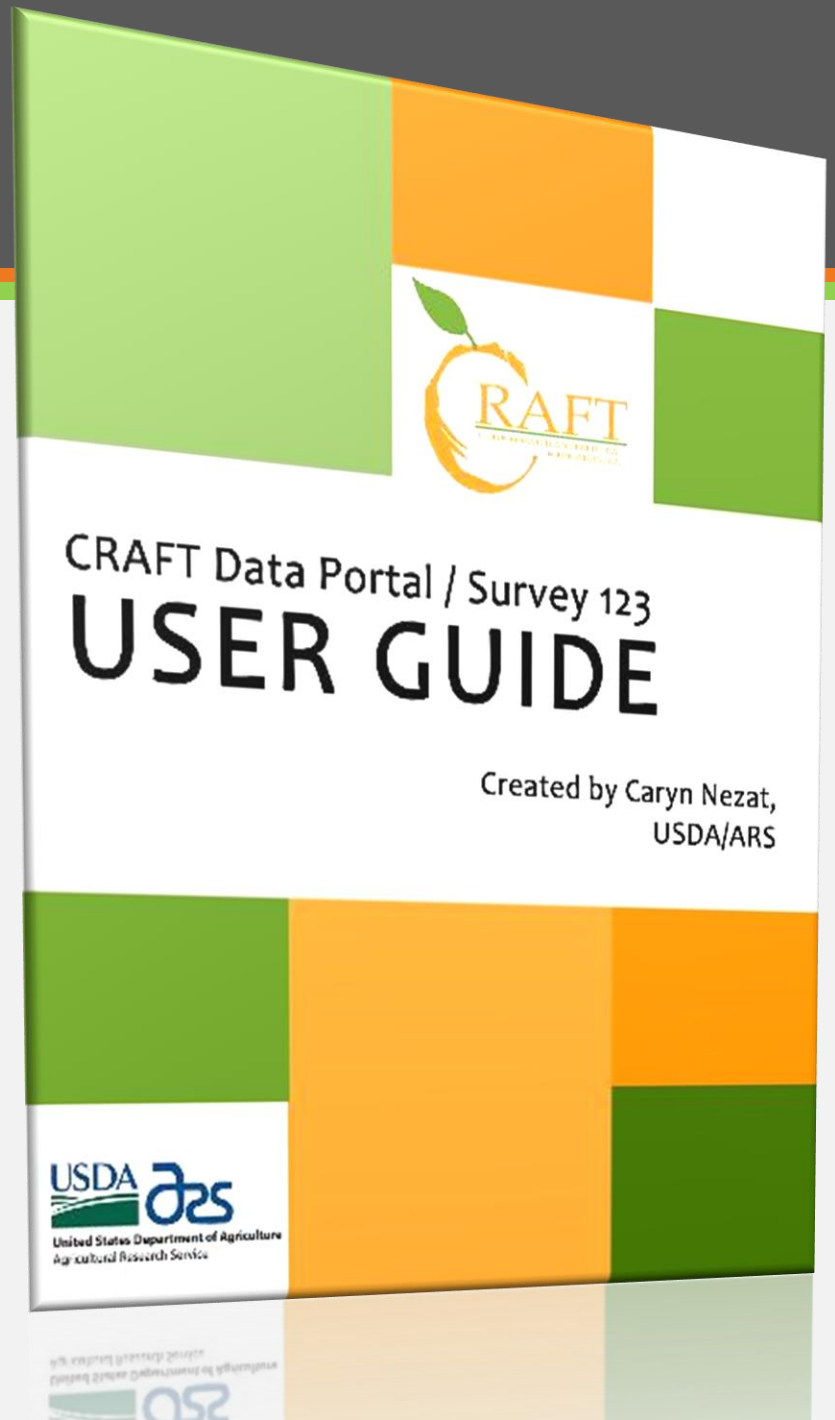
Additional Information and Experimental Design

- Images of property
- Cost estimate files
- Grove design
- Proposed experiment plan
- FDACS BMP enrollment certificate or NOI
- Information on novel management practices
- Additional information
- PDFs, Excel and image files (PNG and JPG)

Approved Applications

- USDA portal access through ESRI ArcGIS Online and Survey 123
  - Username and password for accessing customized surveys
  - Dashboards for editing data entry
  - Save and copy data to new surveys
- Quarterly reports
- Similar layout to application questionnaire
- Contracts
- Technical Support by USDA PDI team
- Expert experience in experimental planning

Data Portal User Guide



- Data Collection Portal

Data Portal User Guide

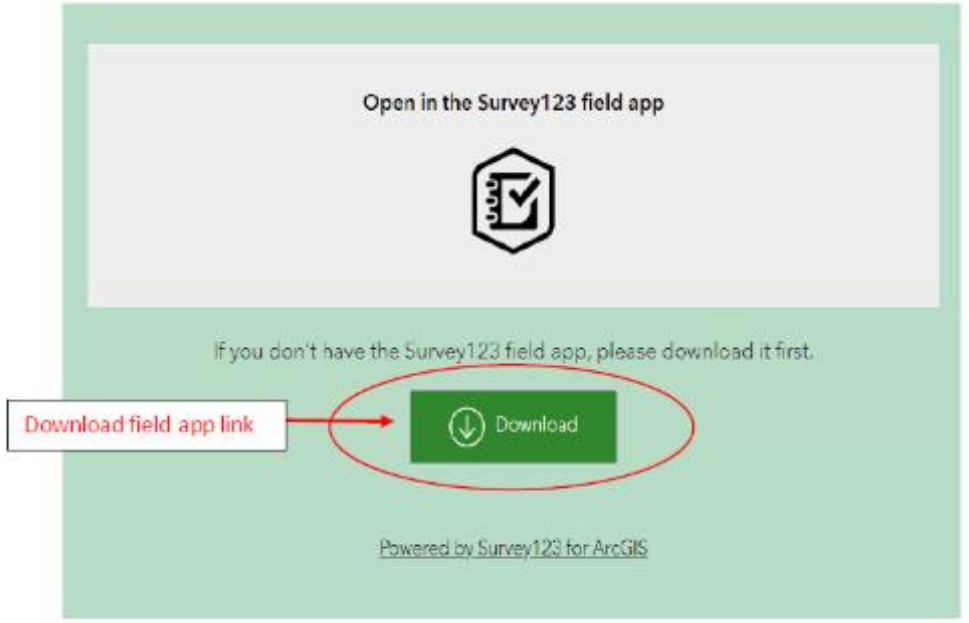
CRAFT Survey 123 user guide:

Getting started

1. Download the Survey 123 field app.

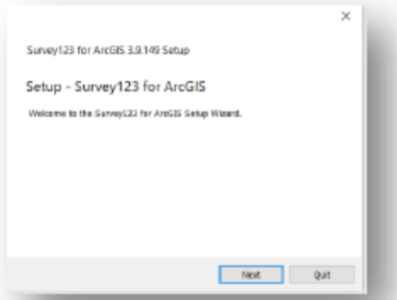
   *You will need to know the operating system that your device is running to download the correct application.

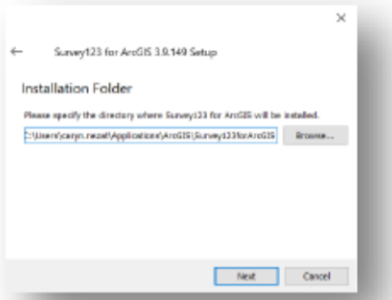
   - You may be prompted through the survey link provided to you or find it on the internet.

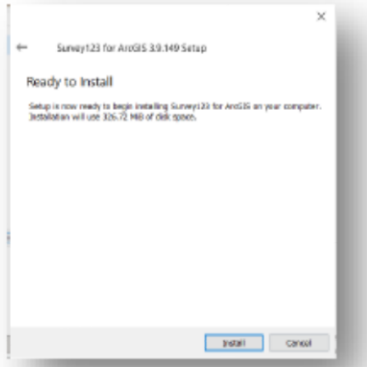


Data Portal User Guide

*Installation wizard, use the default installation folder for the application to run correctly. After installation is finished you will be able to open the survey links.

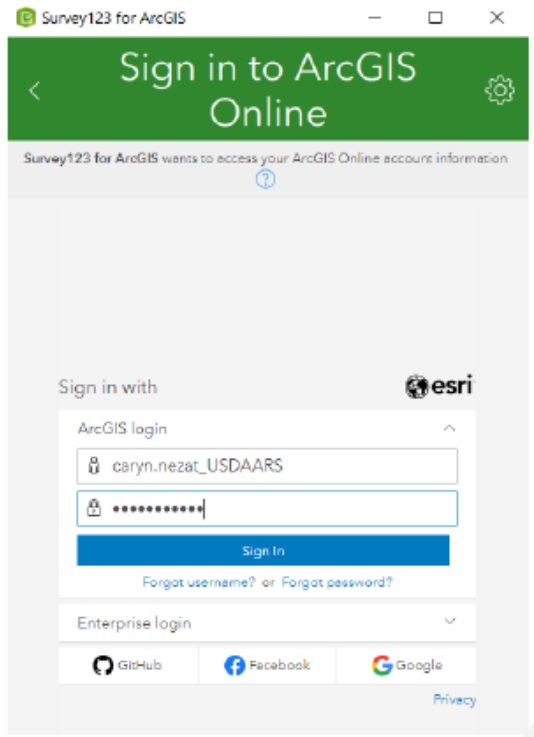




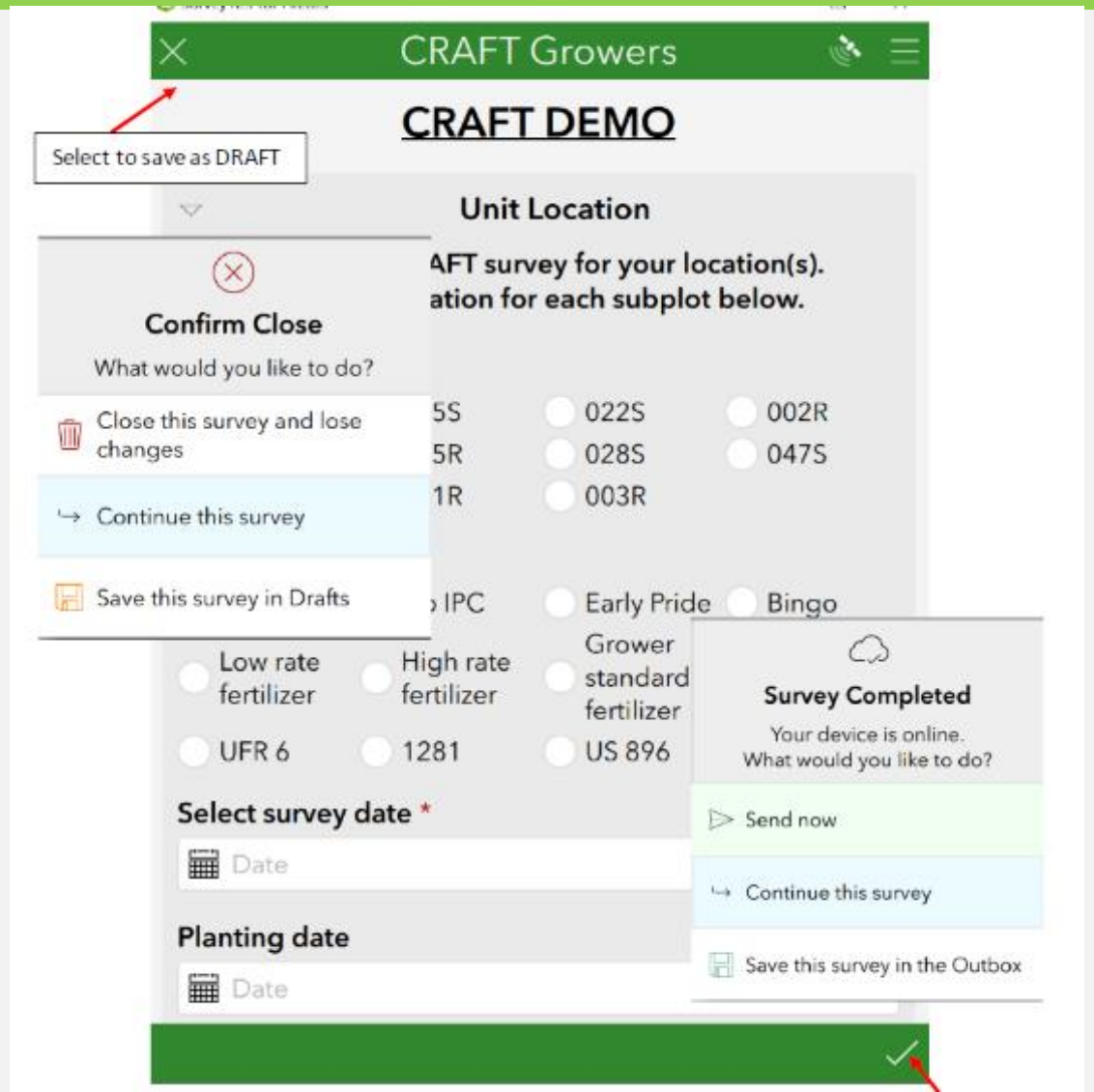


Data Portal User Guide

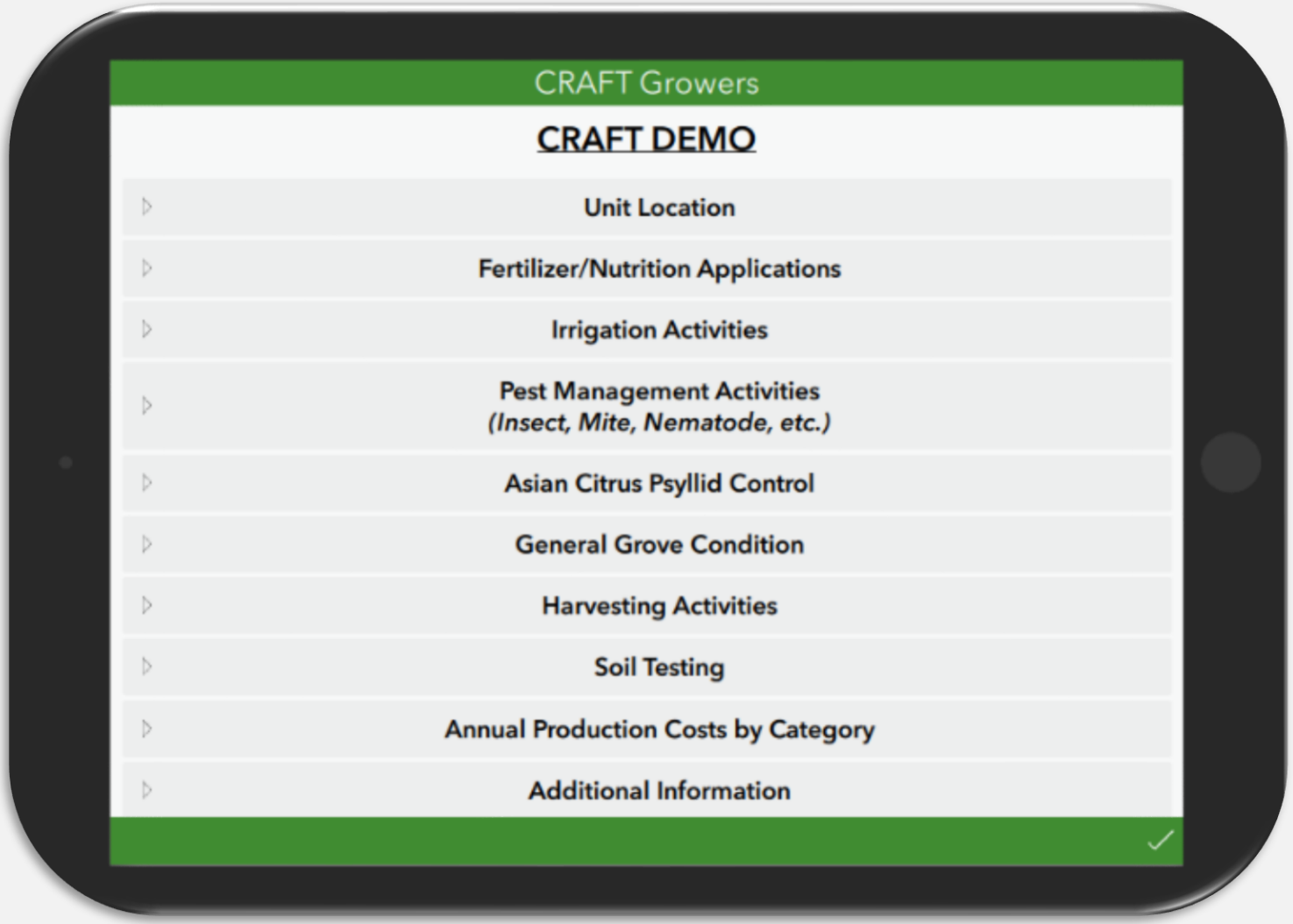
e first time you access the survey it will not be stored on your device. You will be prompte sign in to download the survey. You will need to sign in to access the survey in the future. The username and password will be required to sign into the portal, access the survey and dashboard.



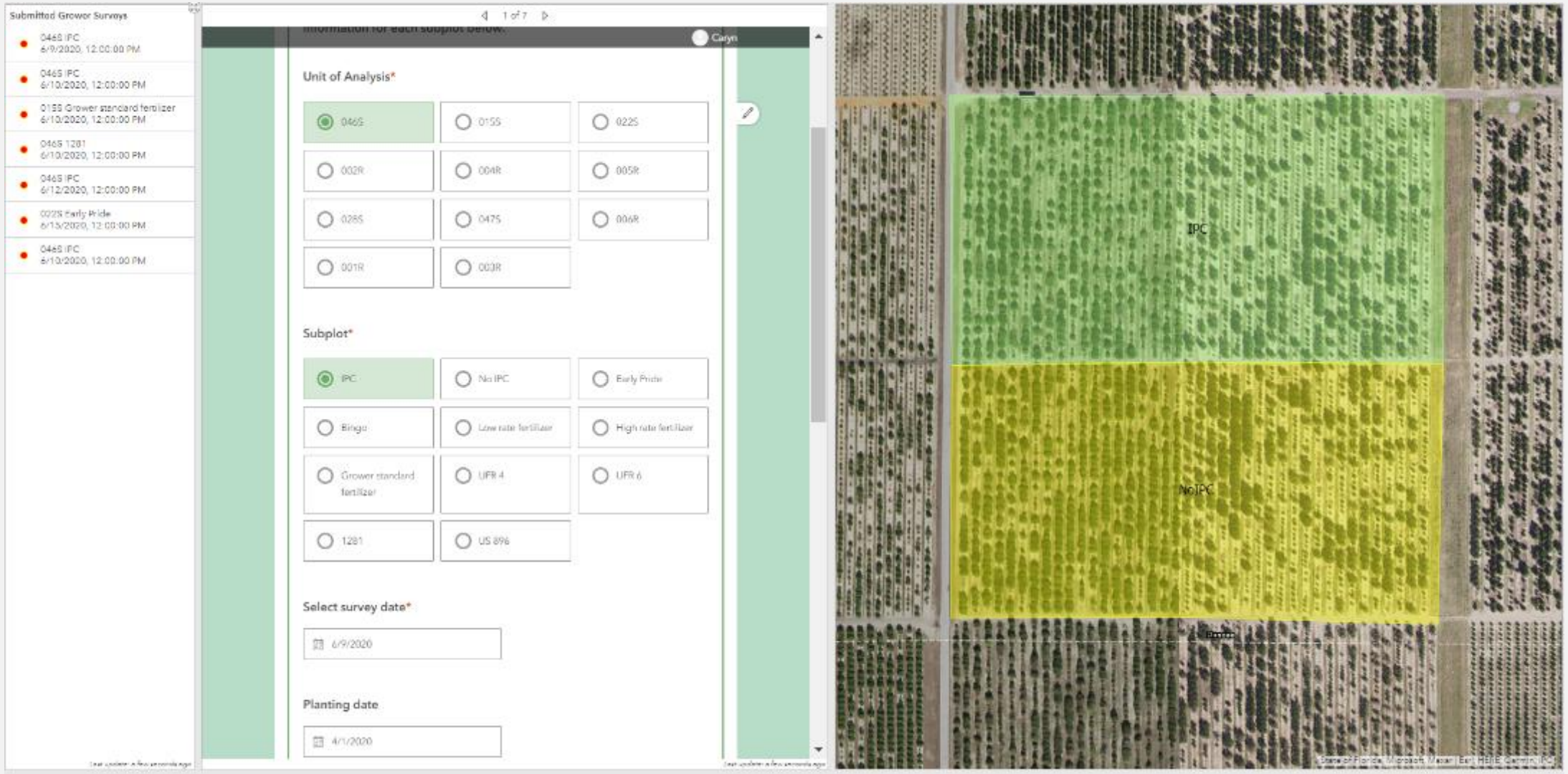
Data Portal User Guide



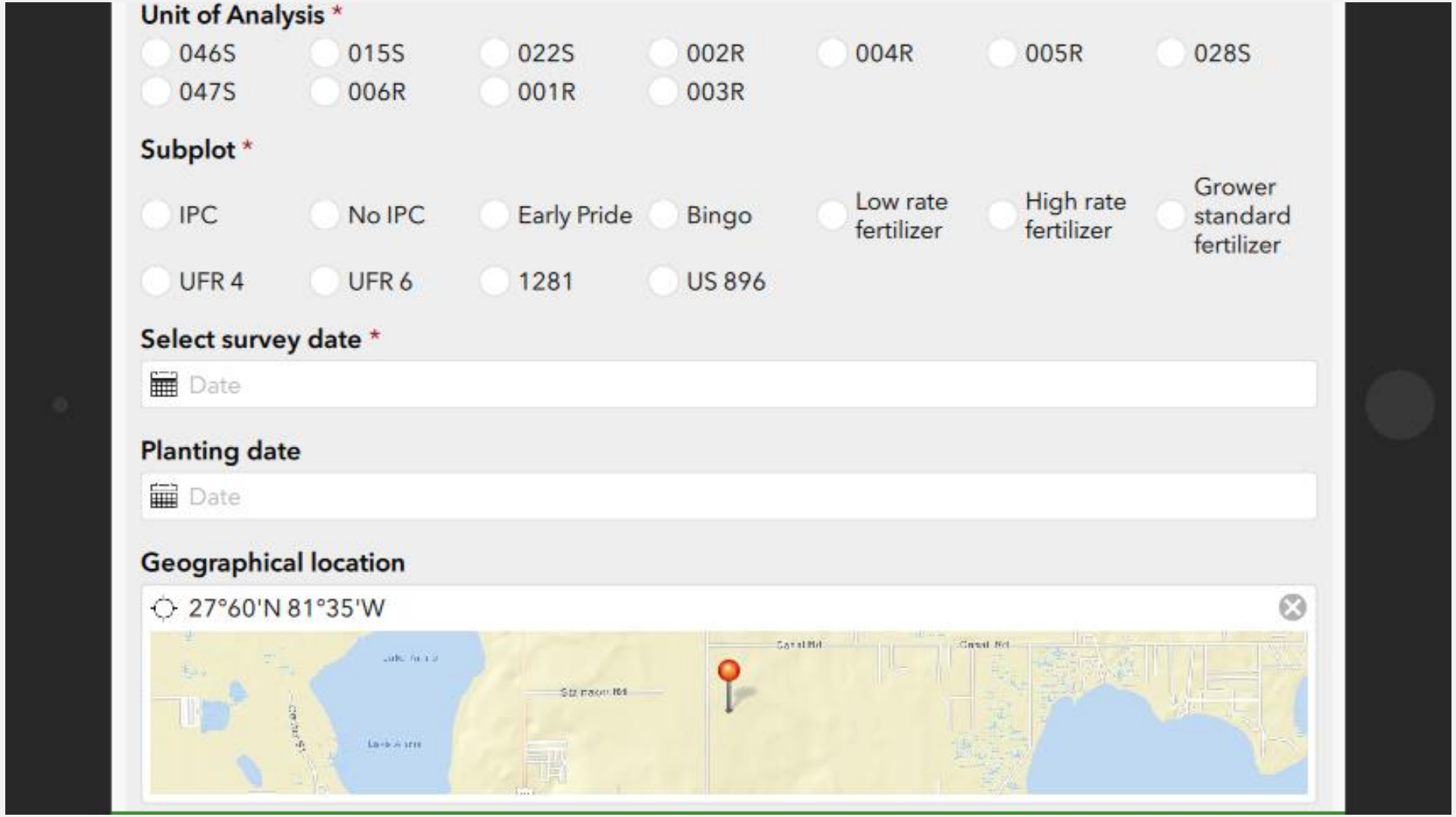
Custom Grower Survey



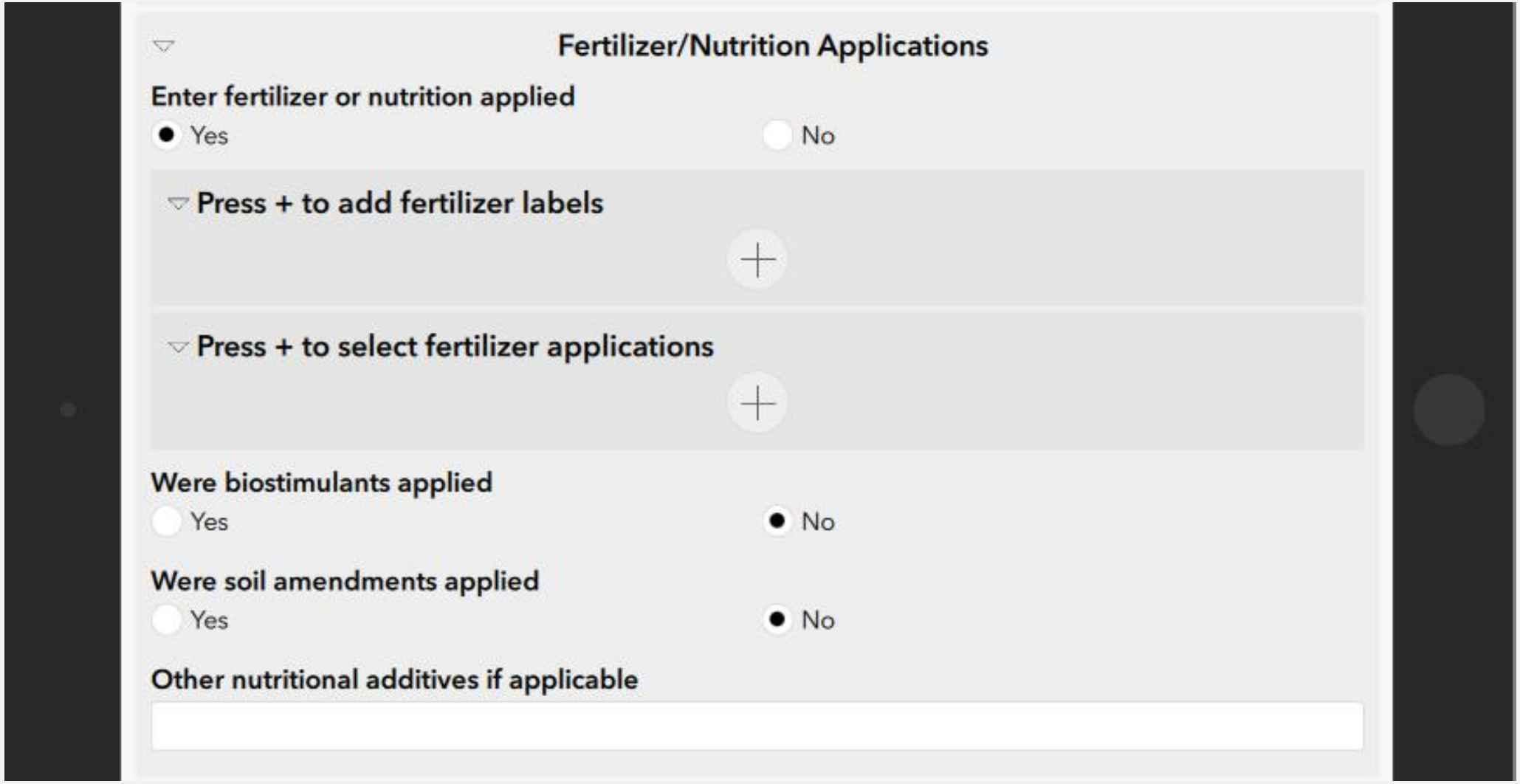
Custom Dashboard



Custom Dashboard



Custom Dashboard



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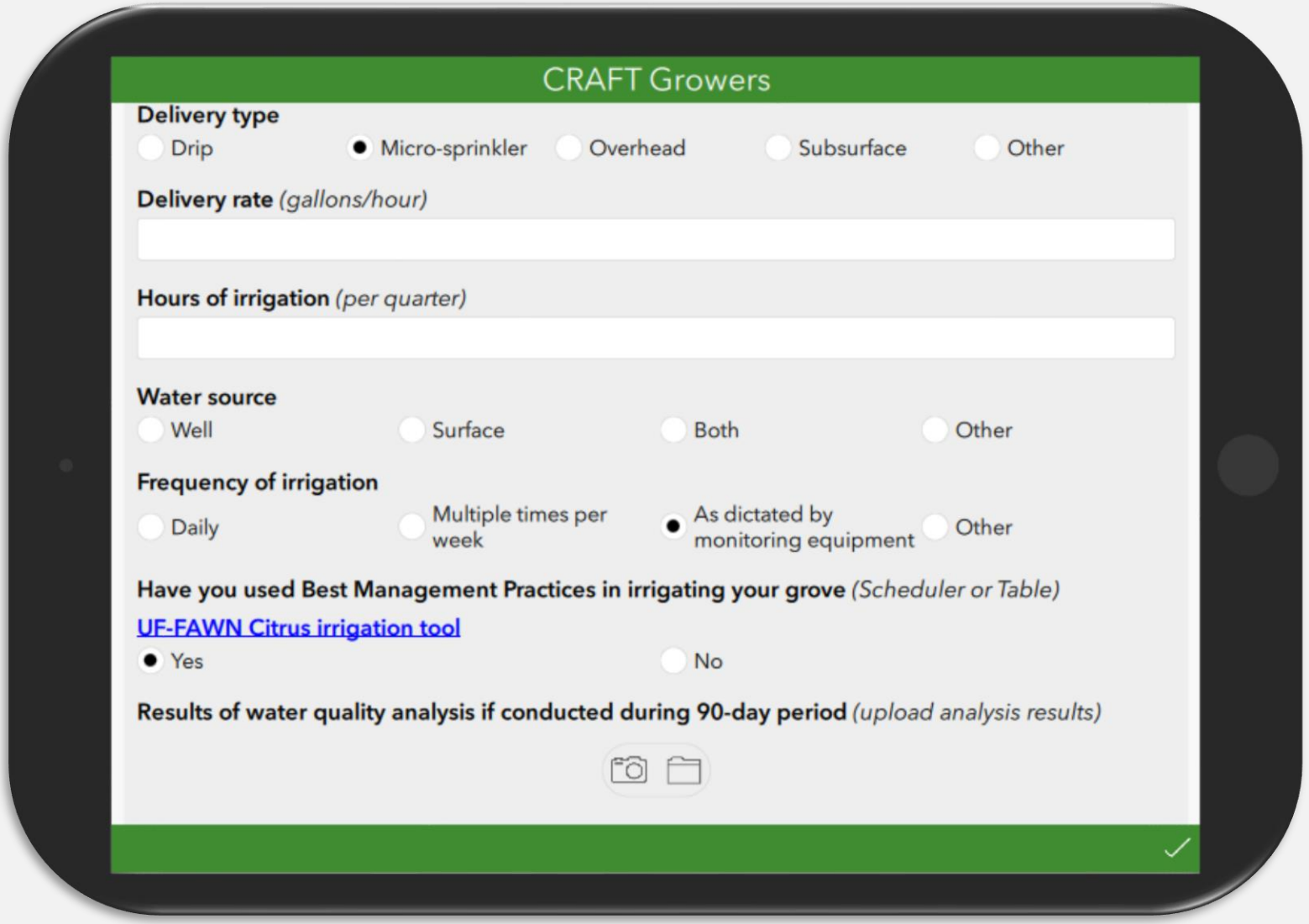
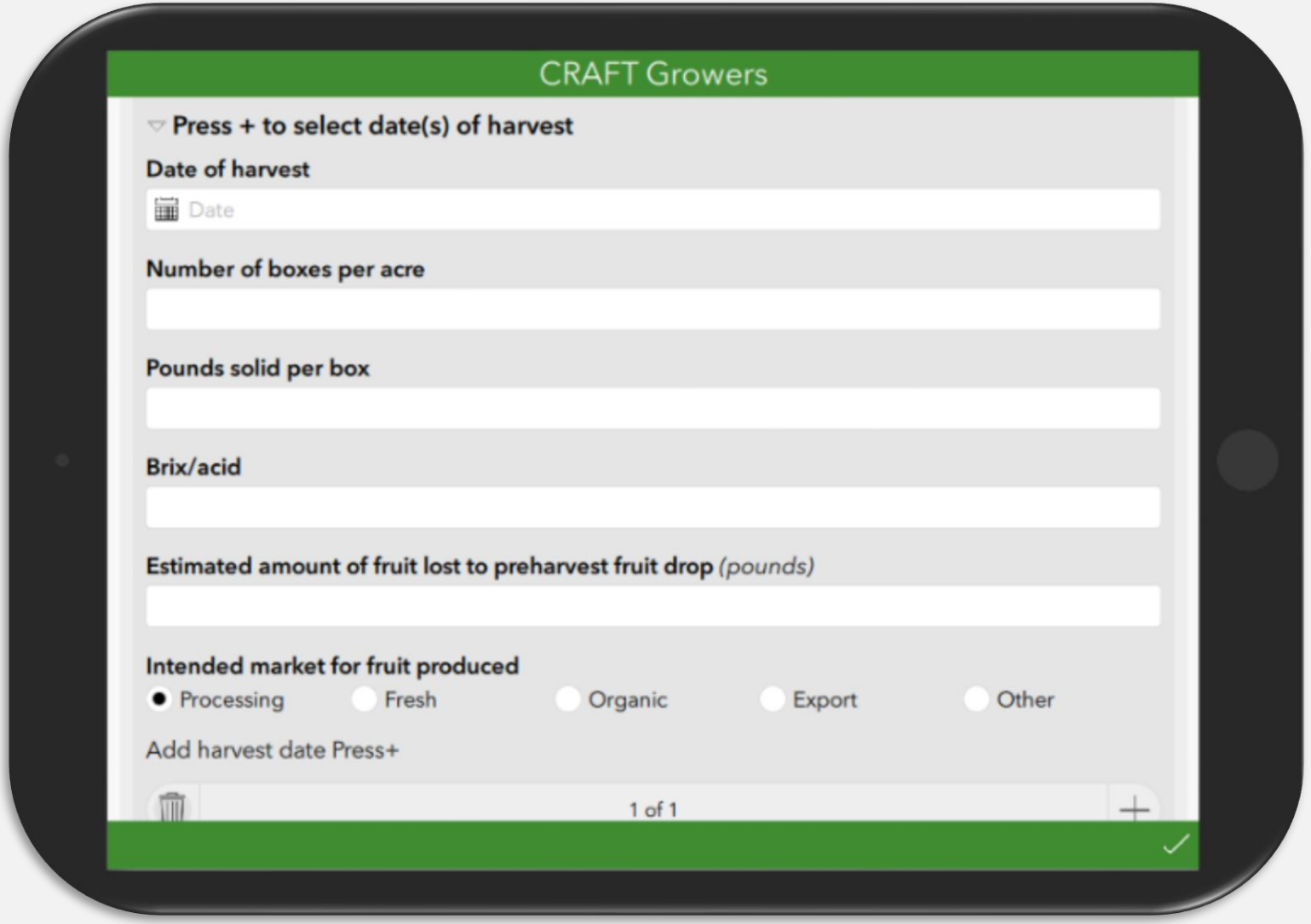


Custom Dashboard

Custom Dashboard



Benefits to Participants

- Year to Year tracking of management and return on investment
  - Plot to Plot comparisons
- Expert and technical support for BMPs and successful practices
- Access to data collected by others
- Economic gains from research knowledge
- Benefit to citrus industry for long term recovery and sustainable groves across Florida

Questions or Discussion?

CRAFT Cycle Two: General Session

How You Get Paid

CRAFT Contracts and How You Get Paid

- Executed Contract between land owner and CRAFT
  - Sets forth what is expected to get paid
- Why staggered payments?
- Who gets the check?
- What documentation will be needed?
- How long until I get paid?

CRAFT Cycle Two: Day Two

Breakout Sessions

CRAFT Cycle Two Research Overview

- Tomorrow's session will be break out sessions where you can meet with the Group leaders
- They will explain their research projects and listen to your ideas for your own projects
- Questions will be answered on how you can select individual projects in the application process

CRAFT Cycle Two Workshop – Day

Breakout Sessions
Wednesday, June 24, 2020
12:00 p.m. – 5:00 p.m.

12:00 p.m. – 12:45 p.m. – Dr. Scully, Resets

1:00 p.m. – 1:45 p.m. – Dr. Graham, Tree/Soil Nutrition

2:00 p.m. – 2:45 p.m. – Dr. Shatters, Biostimulants

3:00 p.m. – 3:45 p.m. – Mr. Page, Rootstock/Scion

4:00 p.m. – 4:45 p.m. – Dr. Batuman, Pest Management