AGENDA

California Avocado Commission
Production Research Committee Meeting

Meeting Information

Date: Thursday, May 23, 2024
Time: 9:00 a.m.
Location: Hybrid Meeting

Physical Meeting Location:
University of California Cooperative Extension Ventura County
669 County Square Drive, Suite 100
Ventura, CA 93003

Web Conference URL:
https://californiaavocado.zoom.us/j/5375836823?pwd=aURBZ3BEL29tclBRS1ZRY3QrMkhZQT09&omn=83286457889

Conference Call Number: (669) 900-6833
Meeting ID: 573 583 6823
Passcode: 348652

Meeting materials will be posted online at least 24 hours prior to the meeting at:
https://www.californiaavocadogrowers.com/commission/meeting-agendas-minutes

Committee Member Attendance

As of Monday May 20, 2024, the following individuals have advised the Commission they will participate in this meeting:

- **Danny Klittich, *PRC Chair***
- **John Burr**
- **Jim Davis**
- **Allisen Carmichael**
- **Consuelo Fernandez**
- **Darren Haver**
- **Leo McGuire**

- **Daryn Miller**
- **Ryan Rochefort**

Time	Item
9:00 a.m.	**1. Call to Order** a. Roll Call/Quorum
9:05 a.m.	**2. Opportunity for Public Comment** Any person may address the Committee at this time on any subject within the jurisdiction of the California Avocado Commission.
9:10 a.m.	**3. Approval of Minutes** a. Consider approval of Production Research Committee Meeting Minutes of March 14, 2024
9:15 a.m.	**4. Research Program Director's Report**
9:25 a.m.	**5. Discussion Items** a. Review and rank list of research and grower education priorities b. Review draft request for proposals for management services for Pine Tree Ranch c. Open discussion of new or old business from PRC members
12:00 p.m.	**6. Adjourn Meeting**

Disclosures

The times listed for each agenda item are estimated and subject to change. It is possible that some of the agenda items may not be able to be discussed prior to adjournment. Consequently, those items will be rescheduled to appear on a subsequent agenda. All meetings of the California Avocado Commission are open to the public and subject to the Bagley-Keene Open Meeting Act.

All agenda items are subject to discussion and possible action. For more information, or to make a request regarding a disability-related modification or accommodation for the meeting, please contact April Aymami at 949-341-1955, California Avocado Commission, 12 Mauchly, Suite L, Irvine, CA 92618, or via email at aaymami@avocado.org. Requests for disability-related modification or accommodation for the meeting should be made at least 48 hours prior to the meeting time. For individuals with sensory disabilities, this document is available in Braille, large print, audiocassette or computer disk. This meeting schedule notice and agenda is available on the internet at

https://www.californiaavocadogrowers.com/commission/meeting-agendas-minutes and http://it.cdfa.ca.gov/igov/postings/detail.aspx?type=Notices.

If you have questions on the above agenda, please contact Tim Spann at tim@spannag.org or 423-609-3451.

Summary Definition of Conflict of Interest

It is each member's and alternate's responsibility to determine whether they have a conflict of interest and whether they should excuse themselves from a particular discussion or vote during a meeting. To assist you in this evaluation, the following ***Summary Definition of Conflict of Interest*** may be helpful.

A Commission *member or employee* has a conflict of interest in a decision of the Commission if it is reasonably foreseeable that the decision will have a material effect, financial or otherwise, on the member or employee or a member of his or her immediate family that is distinguishable from its effect on all persons subject to the Commission's jurisdiction.

No Commission member or employee shall make, or participate in making, any decision in which he or she knows or should know he or she has a conflict of interest.

No Commission member or employee shall, in any way, use his or her position to influence any decision in which he or she knows or should know he or she has a conflict of interest.

CALIFORNIA AVOCADO COMMISSION
PRODUCTION RESEARCH COMMITTEE
MEETING MINUTES

March 14, 2024

A meeting of the Production Research Committee (PRC) of the California Avocado Commission (CAC) was held on Thursday, March 14, 2024, with the following people participating:

MEMBERS PARTICIPATING:
Danny Klittich, Chair
John Burr
Allisen Carmichael
Consuelo Fernandez
Darren Haver
Leo McGuire (9:48)
Daryn Miller
Ryan Rochefort
Jason Cole, *ex officio*

CAC STAFF PARTICIPATING:
April Aymami
Ken Melban

OFFICIALLY PARTICIPATING:
Dr. Tim Spann, Spann Ag Research & Consulting

GUESTS PARTICIPATING:
John Berns
Rachael Laenen

CALL TO ORDER

Danny Klittich, Production Research Committee (PRC) Chairman, called the meeting to order at 9:03 a.m. with a quorum present.

OPPORTUNITY FOR PUBLIC COMMENT

There were no public comments.

APPROVAL OF MINUTES OF FEBRUARY 8, 2024 PRODUCTION RESEARCH COMMITTEE MEETING

MOTION
To approve the minutes of the February 8, 2024 Production Research Committee meeting as amended.

(Miller/Haver) MSC Unanimous

Motion 24-3-14-1

DISCUSSION ITEMS

Danny Klittich opened the discussion by welcoming all the members to the Production Research Committee. He asked each member to take a moment to introduce themselves and briefly describe their role in the California avocado industry. Following introductions, discussion began on the agenda items.

A. Review Committee goals and directives from CAC Bylaws

Jason Cole, CAC Chairman, began by reading Article IV, section 4 of the CAC Bylaws, which establishes the PRC as a standing committee of CAC. Danny Klittich emphasized the role of the Committee is to prioritize research needs, specifically that research which would be most impactful to the majority of industry members. Dr. Spann reminded the Committee that the Committee has no authority to allocate funds but makes funding recommendations to the Board.

B. 2023-24 Production research budget and currently funded projects

Dr. Spann shared the 2023-24 production research budget with the Committee explaining that the total budget for the fiscal year is $233,943. He explained that if UC Santa Barbara student Jesse Landesman is awarded an FFAR fellowship grant there would be an estimated $8,125 increase in the 2023-24 budget. He went on to explain that the production research budget has historically been broken into three categories: pest and disease management; breeding, varieties and genetics; and cultural management. Dr. Spann then reviewed each of the currently funded projects, explaining the genesis of the projects, where they are in their funding cycle, and brief findings of the projects if applicable.

Discussion ensued and the addition of a column for total spent on each project was mentioned as being worth seeing on the production research budget sheet, especially for long-term projects such as rootstock breeding. Dr. Spann explained that he has that information, but it was left off of the budget sheet presented at the meeting and he agreed to share that with the Committee members following the meeting.

The Committee then took time to review and discuss each of the currently funded projects. The avocado lace bug project with Dr. Mark Hoddle was stressed as a critical project since that pest is being a significant issue in groves in the southern growing regions. It was agreed that coordinating a field day with Dr. Hoddle later in the year would be worthwhile.

The rootstock trials for phytophthora root rot tolerant rootstocks were discussed at length. Questions were raised about the need to continue funding those trial beyond their current funding cycle which will take the trials through their sixth year. There was general consensus that it is impossible to ever collect sufficient data to allay all fears of using these new rootstocks and at some point growers will just need to start trialing them for themselves under their growing conditions.

Lastly, the project funded with Dr. Ali Montazar to develop new crop coefficients for using in calculating avocado irrigation needs was discussed. It was agreed that this is very important project and it would be valuable to begin sharing Dr. Montazar's early results with the industry since proper irrigation is such a critical component to managing avocados. A field day with Dr. Montazar at Pine Tree Ranch along with a follow up article in From the Grove was agreed to.

C. Pine Tree Ranch Update

Dr. Spann began the discussion by informing the Committee that the variable frequency drive for the well at Pine Tree Ranch has finally been installed and is operational as of early March. He went on to explain that CAC had executed two 3-month lease extensions on the property while the work on the well was being completed, but the last lease extension had expired at the end of 2023. The Cal Poly Pomona Foundation had finally gotten a third 3-month lease extension to CAC for January – March 2024, as well as the new 5-year lease renewal for the period of April 1, 2024 through March 31, 2029. Both documents are in the process of being fully executed.

Dr. Spann then reviewed the current plantings and projects on going at Pine Tree Ranch. He explained there is a 3-year old GEM spacing trial that Dr. Ben Faber is leading. The trial should have its first harvest in 2024. Also, the company Research for Hire from Porterville is using some trees at the property for conducting pesticide residue trials. In 2023, they used 12 trees was a trial with the plant growth regulator DPP and in 2024 they will be using the same trees for a trial with Nexstar SC miticide.

In addition to these formal trees, Dr. Spann explained that all of the other plantings still exist and harvest data are being collected annually. These include tree planted on flat ground vs. berms, a spacing trial with nine different spacings, as well as the rootstock block that contains trees on 30 different rootstocks.

D. Research Priorities

Danny Klittich began the discussion by stating that it would be good for all of the Committee members work on developing a list of research needs that could then be prioritized by the Committee and used to solicit research proposals. Dr. Spann suggested that if research needs could be formulated as specific questions that the industry needs answered rather than just general topics that would be helpful to focus research requests. The Committee agreed that Dr. Spann would circulate a Google document for everyone to contribute to. A deadline of April 1 was proposed as this would allow time for the group to reconvene to prioritize the list and then solicit proposals for review in July so a preliminary budget could be presented to the Board in August.

E. 2024-25 projected budget

Jason Cole explained that his opinion as a Board member is that there is money available for research if there are projects the Committee feels strongly about. Ken Melban, CAC VP of Industry Affairs and Operations echoed this sentiment and explained how CAC's philosophy had evolved from having a fixed budget that we look for projects to spend the funds on to finding needed projects and allocating funds to them on a project-by-project basis. There was general agreement that a total research spend of $300,000 to $350,000 in 2024-25 would not be out of the question if necessary projects existed.

F. CAC grower outreach and education

Danny Klittich explained that this discussion item was focused primarily on CAC field days and From the Grove Magazine articles. It was agreed that the research priorities list would be helpful in developing a list of topics for grower outreach and education efforts. A question was asked about how past magazine articles, research reports and other information is organized on the CAC website. It was explained that there are three main archives on the CAC website: Research Library articles, which contains reports from CAC funded projects; Cultural Management articles, which contains articles specifically written for the website on various topics; and From the Grove magazine articles. Currently, From the Grove articles are not included in the Cultural Management archives, but it was agreed that they should be. Dr. Spann agreed to develop a list of past magazine articles along with their topic category so the articles could be moved into the Cultural Management archive.

ADJOURN MEETING

Danny Klittich, Production Research Committee (PRC) Chairman, adjourned the meeting at 11:15 a.m.

Respectfully submitted,

_____
Timothy Spann

EXHIBITS ATTACHED TO THE PERMANENT COPY OF THESE MINUTES

EXHIBIT A March 114, 2024 Production Research Committee AB 2720 Roll Call Vote Tally Summary

All,

Below is a combined list of 46 research topics of interest put forward by the members of the CAC Production Research Committee. These topics are not in any particular order but they have been organized into four general categories; Cultural Methods, Irrigation, Pests, and Ag Chem Products. In addition, a small list of topics for upcoming FTG articles can be found at the end of this list.

As this list is extensive, I propose each member of the committee pick one topic and highlight it in this document. We will then make these the “high priority list”. Thoughts

Thanks, Danny

CAC Production Research Priorities/Grower Outreach & Education Needs

Cultural Methods

1. Pollen sprays for avocado orchards: Do they actually work? Real proof needed, Embryo genotyping needed to verify cross pollination, Application methods; liquid (AvoSolutions) or Dusted.
2. Rootstock trials for high carbonate and salinity conditions (Do we have enough areas with high carbonates issues that would make it worth establishing a trial?)
3. Tree stress monitoring tools a review
4. Updated avocado cost studies - UC Davis or Riverside.. Cal Poly SLO could do one for Ventura county and SLO county
5. Use of sulfur for soil acidification. Rates and timing by soil general type
6. “Above Average Grower” Survey of conditions and practices
7. Does mulch have effects in frost areas? Does it make it colder or warmer?
8. Is pulse irrigation better than other methods? Do avocados like it or are their roots too saturated too often?
9. Can you apply too much fertilizer that it will harm the tree? Can you oversalt an avocado tree to the point of killing it?
10. Revisit recommendations for leaching fractions when utilizing reclaimed water and newer rootstocks.
11. Update fertilizer recommendations when using nitrogen-containing reclaimed water.
12. Nitrogen planning and nitrate credits (CalPoly DeCock)
13. Investigate and Evaluate Current Research into Soil Health; USDA has conducted considerable research into soil health, somewhat at the cornerstone of sustainability. The objective is the building of organic matter. Quantitatively OM translates into higher crop yields. How does this research relate to commercial avocado production in California, and if so the best approach to evaluate it and ultimately educate growers for their application.

Irrigation

15. Irrigation Planning/Management tool including water budgeting tool
16. Small farm automation cost analysis
17. Small farm automated valves
18. CIMIS support and advocacy
19. Update/code a simple irrigation calculator tailored for avocado growers (Andre at VC UCCE?)

Pest Research

20. Avocado Lace Bug; Contract with UCRiverside to evaluate potential candidate insecticides to Control Avocado Lace Bug, to also work out timing, application methods, etc.
21. Precision Farming; Introduce the concepts of precision farming into avocado production in California
22. Dotherello, Branch Dieback; Project to further evaluate Topsin for control and work with Syngenta to get it labeled for avocados.
23. Avocado thrips degree day model
24. Persea mite bio-control
25. Need for practical guidance on Botryosphaeria management considering we do not have registered chemicals. We have been contacted by growers, especially in the south, asking how to handle it/live with it… prune or not prune, how to prune? Should I remove the tree, if so when should I remove, etc.
26. ID what currant “fruit fly” quarantine do not affect Lamb, Gem, Reed?
27. Global survey of potential pathogen and other threats that are likely to survive in Ca climate
28. How can we measure overall tree stress levels to observe how heavy pest presence impacts productivity/fruitfulness? Dendrometers? NDVI?

Ag Chem Product Research

29. CDPR approval for Indaziflam (Alion) and Rimsulfuron (Matrix).
30. Cal DPR Registration of Glufosinate
31. CDPR approval of Glufosinate (Rely, generics) as a replacement for glyphosate since the negative publicity is only growing!
32. Glufosinate; Employ a consultant who works with IR4 registration process to get Glufosinate approved in avocados. Growers are using it illegally and the industry is at risk for an outrage response similar to Alar in applies. The residue work has been done, it is just sitting there waiting for a push from the industry expressing the need to get it approved.
33. Herbicide Resistance Management; Survey industry for new herbicides with potential in avocados
34. Avocado thrips abamectin resistance; Avocado thrips are a primary pest of avocados in Ca. Abamectin has been the primary tool for control for decades. Some PCAs and growers have concerns with product efficacy. A survey of thrips populations would inform pest control decisions.

35. What alternative insecticides are proving more effective against avocado thrips & Persea mite in lieu of rotating out abamectin every season to minimize pesticide resistance. Products, Timing, rates, adjuvants to explore to minimize thrip population resistance.
36. Which new(er) bee safe products will be replacements for neonics - ie Sivanto, Movento or Sequoia to control thrips as neonics are phased out by CDPR
37. Chemigation of alternatives to neonics (IRAC 4A) to enable one less ground or aerial app of thrip/mite crop protection products? (potentially very useful in the future if lace bug populations control to grow!)
38. Need for getting fungicides for Botryosphaeria registered
39. IR-4 for Branch Canker
40. Evaluate Microbes that convert or fix atmospheric nitrogen to plant utilizable nitrate nitrogen. Rationale: Source of nitrogen with the potential of being more economical than nitrogen produced via petroleum and natural gas, both now and in the future. (ex: Pivot Bio, Kula Bio, Azotic Technologies, Joyn Bio, Max Plans Institute for Terrestrial Microbiology, New Leaf Symbiotic, Intrinsyx Bio, Novozymes, Corteva Utrisha)
41. Evaluate Microbes that enhance the availability and utilization of phosphate by plants. Phosphate is very immobile within the soil, certain microbes can enhance uptake and reduce the quantities of phosphate applied. (ex: Novozymes, AgBiome, BioConsortia, Bayer, Stoller, Valent BioSciences, Verdesian, Lallemand Plant Care, Symborg)
42. Humic Acids; Humates are known to provide a carbon source for stimulating the soil microbiome, which in turn provides for enhanced uptake of macro, secondary and minor elements. Research into evaluating what microbes are stimulated (UC Santa Barbara Ph.d. project) and their efficacy in taking up nutrients by humic acid…objective is to reduce the quantities of fertilizer.
43. Deer Control; Deer cause significant damage to newly planted groves (and established) each year. Several candidate sprays are being advertised. Set up and evaluate deer repellants in randomized trials. Establish project to survey for potential repellants
44. Resistance management of phytophthora Phosphite/ Orondis/ Ridomil rotation. Fourth AI? Maybe an article in FTG.
45. Additional research into alternative weed control methods for new orchards.
46. Preemergent herbicide use on new orchards assessing impacts on tree establishment.

FTG Topics

1. Salt Management in drip and sprinklers
2. Continual education of application rates in ac-in/hr to compare to reference evapotranspiration combining the utilization of new crop coefficients, distribution uniformity, and irrigation management factor
3. Irrigation Education; Whether you have good, clean, affordable well water or you're paying through the nose for District water, the average grower can improve their irrigation practices.
    1. How to calculate ET,
    2. utilization of CIMIS,
    3. soil moisture monitoring systems, etc. could be helpful to many growers.

4. grant funding available for the purchase and installation of systems that can help growers determine when and how much water to apply.
5. The NRCS is available for emission uniformity evaluations of irrigation systems and they often have funding available to offset the costs for DU improvements.

4. Periodically highlight past research projects that growers may not be aware of.

PRC Discussion Topics

1. Avocado Cafe Sponsorship
2. Monthly production seminars/webinar. Rotating locations

CAC Production Research Priorities/Grower Outreach & Education Needs

Consuelo:

- Pollen sprays for avocado orchards: Do they actually work? (Real proof needed, paternity tests)
- Rootstock trials for high carbonate and salinity conditions (Do we have enough areas with high carbonates issues that would make it worth establishing a trial?)
- Need for getting fungicides for Botryosphaeria registered
- Need for practical guidance on Botryosphaeria management considering we do not have registered chemicals. We have been contacted by growers, especially in the south, asking how to handle it/live with it… prune or not prune, how to prune? Should I remove the tree, if so when should I remove, etc.

Daryn Miller

- What alternative insecticides are proving more effective against avocado thrips & Persea mite in lieu of rotating out abamectin every season to minimize pesticide resistance. Products, Timing, rates, adjuvants to explore to minimize thrip population resistance.
- Which new(er) bee safe products will be replacements for neonics - ie Sivanto, Movento or Sequoia to control thrips as neonics are phased out by CDPR
- Chemigation of alternatives to neonics (IRAC 4A) to enable one less ground or aerial app of thrip/mite crop protection products? *(potentially very useful in the future if lace bug populations control to grow!)*
- How can we measure overall tree stress levels to observe how heavy pest presence impacts productivity/fruitfulness? Dendrometers?
- Continual education of application rates in ac-in/hr to compare to reference evapotranspiration combining the utilization of new crop coefficients, distribution uniformity, and irrigation management factor
- CDPR approval of Glufosinate (Rely, generics) as a replacement for glyphosate since the negative publicity is only growing!
- Updated avocado cost studies - UC Davis or Riverside.. Cal Poly SLO could do one for Ventura county and SLO county
- Explore if CropManage developed by Michael cahn would be worthwhile for Avocados

Danny

Make FTG articles searchable on grower page

Avocado thrips abamectin resistance

Update irrigation calculator

IR4 Marestail and fleabane

Small farm automation cost analysis

Small farm automated valves

Avocado Cafe Sponsorship

Monthly production seminars/webinar. Rotating locations

Tree stress monitoring tools a review

Potassium dynamics and strategies

Nitrogen planning and nitrate credits (CalPoly DeCock)

Irrigation Planning/Management tool including water budgeting tool

Zinc dynamics and demand

Salt Management in drip and sprinklers

Rootstock

resistance management of phytophthora Phosphite Orondis rotation third AI?

GEM market analysis

Avocado thrips degree day model

Persea mite bio control

Use of sulfur for soil acidification. Rates and timing by soil general type

Avocado scion breading with a target of a Hass fruit with better consumer and farming characteristics.

Global survey of potential pathogen and other threats that are likely to survive in Ca climate

IR-4 for Branch Canker

Cal DPR Registration of Glufosinate

CIMIS support and advocacy

Jason Cole

Avo Solutions type plination efficacy

Great grower survey of conditions and practices

Leo

ID what currant “fruit fly” quarantine do not affect Lamb, Gem, Reed?

Ryan

Irrigation. Irrigation. IRRIGATION!
Whether you have good, clean, affordable well water or you’re paying through the nose for District water, the average grower I speak with can improve their irrigation practices. How to calculate ET, utilization of CIMIS, soil moisture monitoring systems, etc. could be helpful to many growers. The Green Sheet and The Grove are great outreach tools that can be utilized for brief articles along with relevant links for more detailed information on these topics. There’s also grant funding available for the purchase and installation of systems that can help growers determine when and how much water to apply. The NRCS is available for emission uniformity evaluations of irrigation systems and they often have funding available to offset the costs for EU improvements.

Use our outreach tools to periodically highlight past research projects that growers may not be aware of.

CDPR approval for Indaziflam (Alion) and Rimsulfuron (Matrix).

Allisen

- Does mulch have effects in frost areas? Does it make it colder or warmer?
- Is pulse irrigation better than other methods? Do avocados like it or are their roots too saturated too often?
- Can you apply too much of any fertilizer that it will harm the tree? Can you over salt an avocado tree to the point of killing it?

Darren (The list generated above by experts in avocado production should guide the type of research being done for growers, regardless of the funding coming from CAC or some other source.)

- Revisit recommendations for leaching fractions when utilizing reclaimed water and newer rootstocks.
- Update fertilizer recommendations when using nitrogen-containing reclaimed water.
- Additional research into alternative weed control methods for new orchards.

John Burr

Evaluate Microbes that convert or fix atmospheric nitrogen to plant utilizable nitrate nitrogen.

Rationale: Source of nitrogen with the potential of being more economical than nitrogen produced via petroleum and natural gas, both now and in the future.

Evaluate Microbes that enhance the availability and utilization of phosphate by plants.
Rationale: Phosphate is very immobile within the soil, certain microbes can enhance uptake and reduce the quantities of phosphate applied.

Candidate Companies with nitrogen fixing microbial products:

1. Pivot Bio
2. Azotic Technologies
3. Joyn Bio
4. Max Plans Institute for Terrestrial Microbiology
5. New Leaf Symbiotic
6. Intrinsyx Bio
7. Novozymes
8. Corteva (Utrisha is a foliar applied nitrogen fixing bacteria)

Phosphate Solubilizing microbes:

1. Novozymes
2. AgBiome
3. BioConsortia
4. Bayer
5. Stoller
6. Valent BioSciences
7. Verdesian
8. Lallemand Plant Care
9. Symborg

Investigate and Evaluate Current Research into Soil Health

USDA has conducted considerable research into researching soil health, somewhat at he cornerstone of sustainability. Objective is the build organic matter. Quantitatively OM translates into higher crop yields. How does this research relate to commercial avocado production in California, and if so the best approach to evaluate it and ultimately educate growers for their application.

Humates are known to provide a carbon source for stimulating the soil microbiome, which in turn provides for enhanced uptake of macro, secondary and minor elements. Research into evaluating what microbes are stimulated (UC Santa Barbara Ph.d. project) and their efficacy in taking up nutrients by humid acid…objective is to reduce the quantities of fertilizer.

Weed Control:

Employ a consultant who works with IR4 registration process to get Glufosinate approved in avocados. Growers are using it illegally and the industry is at risk for an outrage response similar to Alar in applies. The residue work has been done, it is just sitting there waiting for a push from the industry expressing need to get it approved.

Survey industry for new herbicides with potential in avocados

Deer Control

Deer cause significant damage to newly planted groves (and established) each year.
Several candidate sprays are being advertised.
Set up and evaluate deer repellants in randomized trials
Establish project to survey for potential repellants

Spotted Lace Wing

Contract with UCRiverside to evaluate potential candidate insecticides to Control spotted Lace Wing, to also work out timing, application methods, etc.

Precision Farming

Introduce the concepts of precision farming into avocado production in California

Dotherello, Branch Dieback

Project to further evaluate Topsin for control and work with Syngenta to get it labeled for avocados.

California Avocado Commission

Agricultural Management Services at Pine Tree Ranch, Santa Paula, CA

REQUEST FOR PROPOSALS

California Avocado Commission
12 Mauchly, Suite L
Irvine, CA 92618-6305
May 31, 2019

Privileged and Confidential

Introduction and Background

Created in 1978, the California Avocado Commission (CAC) strives to maximize grower returns by enhancing premium brand positioning for California avocados and improving grower sustainability through advertising, promotion and public relations, and engaging in related industry activities that benefit the state's approximately 3,400 avocado growers.

In an effort to improve grower sustainability, in July 2013 CAC negotiated a ground lease with the Cal Poly Pomona Foundation (Foundation) for 11 acres located at the Pine Tree Ranch property in Santa Paula. Over the past six years, CAC has utilized and developed the leased premises as a demonstration grove to provide hands-on avocado outreach and education to growers within the state.

Currently CAC is seeking a farm management company to partner with to provide agricultural management and grove development services for the leased acreage at Pine Tree Ranch. Due to the nature of the demonstration grove, services provided will need to be customized based on the Commission's demonstration grove business and development plan. The plan (included on pages 8 - 11 of this RFP), developed by the Commission with input from an industry advisory group, includes specific and customized types of plantings that will be of value to growers and meet the educational and outreach goals of the Commission.

Parties interested in providing management and development services for the period of November 1, 2019 through June 30, 2023 should submit a detailed proposal, which outlines their schedule of management fees, to the Commission no later than Friday, June 21, 2019. The Commission shall review all submitted proposals and make a selection no later than Friday, August 16, 2019.

Please note, while the term of this project is through June 30, 2023, the first contract with the selected farm management company will be for the term of November 1, 2019 through October 31, 2020 and is subject to annual renewal on November 1 of each year. Award of contract to a farm management company in response to the RFP is subject to the Commission's annual contract renewal process and is not a guarantee of contract renewal through June 30, 2023.

Additional details regarding the project and proposal process are included on the following pages.

About the Grove Location: Pine Tree Ranch, Santa Paula, CA

The Commission's ground lease consists of approximately 11 acres of a 53-acre property located at 19455 E. Telegraph Road, Santa Paula, California, commonly referred to as Pine Tree Ranch. As seen in Image One below, the Commission's leased acreage is located at the front of the premises, closest to Highway 126. Since taking possession of the property, the Commission replanted eight of the nine acres to the left of the entrance (previously lemon acreage) with avocados in varying densities and varieties, as seen in Image Two. In addition to the newly planted acreage, there are two acres of existing 'Hass' avocados to the right of the entrance. As negotiated in the lease agreement, CAC shall have access to and use of the potable domestic water and irrigation water from the well located on the premises.

IMAGE ONE

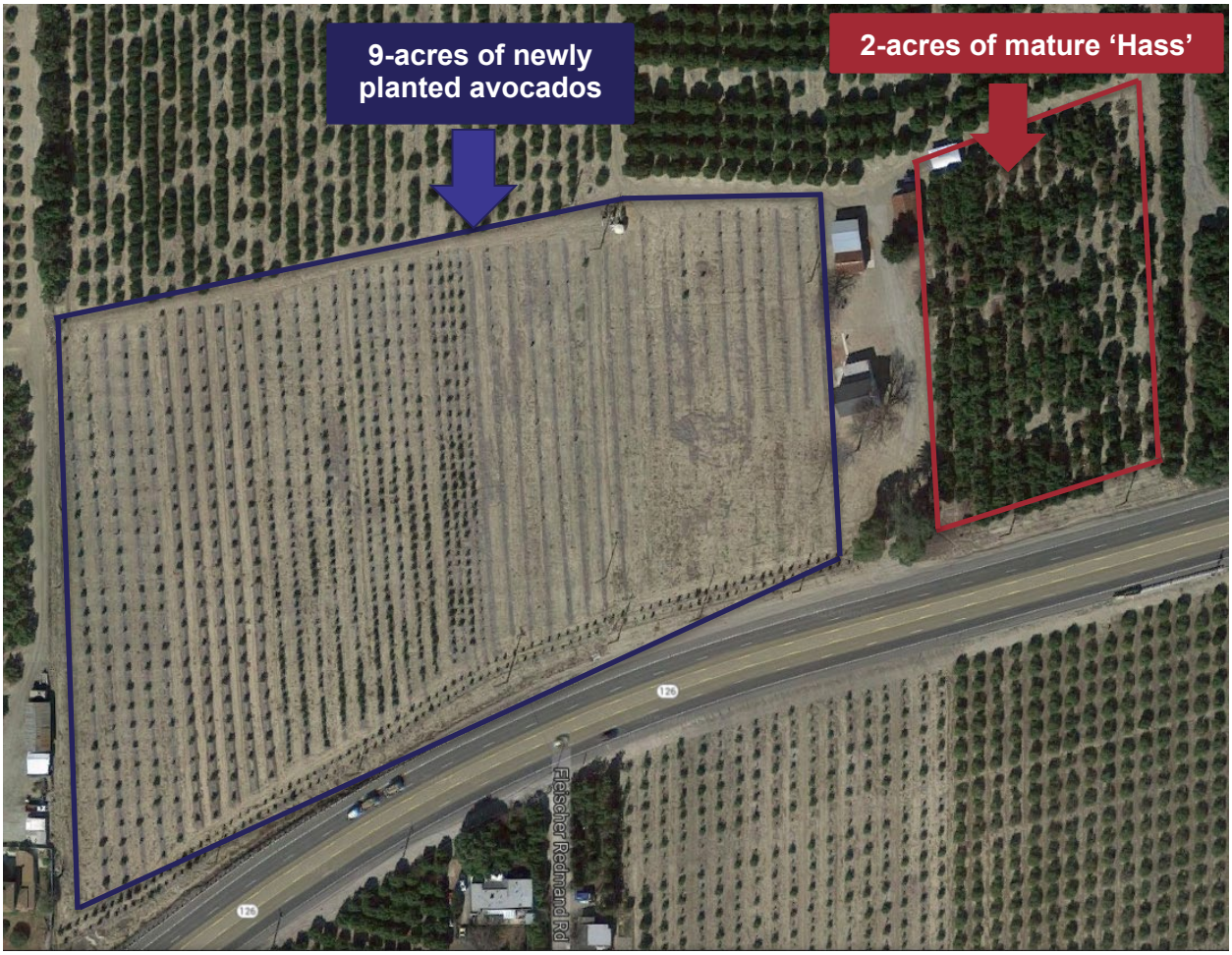
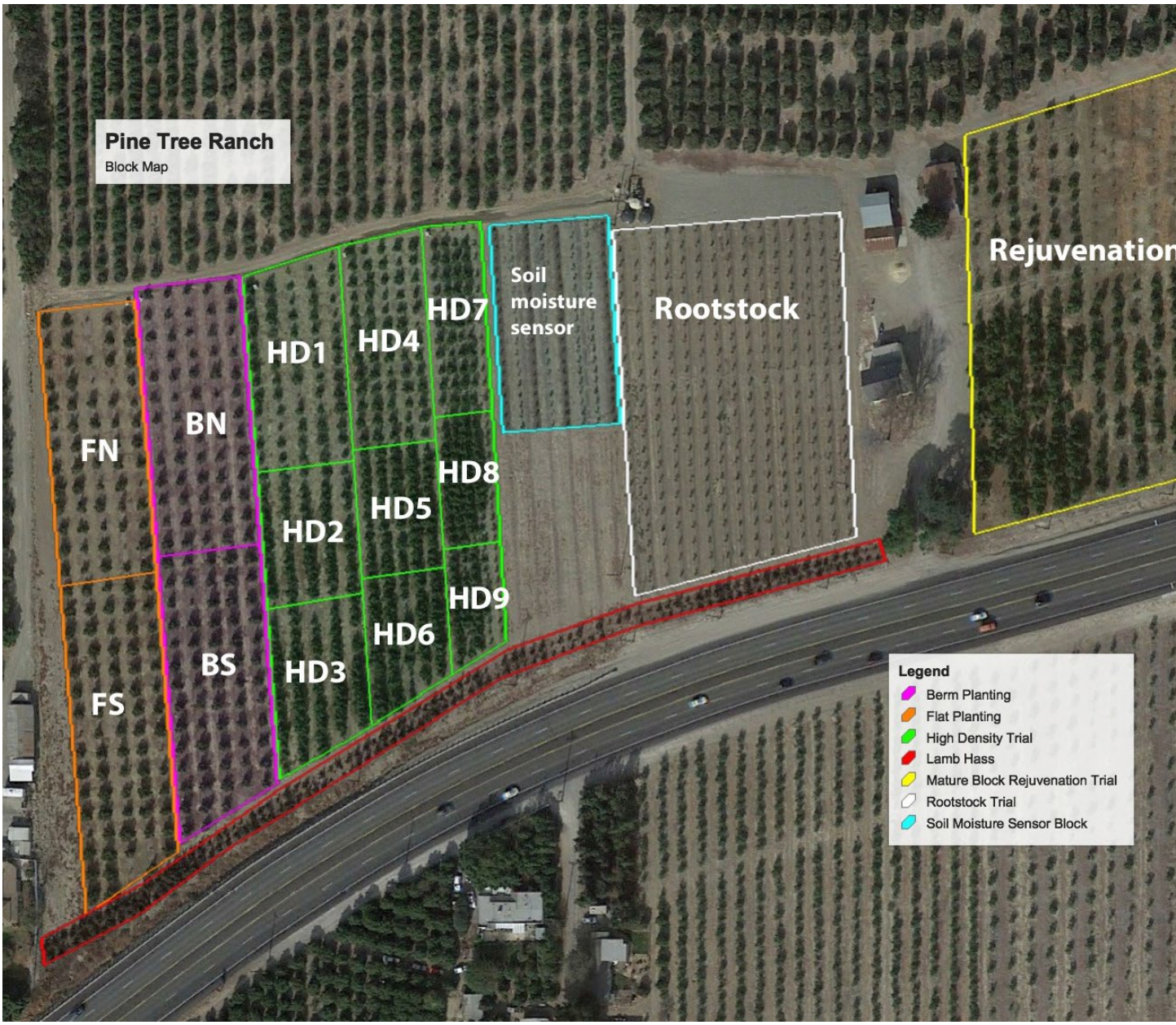


IMAGE TWO



CAC Project Leadership

Members of CAC's Production Research and Industry Affairs Departments are leading this project on behalf of the Commission and include:

Tim Spann
Research Program Director

April Aymami
Industry Affairs Director

Production Research Committee

RFP Timeline

Schedule of Events

Event	Date
RFP Publication	Friday, May 31, 2019
Proposal Due Date	Friday, June 21, 2019 at 5:00 pm
CAC Proposal Evaluations	June 21, 2019 through August 15, 2019
Award of Contract	August 16, 2019
Contract Negotiations Finalized	October 1, 2019
Grove Management Services Commence	November 1, 2019

Evaluation Criteria

Any award to be made as a result of this RFP will be based upon the proposal with appropriate consideration given to operational, technical, cost, and management requirements.

The following elements will be the primary considerations in evaluating all submitted proposals and in the selection of a Partner or Partners:

Evaluation Criteria	% of Overall Score
Proposer's responses to Pine Tree Grove Management Questionnaire	35%
Overall fee estimate	25%
Availability of sufficient personnel with required skills and experience	25%
References Provided	15%

CAC may, at their discretion and without explanation to the prospective Proposers, at any time choose to discontinue this RFP without obligation to such Proposers.

Proposal Submission

Award of the contract resulting from this RFP will be based upon CAC's evaluation of the proposals based on the criteria outlined in this RFP.

CAC reserves the right to:

- Reject any or all offers and discontinue this RFP process without obligation or liability to any potential Proposer,
- Accept other than the lowest priced offer,
- Award a contract on the basis of initial offers received, without discussions or requests for best and final offers, and
- Award more than one contract.

Parties interested in providing management services for the period of November 1, 2019 through June 30, 2023 should submit a detailed proposal to the Commission no later than 5:00 p.m. on Friday, June 21, 2019. Proposal submissions shall include each of the following:

1. Itemized schedule of management and development fees, including breakdown by hourly rate, estimated hours and material costs, required to perform requested farm management services as outlined starting on Page 8
2. Responses to Pine Tree Grove Management Questionnaire listed on Pages 12-13.
3. List of at least one grower and one additional avocado industry-related business reference
4. List of grove management team and qualifications

For questions regarding the proposal process, please contact April Aymami at (949) 341-1955 or aaymami@avocado.org.

Proposals may be submitted through any of the following formats:

Mail
California Avocado Commission
Attn: Pine Tree Ranch Proposals
12 Mauchly, Suite L
Irvine, CA 92618

E-mail
April Aymami
Subject: Pine Tree Ranch Proposals
RFP@avocado.org

Fax
California Avocado Commission
RE: Pine Tree Ranch Proposals
(949) 208-3503

Farm Management Services Requested

For the term of this project, CAC is seeking a management company to oversee the day-to-day agricultural operations on the 11-acre property in accordance with accepted agricultural practices in Ventura County, California. The Commission is seeking a partner to provide both labor and materials for the following services: irrigation (operation, repairs and maintenance); pruning; weed control; rodent control; sucker control; fertilizer[1]; irrigation system repairs; and basic entomology.

The selected farm management company shall carry all required insurance coverage, including but not limited to:

- General Liability of $1,000,000 per incident with an annual aggregate of not less than $2,000,000
- Worker's Compensation of $1,000,000 per incident
- Automobile Liability of $1,000,000 per incident

In addition to the day-to-day agricultural operations, CAC is seeking a company that is able to provide the grove management and development services per the grove business plan outlined below. The grove management company will be expected to solicit bids and select contractors as needed to accomplish the deliverables specified in the plan.

Please note: The Commission shall pay for approved project costs and material expenses at actual cost, upon receipt of detailed itemized receipt backup. Any trees identified as needing to be purchased will be done directly by the Commission; therefore, tree costs should not be included in the estimated costs submitted with proposals. The Commission reserves the right to pay for any other project costs and material expenses directly if doing so is deemed more efficient or cost effective by CAC.

Lastly, the Commission has entered into a partnership with Cal Poly Pomona to provide an outlet for student involvement at Pine Tree Ranch. This involvement could include day trips to the ranch for harvesting or long-term internships on the property and handling of day-to-day operations. The selected grove management company will have an integral role in working with on-site students to train and educate them on proper grove management techniques. As such, the selected company, and its employees, will be required to submit to background screenings that may be deemed necessary by Cal Poly Pomona.

[1] The Commission has entered into an agreement with Redox Chemicals, LLC and AgRx to provide agronomic consulting on fertility programs, twice per year soil and water testing, complete fertility recommendations, fertility products included in recommendations, and delivery and injection of said recommended products through December 3, 2021. The selected management company will be expected to cooperate with Redox Chemicals, LLC and AgRx on all fertility activities at Pine Tree Ranch as long as the agreement between the Commission and Redox Chemicals, LLC and AgRx is in effect.

Pine Tree Ranch Grove Business Plan

Current Situation, May 2019
Currently the 11-acres of the Pine Tree Ranch leased by CAC consists of approximately 2-acres of mature avocados, 8-acres of trees planted in 2014 and 2017, and 1-acre of open ground. The current status of all of the plantings follow along with possible uses and plans for each block.

Mature 2-acre Block
CURRENT SITUATION: This block of approximately 12-year-old trees had declined significantly and was turned into a grove rehabilitation demonstration in 2017. The block now consists of four ½-acre plots composed of: traditional stumping, stumping with a nurse limb, canopy rejuvenation over multiple years, and complete replant.

NOVEMBER 2019 FORWARD PLAN:
Continue to manage the four plots accordingly to bring them back into full production. Observations on how each plot progresses should be made and shared with CAC staff for ongoing communication with the industry.

Lamb Hass Planting
CURRENT SITUATION: This is a double row of 'Lamb Hass' spaced 10' apart within row and 10' between rows along the fence line at the front of the property. All of these trees are on one irrigation zone. The purpose of these trees is to maintain a screen between the main grove and the highway.

NOVEMBER 2019 FORWARD PLAN: Any missing or weak trees should be scheduled for replacement. Continue to grow it as originally planned as a screen along the fence.

Standard Density Planting with and without Berms
CURRENT SITUATION: This planting is on the western edge of the property covering approximately 2.4-acres. It consists of 10 rows of 'Hass' on 'Toro Canyon' spaced 20x20. The first five rows are planted on flat ground; the second five rows are planted on berms. There are approximately 141 trees on flat ground and 129 on berms. All of the trees in this block are on one irrigation zone. In spring 2018, a project to test the efficacy of gibberellic acid (GA3) alone and with urea or boron was initiated. These treatments continued in 2019. In addition, some trees are being utilized (beginning spring 2019) in a project investigating the causal agents of avocado branch canker disease.

NOVEMBER 2019 FORWARD PLAN: The GA3 trials will continue at least through harvest in 2021. The selected management company will be expected to apply these treatments as instructed and aid CAC staff in any data collection or other associated activities. The selected management company will be expected to supervise the harvest of this block to ensure that all treatment trees are harvested separately and yield data are recorded accurately per CAC staff instructions.

High Density Planting

CURRENT SITUATION: This is the second block from the western edge of the property covering approximately 2.4-acres. It contains 15 rows of 'Hass' on 'Toro Canyon' with five rows each at 20, 15 and 10 feet between rows. Going down the rows, the between tree spacing, from north to south, is 15, 10 and 7.5 feet. Thus, the block has a total of nine different tree spacing. Each of the nine different planting densities is a separate irrigation zone.

NOVEMBER 2019 FORWARD PLAN: The high density planting has nine different spacings and there are approximately 60 trees at each spacing. In March 2019 a pruning trial was begun to demonstrate five different pruning strategies — open vase, pyramid (Christmas tree), one limb up and one limb out removed to point of origin annually, one limb up and one limb out removed leaving a 12 inch stub annually, and girdling with limb removal after cropping. These pruning strategies will continue going forward to demonstrate different approaches to pruning high density trees. This block is to be harvested based on spacing and pruning strategy. The selected management company will be expected to supervise the harvest of these blocks and ensure accurate harvesting, according to CAC staff instruction, for data collection.

Rootstock Block

CURRENT SITUATION: In June 2017, a block of 300 trees on 30 different rootstocks was planted in cooperation with the University of California, Riverside and Brokaw Nursery. The rootstocks being evaluated are not publicly available and are being evaluated for potential commercial release. University and Brokaw staff routinely evaluate the trees. Annually, CAC staff must submit a written report to Brokaw Nursery for their proprietary rootstocks included in the trial.

NOVEMBER 2019 FORWARD PLAN: This block will continue to be managed according to standard commercial practices. No pruning is to be done on these trees unless requested by the University or Brokaw. The selected management company should be prepared to share their observations of these trees with University, Brokaw and CAC staff to aid in the evaluation process.

Irrigation Trial

CURRENT SITUATION: In April 2017, a block of 160 trees was planted as an irrigation trial to evaluate various soil moisture sensors in helping to manage irrigation. This block's irrigation is separate from the rest of the farm and is controlled by an automated system.

NOVEMBER 2019 FORWARD PLAN: The intention is to continue this irrigation trial going forward. The selected management company should be prepared to aid CAC staff in managing this trial on a day-to-day basis by monitoring the trees' status to ensure that all irrigations take place as scheduled and report any possible issues to CAC staff immediately.

Open Land

CURRENT SITUATION: There remains about ¾-acre of open ground that is reserved for future use.

NOVEMBER 2019 FORWARD PLAN: At this time there are no definite plans for developing the remaining open ground. One possible use for this land is a planting of ‘Gem’ avocados, which are becoming quite popular. If this plan moves forward, the selected management company will be expected to develop an estimate for all necessary ground preparation, irrigation system installation and planting for this block according to the specifications provided by CAC staff.

Pine Tree Grove Management Questionnaire

The Commission's Pine Tree Ranch facility is not a typical commercial grove and cannot be managed as such. Currently the 11-acres the Commission manages are divided into six different blocks, each requiring slightly different management practices. Within these six blocks are at least 19 sub-blocks that must be harvested separately.

1. Because of the variation that exists across Pine Tree Ranch in terms of the different blocks of trees, and the interactions between the Commission and Cal Poly, communication is critical. Please tell us about your communication strategies with your current clients (how do you communicate with them, how often, by what means) and how you would envision communication occurring between yourself, the Commission and Cal Poly if you were to manage the property.

2. One of the blocks at Pine Tree Ranch is designed to compare irrigation based on soil moisture sensor readings to traditionally scheduled irrigation by calendar or "grower instinct." Please tell us how you currently manage the irrigation scheduling in the groves you manage, and describe any experience you have working with soil moisture sensors (sensor types, system brands, etc.).

3. Another of the blocks at the ranch is a high density planting composed of nine different tree spacings. Do you have any prior experience working with high density plantings and if so how do you manage those plantings (pruning, irrigation, harvesting, etc.), and what planting densities are you comfortable managing?

4. Because of the number of different blocks present at the ranch and the shared nature of the property between the Commission and Cal Poly, harvesting and other activities need to be carefully managed to ensure that each block is managed correctly. Do you have experience managing special harvest requests within the same grove? What steps do you take to ensure that special requests regarding harvesting (or other activities) are carried out correctly and crews only work in the blocks they are supposed to? Can you provide a reference of at least one person for whom you have provided such custom services in the past?

5. The primary mission for Pine Tree Ranch is education – avocado growers through the Commission and students through Cal Poly. As such, field days are held at the ranch throughout the year (typically 3-4 per year) and students may participate in internships at the ranch. As grove manager, your participation in these activities would be expected. Are you comfortable interacting with other growers in a field setting, are you willing to share your knowledge and experiences learned at the ranch and elsewhere with growers, and are you willing to interact with students and aid in the develop the next generation of grove managers?

6. If you have any prior experience managing Pine Tree Ranch for the Commission, please tells us what that experience is. What have you learned from your prior experience managing Pine Tree Ranch? What will you do differently or how will improve the management of Pine Tree Ranch going forward?

California Avocado Commission

Agricultural Management Services at Pine Tree Ranch, Santa Paula, CA

PROPOSAL EVALUATION FORMS

California Avocado Commission
12 Mauchly, Suite L
Irvine, CA 92618-6305
June 17, 2019

Privileged and Confidential

Introduction and Background

Currently the Commission is seeking a farm management company to partner with to provide agricultural management and grove development services for the leased acreage at Pine Tree Ranch. Due to the nature of the demonstration grove, services provided will need to be customized based on the Commission's demonstration grove business and development plan, which was included on pages 8 - 11 of the RFP.

The Production Research Committee is tasked with evaluating the submitted proposals in response to the RFP. Proposers were required to include specific information in their proposal as outlined below. Proposal evaluations should be based upon these criteria, with points awarded to each proposal as outlined in the following table and further detailed on the proposal score sheet.

Evaluation Criteria	% of Overall Score
Proposer's responses to Pine Tree Grove Management Questionnaire	35%
Overall fee estimate	25%
Availability of sufficient personnel with required skills and experience	25%
References Provided	15%

Proposal Submission Requirements

Proposal submissions were required to include each of the following:

1. Itemized schedule of management and development fees, including breakdown by hourly rate, estimated hours and material costs, required to perform requested farm management services as outlined starting on Page 8
2. Responses to Pine Tree Grove Management Questionnaire listed on Pages 12-13.
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4. List of grove management team and qualifications

Proposal Evaluation

Proposer:		
Reviewer:		
Evaluation Criteria	**Available Points**	**Scored Points**
Proposer's responses to Pine Tree Grove Management Questionnaire[1]	35 points total	
Question 1: Communication strategies	5	
Question 2: Irrigation management and soil moisture sensors	5	
Question 3: High density management	5	
Question 4: Harvesting management	7	
Question 5: Education and outreach participation	8	
Question 6: Prior Pine Tree Ranch experience	5	
Overall fee estimate	25 points total	
Was an itemized fee schedule included?	15	
Are the proposed cultural activities reasonable and customary?	5	
Are the estimated fees, time and materials costs reasonable?	5	
Availability of sufficient personnel with required skills and experience	25 points total	
Was a list of the grove management team provided?	10	
Is the grove management team appropriate to manage the grove as outlined in the RFP?	15	

[1] The complete questionnaire that each proposer was asked to answer is provided for your reference on page 5.

References Provided	15 points total	
Were references provided as required by the RFP?	5	
Was the grower reference able to validate the grove manager's ability to customize management practices to their needs?	5	
Did the avocado industry reference provide a positive opinion?	5	
TOTAL POINTS SCORED		

Pine Tree Grove Management Questionnaire

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6. If you have any prior experience managing Pine Tree Ranch for the Commission, please tells us what that experience is. What have you learned from your prior experience managing Pine Tree Ranch? What will you do differently or how will improve the management of Pine Tree Ranch going forward?