



**SUMMARY | PEST MANAGEMENT RESEARCH GRANT REVIEW MEETING
CALIFORNIA DEPARTMENT OF PESTICIDE REGULATION**

February 13, 2025

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Attendance

Pest Management Advisory Committee (PMAC) Members

- 1. Roger Baldwin, University of California (UC) Agriculture and Natural Resources
- 2. Greg Browne, USDA Agricultural Research Service
- 3. Patrick Dosier, California Association of Pest Control Advisers
- 4. Robert Ehn, California Garlic and Onion Research Committee
- 5. Jonathan Evans, Center for Biological Diversity
- 6. James Farrar, Director, UC Statewide IPM Program (Ex Officio)
- 7. Terry Gage, California Agricultural Aircraft Association
- 8. Thomas Getts, University of California Cooperative Extension
- 9. Jessica Gonzalez, California Certified Organic Farmers
- 10. Brian Gress, California Department of Food and Agriculture (Ex Officio)
- 11. Elizabeth Henry, Pro Farm Group, Inc.
- 12. Hanna Kahl, Community Alliance with Family Farmers
- 13. Anne Katten, California Rural Legal Assistance Foundation
- 14. Alison Laslett, Santa Barbara Vintners
- 15. Gabriele Ludwig, Almond Board of California
- 16. Nick Lupien, California Association of Pest Control Advisers
- 17. Nicole Quinonez, Madden Quinonez Advocacy
- 18. Margaret Reeves, Pesticide Action Network North America
- 19. Eric Stein, Western Plant Health Association
- 20. Bill Turechek, California Strawberry Commission
- 21. Efrain Velasco, California Pest Management Association
- 22. Karey Windbiel-Rojas, UC Statewide IPM Program

California Department of Pesticide Regulation (DPR)

- 23. Dr. Sapna Thottathil
- 24. Aimee Norman
- 25. Dr. Tory Vizenor
- 26. Dr. Matt Fossen
- 27. Baljot Biring
- 28. Jordan Weibel
- 29. Dr. Andy Nguyen
- 30. Hannah Ferguson
- 31. Dr. Brian Ingel
- 32. Kurt Hildebrandt

Facilitation Support, CSU Sacramento

- 33. Ariel Ambruster
- 34. Corin Choppin

Opening Comments and Background

Introductions and Opening Comments

Sapna Thottathil, Deputy Director, Department of Pesticide Regulation (DPR) welcomed everyone and thanked Pest Management Advisory Committee (PMAC) members for their time.

Dr. Thottathil recognized three outgoing PMAC members for their years of service:

- Nate Laux, who represented California Citrus Mutual
- Jim Steed, who represented the California Pest Management Association
- Melissa O’Neal, who represented Pro Farm Group, Inc.

Dr. Thottathil welcomed five new committee members to PMAC:

- Elizabeth Henry, who is filling Melissa O'Neal's vacancy as the primary representative for Pro Farm Group
- Bill Turechek, who is filling Melissa Koshlaychuk's vacancy as the primary representative for the California Strawberry Commission
- Jessica Gonzalez, who is joining the committee as the primary representative for the California Certified Organic Farmers
- Addison Peterson, who will be serving as Jessica Gonzalez's alternate
- Efrain Velasco, who is filling Jim Steed's vacancy as the primary representative for the California Pest Management Association

Dr. Thottathil announced Governor Gavin Newsom’s appointment of Dr. Karen Morrison as the next Director of DPR.

Dr. Thottathil noted that public comments and questions would be taken after each proposal item, in the room, via email to PMAC@cdpr.ca.gov for those watching the meeting by webcast, and by raised hand on Zoom for those in the webinar.

Research Grant Proposal Overview

Jordan Weibel, DPR’s Integrated Pest Management Branch (IPM) Research Grants Program Lead, highlighted the research grant proposal review focus of the meeting. He then shared updates regarding the 2025 Research Grants Program. He indicated there is \$1.9 million dollars in funding available, and that there will be a shared funding pool between DPR’s 2025 Research and Alliance Grants Programs. He shared six priority topic areas for the Research Grants:

1. IPM for underserved or disadvantaged communities
2. Decreasing the use of high regulatory interest pesticides
3. Advancement of urban IPM and safer, more sustainable pest management tools and strategies in urban settings
4. Advancement of IPM and safer, more sustainable pest management tools and strategies in agricultural settings adjacent to or near a school(s)

5. Meeting the IPM needs of small growers and
6. Alignment with two or more of the three sustainability pillars from the Sustainable Pest Management (SPM) Roadmap:
 - a. Human Health and Social Equity
 - b. Environmental Protections
 - c. Economic Vitality

Mr. Weibel announced 25 total submissions for the Research Grant program this year with a total funding request of more than \$8,500,000. After initial screening of the applications, DPR staff moved 21 of the proposals to full review.

Mr. Weibel noted that the Legislature passed AB 2113, which enshrined the definitions of both IPM and SPM in the Food and Agriculture Code.

Mr. Weibel informed attendees that the 2025 Alliance Grant application period closed November 21, 2024. The PMAC Alliance Grant proposal review meeting will occur on May 8, 2025.

2025 Research Grants Summary of Proposals

Proposal Short and Full Title	Principal Investigator	Budget
Rijal – Nonchemical Control in Pistachio and Almond Developing cultural and biological-based practices for managing navel orangeworm and invasive <i>carpophilus</i> beetle in almond and pistachio orchards	Dr. Jhalendra Rijal	\$498,998
Gyawaly – Entomopathogens for Walnut Husk Fly Developing sustainable walnut husk fly management practices using entomopathogens	Dr. Sudan Gyawaly	\$439,489
Sadek – Microwave to Control Macrophomina in Strawberry Can microwave be a fumigant alternative to control <i>Macrophomina</i> root rot in strawberries?	Dr. Mohammad Sadek	\$334,593
Hasegawa – Receptor Interference Technologies for Insect Pests Advancing receptor interference technologies as a tool for managing key insect pests of vegetables	Dr. Daniel Hasegawa	\$348,674
Taravati – Low-risk Mosquito Control Balancing safety and efficacy: Testing low-risk pesticides against two California mosquito species	Dr. Siavash Taravati	\$356,517
Choe – High Temp and CSI Effects on Termites Impact of High Temperature and Chitin Synthesis inhibitors on Gut Microbial Symbiont Community and Desiccation Tolerance in Western Drywood Termite	Dr. Dong-Hwan Choe	\$359,703
Siddique – RNAi-based Resistance in Walnut NemaBlock: RNAi-Based Resistance for Walnut Orchards	Dr. Shahid Siddique	\$494,833

Proposal Short and Full Title	Principal Investigator	Budget
Lee – Dusts for Cockroach Control Improvement of silica gel dust and dust mixtures as safer alternatives, and development of a lethal harborage for German cockroach control	Dr. Chow-Yang Lee	\$291,175
Lee – Sucralose for Cockroach Control Evaluation of boric acid-sucralose and selenium-sucralose gel bait formulations against German cockroach, an important indoor health pest of low-income housing	Dr. Chow-Yang Lee	\$324,539
Ding – Biofungicides for Powdery Mildew Reducing use of synthetic fungicides in grapevine powdery mildew management by effectively integrating biofungicides	Dr. Shunping Ding	\$404,228
Lee – Bedbug Insecticide Resistance Diagnostic Test Development of a rapid diagnostic test for detecting insecticide resistance in bed bugs in low-income housing	Dr. Chow-Yang Lee	\$332,727
Cobb – Biocontrols for Fungus in CA Forestry Developing the biocontrol <i>Phlebiopsis gigantea</i> as a replacement for boric acid based fungicides in California forestry	Dr. Richard Cobb	\$312,056
Dandekar – Rootstock Incorporated Protectants Translational research to deploy Rootstock Incorporated Protectants that provide RNAi—mediated suppression of crown gall disease for orchard and vineyard crops	Dr. Abhaya Dandekar	\$499,004
Presley – Borate Timber Treatment Borate timber treatment: A California-based solution for mitigating sulfuryl fluoride fumigation for termites	Dr. Gerald Presley	\$436,994
Rolshausen – Citrus Screen Houses Precision Pesticide Use for Citrus Under Protective Screens	Dr. Philippe Rolshausen	\$496,126
Pan – AI for IPM in Tree Nuts Development of an AI vision system for improving integrated pest management in tree nut orchards	Dr. Zhongli Pan	\$499,945
Shogren – IPM for Eucalyptus Beetle Developing an IPM program for the invasive eucalyptus beetle <i>Paropsis atomaria</i>	Dr. Christopher Shogren	\$270,676
Khodadadi – Fungicide Effects in Citrus Impact of Fungicide Oxathiapiprolin on the Rhizosphere Microbiome and Phytophthora Resistance in Citrus and Avocado Orchards	Dr. Fatemeh Khodadadi	\$489,217
Ma – Biochemical Fungicide for Powdery Mildew A New Biochemical Fungicide Ningnanmycin for Safe and Effective Powdery Mildew Management in California	Dr. Bangya Ma	\$499,606

Proposal Short and Full Title	Principal Investigator	Budget
Calderon-Urrea – Nematicide Testing Safe and effective nematicides developed at Fresno State: testing in California prior to EPA registration	Dr. Alejandro Calderon-Urrea	\$499,997
Brar – Pesticide Residues in Pistachio Understanding migration and distribution of systemic pesticide residue in pistachio nut tissues	Dr. Gurreet Brar	\$268,134

PMAC members reviewed proposals ahead of the meeting and submitted ranks. Mr. Weibel shared that initial ranking, as presented in the following chart, shown in ranked order.

2025 Research Grants Program Initial PMAC Proposal Rankings (average of 13 rankers)
Proposals denoted with an asterisk () were tied for Average Rank and are presented alphabetically.*

Principal Investigator	Project Short Title	Pre-Meeting Rank	Average Rank	Standard Deviation	High	Low
Rijal	Nonchemical Control in Pistachio and Almond	1	5.1	3.35	1	19
Gyawaly	Entomopathogens for Walnut Husk Fly	2	5.3	3.68	1	20
Sadek	Microwave to Control Macrophomina in Strawberry	3	5.6	5.27	1	20
Hasegawa	Receptor Interference Technologies for Insect Pests	4	8.3	4.94	1	17
Taravati	Low-risk Mosquito Control	5	8.9	5.22	2	19
Choe	High Temp and CSI Effects on Termites	6	9.4	6.53	2	21
Siddique	RNAi-based Resistance in Walnut	7	9.5	5.37	1	19
Lee (Dusts)	Dusts for Cockroach Control	8	10.2	5.45	3	21
Lee (Sucralose)	Sucralose for Cockroach Control	9	10.4	6.43	1	21
Ding*	Biofungicides for Powdery Mildew	10	10.5	4.49	3	19
Lee (Bedbug)*	Bedbug Insecticide Resistance Diagnostic Test	10	10.5	3.91	3	16
Cobb	Biocontrols for Fungus in CA Forestry	12	10.8	5.55	2	21
Dandekar	Rootstock Incorporated Protectants	13	11.9	4.30	4	18
Presley	Borate Timber Treatment	14	12.3	6.32	2	20
Rolshausen	Citrus Screen Houses	15	12.4	4.46	5	19
Pan	AI for IPM in Tree Nuts	16	13.9	4.43	1	21
Shogren	IPM for Eucalyptus Beetle	17	14.6	4.93	6	20
Khodadadi	Fungicide Effects in Citrus	18	14.7	4.25	8	21
Ma	Biochemical Fungicide for Powdery Mildew	19	15.7	5.19	3	21
Calderon-Urrea	Nematicide Testing	20	16.1	2.76	3	20
Brar	Pesticide Residues in Pistachio	21	16.5	6.17	2	21

Quorum Count

Aimee Norman, DPR IPM Branch Chief, conducted a verbal roll call to verify PMAC member attendance achieved quorum, in accordance with the state's Bagley-Keene Open Meeting Act. Ms. Norman reminded PMAC members of their legal obligation to disclose any conflicts of interest and initiate recusal as appropriate. Ms. Norman announced that DPR had been notified in advance of the meeting of the following PMAC member conflicts of interest or recusals:

- Brenna Aegerter recused from ranking and discussing all proposals due to her role as a subcontractor for the Ma proposal
- James Farrar recused from the Choe, Lee (Bedbug), Gyawaly, Rijal, Taravati, Shogren, and Rolshausen proposals due to having working relationships with several Principal Investigators (PIs) and key personnel
- Bill Turechek recused from the Sadek proposal because he wrote a letter of support as a representative for the California Strawberry Commission

In addition, during consideration of the proposals, the following recusals were made:

- Efrain Velasco recused from the Lee (Dusts), Lee (Sucralose), and Lee (Bedbug) proposals as his association wrote letters in support of them.
- Gabriele Ludwig recused from the Pan proposal as a colleague wrote a letter of support.

Ms. Norman noted that four PMAC members were being represented by their alternates:

- Sapna Thottathil for DPR Director Karen Morrison
- Thomas Getts for Whitney Brim-DeForest
- Brian Gress for Karen Ross
- Eric Stein for Renee Pinel

Ms. Norman noted that Ex Officio members do not count toward quorum and affirmed that a minimum of 13 for quorum had been attained. See page 2 of this document for the attendance list. Ms. Norman notified members that DPR is required to monitor and maintain quorum during the meeting and that members should notify DPR of the need to leave the meeting or be off video for more than five minutes.

A PMAC member asked Ms. Norman how many members were present. Ms. Norman responded that there were currently 19 members present.

Research Grant Proposal Discussion

The facilitator, Ariel Ambruster from California State University, Sacramento, outlined the process for proposal review and led PMAC members in a discussion on whether there was an obvious bright line separating out proposals they would recommend not funding, in order to allow for additional discussion on the more highly rated proposals. She reported that, given the large number of proposals before the PMAC, DPR staff had suggested to PMAC a line below the **Pan proposal ranked 16th** out of 21 proposals. This bright line was suggested by DPR as a bright line that might best assist DPR in developing the recommendation memo for DPR's Director and

it does not exclude any member's highest-ranked proposal. Ariel noted that PMAC would still briefly review the proposals ranked on the other side of the bright line. Individual PMAC members made other suggestions: placing the line after the **Presley proposal ranked #14**; after the **Shogren proposal ranked #17**; or after the **Khodadadi proposal at #18**. PMAC members coalesced in support of the staff suggestion of setting the bright line after the Pan proposal at #16.

Discussion of Proposals

PMAC members discussed the merits, concerns, and areas needing clarification for each project proposal, in the order of their initial ranking. Below is a summary of PMAC members' comments for each proposal. Comments reflect individual PMAC member observations, not consensus opinions. Thus, merits and concerns may occasionally appear to be contradictory.

Rijal - Nonchemical Control in Pistachio and Almond

Merits

- The proposal included a good write-up on the California history of the pest's geography and system ecology.
- This is a proactive and preventative IPM approach with emphasis on SPM.
- Good letters.
- Very well thought out.
- The non-chemical control emphasis is very important.
- Going after the mummies population seems like a smart approach.
- The proposal targets a problematic pest.
- This is an important chemical class for us to focus on.

Concerns

- Growers may not be willing to buy a major new piece of equipment.
- Letters did not address the quality of work and how people would be involved in actually adopting these findings.
- Lacks an unsanitized control in the first experiment, the field experiment is in a similar unsanitized field.
- Pyrethroids, a focus of this proposal, are very important, but they are not currently on the list of DPR priority pesticides.
 - Another PMAC member said that the Irrigated Lands Regulatory Program is currently undertaking efforts to reduce pyrethroids in surface waters in some locations. And for Carpophilus beetles, neonics might be used. It's such a new pest that it's not certain yet what the products are that might or might not work for it.

Points of Clarification

- None.

Public Comment

- None.

Gyawaly – Entomopathogens for Walnut Husk

Merits

- Liked the focus on the long-term management of housefly populations and the avoidance of sprays for secondary pests.
- Using entomopathogens is low risk and aligned with SPM goals.
- This project is targeting an important pest.
- The proposal has a strong research team driving the work.
- Good explanation of the challenges associated with monitoring and the lack of cultural and biological control options which are key pieces of ecological pest management.
- Good explanation of the problem addressed.
- The project features good economic considerations.
- Liked the bio-control focus.
- Very well written.
- Clearly identified the specific counties impacted by the project's scope.

Concerns

- The project proposes only one year of field testing, but it will require a longer period of testing to achieve its purposes.
- No entomopathogens are currently marketed. The project aims to find entomopathogens through surveying, but if none are found, it could complicate the process. The project is dependent on finding the correct entomopathogens to follow through with further steps.
- It's important to fund projects with high likelihoods of success due to the limited funding available. The likelihood of this project's success is impacted by the reasons outlined above.
 - Another PMAC member said that there are commercially available entomopathogens which have achieved moderate level field efficacy, and a citation to that. This project would be building off of that work to see if there could be more efficacy with discoveries made in the field.
- The project lacks a broader California stakeholder benefit relative to other proposals received for consideration this round due to its targeted geographic focus.

Points of Clarification

- None.

Public Comment

- None.

Sadek – Microwave to Control *Macrophomina* in Strawberry

Merits

- Appreciated the proposal's economic analysis.

- The project focuses on identifying alternatives to fumigants, which is something we should be exploring.
- The proposal has very good letters of support.
- This project could be a positive step in addressing the challenges faced by the strawberry industry and ensuring the security of that industry's presence in California.
- Well written.
- Important focus on *Macrophomina* in strawberries, which has been a tough pest to control without fumigants.
- Good team behind the proposal.

Concerns

- *Macrophomina* is only one reason why soil fumigants are used with strawberries, so that limits this approach's effectiveness at reducing use of fumigants.
- Microwave radiation was examined extensively in the early 2000s for soil borne, wood, and stored pests and was abandoned as a line of inquiry due to the uneven heating of the substrate. Strawberry crowns in the ground are a very heterogeneous substrate and getting even heating would be very difficult.
- There was no description of field evaluation throughout the season in the project. Evaluating disease severity in the crop as a measure of effectiveness will be important to the evaluation of the technology, given the above concern.
- Penetration will be a serious limitation of the technology. It will be easy to demonstrate efficacy in small volumes of soil or for short periods of time in the field. For real field effectiveness, long term evaluation for the duration of the crop is necessary as early collapse, or collapse over the course of the season, is how this pathogen causes losses.
- Concern about the likelihood of success.
- If only 0.2 acres can be treated per day using this approach, this would be a serious obstacle for the project's implementation.
- This project involves high energy processes and does not cover how electrical safety in the field would be ensured for workers.

Points of Clarification

- Will the microwave also kill useful or beneficial organisms? Could that be an area of concern?
- How many acres could be treated in a day using this approach?
- Considering all the other affected pesticides listed, would like to see further evaluation around other pests, such as weeds and other diseases.
- If the project fulfills its goals, will the results make a significant difference in fumigant usage if the strawberry growers lack tools to cope with the other challenges and pests that necessitate the use of fumigants?
- Is the microwave used during the growing season, and, if so, would it kill the plants?
 - A PMAC member confirmed that the microwave is used at the end of the season instead of using fumigants for end of season termination.

Public Comment

- None.

Hasegawa – Receptor Interference Technologies for Insect Pests

Merits

- This proposal focuses on western flower thrips and diamondback moths which are both important pests, extremely difficult to control, and require large quantities of pesticide use.
- Finding novel approaches targeted towards these specific pests would have huge impacts if successful.
- The project seems to already have cyclic peptides available to be used. Newer insecticides using peptides are being explored. The project will evaluate the peptides and the delivery systems.
- This technology could replace higher-risk insecticides.
- Receptor interference is a new technology, but labeled as safe by USDA.
- This project would be built upon previous research.

Concerns

- The PI does not cover how they could transition the results of their research into a product that could be introduced to the market.
- There is no discussion of the potential risks of the environmental release of nanoparticles. Nanoparticles can show up in places we can't anticipate, and there has been little research around what their release can mean for the environment and human health.
- The project seems to be in a preliminary stage as it is based on greenhouse and petri dish research. The potential of this project for actual field application seems far off in the future.
- The proposal alludes to this method being cheap in terms of costs, without sufficiently demonstrating the cost efficiency of the application.
- The proposal didn't clarify why nanoparticles were a relevant mechanism to be used.

Points of Clarification

- Should California be funding more research locally as opposed to through the USDA in order to keep funds in California?
- A PMAC member clarified that the PI is located in the USDA station in Salinas, so he is indeed in California.
 - Another PMAC member said that funding USDA researchers in some areas may be necessary as they have the most applicable skillsets in some areas.
- Is this project more suited to be funded by the private sector?

Public Comment

- None.

Taravati – Low-risk Mosquito Control

Merits

- Appreciated that the letters of support for this project came from a diverse array of credible sources, which shows buy-in for this effort.
- The proposal was well-written.
- The broadness of the benefit to California stakeholders is very high as everyone can experience mosquito issues and alternatives to currently available treatments would be beneficial to public health and mosquito control.

Concerns

- Clove oil, garlic oil and cinnamon oil are not encouraging candidate materials for research.
- The language in the proposal around the efficacy of the materials indicates hesitation around whether the product has the potential to function.
- The proposal was lacking information in respect to economic benefits.
- The proposal makes the assumption that pesticides would be highly effective and would not require follow up treatments, which does not seem practical.
- The PI is requesting salary relief which can be a concern considering the limited funding resources available.
- Pesticide applications to landscapes are not particularly effective. There are alternative practices such as the management of mosquito breeding grounds which should have been considered. There is good evidence that management of breeding grounds may be more efficacious than applications against adults.
 - Another PMAC member said that one of the mosquito species to be addressed can breed in a very small amount of water, so it is very difficult to eliminate breeding habitat. This approach would be in addition to outreach encouraging the public to dump water sources.
- The lab methods used for spraying didn't seem to translate well to real world conditions.
- Products of this type have been studied before and have been deemed non-efficacious.
- The substances used may not be benign to other insects, even if benign for humans.
- A PMAC member said they would like to see more information about potential economic viability. Would alternatives be economically viable for consumers to adopt even if they were efficacious?
- Using cinnamon oil or garlic oil in waterways would not be ideal.

Points of Clarification

- What does testing the “top performing reduced risk insecticides for chemical residues” mean as referred to in the proposal?
- Even if the proposal works, it is not clear how the research will be applied. How will this project have the intended effect on mosquito populations?

Public Comment

- None.

Choe – High Temp and CSI Effects on Termites

Merits

- California is a global leader in the use of sulfuryl fluoride, the primary structural fumigant, which is an extremely potent greenhouse gas. It is also a toxic air contaminant with neurotoxic effects. Identifying methods to address the use of sulfuryl fluoride is thus very important. Chloropicrin is also used in fumigation.
- This proposal has the potential to reduce carbon emissions.
- This research has potential to reduce human risk and exposure to pesticides.
- This proposal's focus on developing alternatives to whole-house fumigation is particularly important to reducing fumigant use and offers an option for multi-unit buildings where whole-house fumigation is not an option.
- The project may reduce overall termite viability and allow for long-term, effective treatment.
- The proposal focuses on the new area of chitin synthesis inhibitors.
- The proposal included a good focus on the ecology of the pest, reflecting an SPM approach to IPM, and includes a good literature review.
- There were very good letters of support.
- This proposal touches on many of the ideals of the research proposal solicitation priority topic areas.
- The proposal was well-written.
- There were strong letters of support.
- Urban focused projects can have difficulty getting funding. There is broad stakeholder benefit, and funding may be harder to acquire from other sources.

Concerns

- Information on economic benefits was lacking in this proposal.
- These tools could be incorporated into an IPM program to reduce reliance on pesticides, but they don't develop an IPM program for managing termites.
- Methods concerns: The treatments are in separate chambers, and if the chambers are different at all, this could be problematic. Many of the methods that would occur in an actual structure seem different than the treatment setup, such as using GC oven heating and feeding the termites filter paper rather than wood. This raises questions about the applicability of the research in regard to real world usage.

Points of Clarification

- Are there barriers to actual structure testing of the methods detailed in this proposal?
- It would have been helpful for the proposal to go into further detail about the importance of desiccation for the long-term prevention of termites, as well as the difference between physical water loss and physiologically-mediated water loss.

Public Comment

- None.

Siddique – RNAi-based Resistance in Walnut

Merits

- Root knot nematodes are an important pest.
- The approach of using RNAi has promise. Developing resistance in the rootstock is the effective pathway. The PIs have a genome and targets to work with.
- If successful, this proposal could eliminate the need for 1,3-D, a fumigant of concern, in the walnut production system.
- The project has a strong outreach component.
- Good study design.
- Finding genetic solutions to soil pests for the tree and vine industry is the best way we can resolve not relying on soil fumigants. The main issue is making sure the resistance in the rootstocks is effective against multiple pests.
- This proposal builds on existing work with crown gall to add the key nematode for walnuts.
- This proposal meets what we're looking for: new approaches that fundamentally change the need to even use pesticides.
- New tools like those detailed in this proposal are very needed.

Concerns

- Weak letters of support.
- It would have been helpful to have more demonstrations of economic feasibility.
- The proposal could have tried to look at yield effect.
- Issues around the use of RNAi technology: it is unregulated. The impacts of RNAi on related species are unknown. No attention was given to the question of what impacts RNAi would have on the beneficial nematodes in healthy soils.

Points of Clarification

- How will the field experiment data be analyzed?

Public Comment

- None.

Lee – Dusts for Cockroach Control

Merits

- The human health and social equity focus: living with cockroaches and cockroach allergens is a health challenge that disproportionately affects low-income households.
- Good letters of support.
- This proposal would involve the development and testing of a much-needed alternative to traditional insecticides. If effective, this would fit well into an IPM program.
- Strong proposal regarding the solicitation priorities around public health and underserved audiences.
- This could have a broad statewide stakeholder benefit.
- The research focuses on an important economic pest.
- This proposal could help reduce exposure to asthma and pesticides.

- Combining three low-risk pesticides for treatment can provide benefits regarding moving away from the higher hazard pesticides used indoors.

Concerns

- The tests in the proposal are all still lab-based. How well will they translate into real world usage? Disappointing that there was no pilot structure-based testing component.

Points of Clarification

- None.

Public Comment

- None.

Lee – Sucralose for Cockroach Control

Merits

- The study was well designed.
- This research has the potential to reduce reliance on certain kinds of insecticides.
- This proposal seems potentially more practical than the Dusts for Cockroach Control proposal.
- A benefit is the human health and social equity focus, as cockroaches disproportionately affecting low-income households.
- This proposal aligned well with solicitation priorities, with its asthma reduction and pesticide exposure reduction goals.
- The explanation of the experimental design was strong.
- Strong letters of support.

Concerns

- The PI could have submitted a combined proposal including both the Sucralose and Dusts for Cockroach Control projects as a more comprehensive approach. It would be better to present an integrated approach that works for the investigator.
 - Two other PMAC members agreed, saying it is difficult for reviewers to weigh the pros and cons of these very similar and overlapping studies, and the purpose of the grants is to take an integrated approach.
- A project by this investigator focusing on Sucralose was previously funded in 2021, and the report was not favorable. There is no reference to previously funded work in this proposal. It would have been helpful to see how that previous effort was tied into this current proposal.
 - Two other PMAC members agreed, saying PIs need to include this type of information. It's important that the PMAC knows how previously funded projects by an investigator turned out before making a decision on future proposals.
- The proposal discusses issues of lagging implementation, yet its focus is limited to evaluating products in a lab and does not address the question of implementation, which is fundamental.
 - Another PMAC member said research on whether an approach works needs to be done first in a lab, as urban pest research is different from in-field agriculture

and placing the materials at a low-income housing site brings in a gamut of issues and variables.

- In response, the original commenter indicated they were thinking of a shed or model house environment, rather than an actual living site.
- The project lacks field testing in real world conditions.
- The project would use selenium, a micronutrient that is toxic and can create environmental concerns at high levels. The proposal featured no details about relative dose and how the use of selenium would be controlled, especially around the disposal aspect. Selenium was the cause of the bird deformity issue in the Kesterson Wildlife Refuge some decades ago.

Points of Clarification

- None.

Public Comment

- None.

Ding – Biofungicides for Powdery Mildew

Merits

- The focus on powdery mildew in grapes is beneficial, as it is one of the most threatening pests for that crop.
- Powdery mildew is an intensely sprayed pest. Looking at alternatives to spraying is very worthwhile.
- The experimental design of the trial in this proposal will allow the investigators to capture more insights in their analysis than would be possible with a typical spray schedule.
- The proposal covers collaboration with small scale growers and safety for farm workers.
- Appreciated how the proposal went into detail around resistance management.
- This type of proposal is very needed because biopesticides are often not one-to-one replacements for conventional pesticides. This proposal can help us understand how the materials involved can be integrated into programs in ways that utilize their attributes effectively.
- The proposal detailed a realistic increment of advance around the integration of biopesticides into existing programs.

Concerns

- Concerns about the idea of applying biofungicides at the same time as conventional fungicides. The biofungicides may need to be applied before conventional fungicides so they have a chance to grow and outcompete the conventional fungicides.
- A fundamental issue around biopesticides is that they can't be applied in the same way as conventional pesticides. This issue was not addressed in the proposal.
- The proposal only has one letter of support.
- A better selection of biologicals could have been used in this proposal.

- Most of the products listed for inclusion have already been used in trials by Akif Escalon at UC Davis. The results of those trials have been incorporated into a UC IPM publication.
- A lot of the work proposed in this project has already been done.
- Grape growers already have access to synthetic products, biofungicides and organic products. There may be more important priorities to fund.
- The experimental design is not described well. There would be a high potential for interference, especially from diseases like powdery mildew. The methodologies of the experimental design do not seem sound.
- The proposal had no mention of cultural controls used for powdery mildew, such as de-leafing.
- Sulfur should have been discussed in the proposal.
- One PMAC member preferred to see a more ecological approach given the literature around this topic, and less of a singular product substitution approach.
- Biopesticides tend to be lower in toxicity and environmental risk, but that can't be presumed. Biopesticides need to go through testing before they are put into use in California.

Points of Clarification

- Are all of the biopesticides mentioned in the proposal registered in California?

Public Comment

- None.

Lee – Bedbug Insecticide Resistance Diagnostic Test

Merits

- Large potential community benefit for low income and urban populations, reducing the risk of populations experiencing exposure to pesticides where they live and sleep.
- The proposal aligns with the solicitation goals of addressing public health concerns in underserved communities.
- If successful, this proposal could fit well into an IPM program.
- This project falls within the scope of IPM as it is focused on assessment before treatment, so that unnecessary or ineffective treatments can be avoided.

Concerns

- This proposal is primarily centered around insecticide resistance, so it doesn't seem like a fitting focus of an IPM project.
 - Another PMAC member said it does fit the IPM definition, as pre-assessment avoids unnecessary pesticide treatments.
- DPR has already supported many proposals focused on bed bugs. The need for this proposal is unclear as much of the work proposed has already been done, the results of which are currently in use.
- The practicality of applicators collecting 10 or more bedbugs, putting them into wells, and waiting for an hour to determine what to treat them with seems unrealistic.

- Two other PMAC members said a field representative might first collect samples in order to recommend an applicator's effective treatment, so it could be practical and reduce ineffective applications. If there is a resistance test out there, it gets used.
- The proposal lacked information about the feasibility of adoption, such as the potential cost of the kits and the time commitment involved in applying these methods.
- The proposal lacked details around economic impacts.

Points of Clarification

- How would the database developed by this project account for differences in past use patterns around how resistance has developed in different regions and individual structures?

Public Comment

- None.

Cobb – Biocontrols for Fungus in CA Forestry

Merits

- Good use of biological control.
- Strong argument for state funding of this proposal as forest management projects are less funded and have less support from commercial sectors than production agriculture.
- Strong letters of support.
- Good literature review.
- This approach has been used in Europe and the Northeastern United States with success. Because we have a genetically distinct population in California, we need a different specific fungus to use locally.
- Because of this proposal's specific benefits for California, it is fitting that it be funded by state grants.
- This proposal could help preserve the diversity within forests by eliminating the boric acid used in biological control.
- The proposal was well-written.
- This is a good research design.
- A PMAC member appreciated the approach of substituting biologicals for synthetic or non-organic methods.

Concerns

- Borates are a low-risk pesticide that are sometimes suggested as substitutes for higher risk pesticides. This proposal may not have a high funding priority due to borates' low impacts on human health and environmental exposure.
- The proposal is centered around economic benefits rather than environmental or ecological health. This project doesn't seem like the best fit for this grant program.
- The economic benefits of this project are not quantified in the proposal, despite the proposal's intended economic focus.

Points of Clarification

- None.

Public Comment

- None.

Dandekar – Rootstock Incorporated Protectants

Merits

- This is a potentially far-reaching proposal.
- This proposal is valuable as, regarding woody perennial cropping systems, finding new genetic technologies to get multiple resistances into woodstocks is the best long-term solution for soil pest management needs.
- This is new technology, but it would be useful to support the development of this area.
- There is good data to support the idea that the kind of approach detailed in the proposal is functioning well in other sectors. The concept is validated by past applications.
- This technology seems to be able to navigate past any regulatory barriers.
- The design and explanation of the ecology was intriguing.
- This proposal deals with the most advanced, well-documented use of RNAi technology at this stage.
- RNAi-based technologies will likely have synergy with one another.
- If proven in one field of application, RNAi technology can be evaluated more fully.

Concerns

- This proposal does not address all of the reasons why fumigants are used.
- This project does not address traditional IPM needs, but would be necessary to move forward in this area.
- Concerned about the use of unregulated RNAi technologies and potential impacts on non-target species.
- The literature around this pest seems to feature many examples of biocontrol options for this pest, making the high-technology approach of the proposal seem unnecessary.
- This proposal did not sufficiently explain its experimental design.
- There was very little information in the proposal beyond the opening statement and the abstract.
- Details given about the field evaluations were not sufficient.
- The proposal lacked a description of scientific methods.
- The proposal seems to allude to the low costs of applying the methods described without sufficiently demonstrating why that would be so with metrics.
- This project would have to overcome regulatory barriers.
- The timeline for DPR research grants are shorter than other grant opportunities. This grant may not be the best funding source for this proposal.

- The PI and the staff members involved in the project do not seem to have a background in field testing. It would be helpful if they could partner with more applied scientists to get support around the testing element of the project.

Points of Clarification

- When transferred to private industry, will the price of the cultivars developed from this new RNAi method be subsidized sufficiently to be at comparable price points with currently used cultivars? This would be helpful information to include in the application.
 - A PMAC member said this is something the commodity boards think about as they fund research and development.
 - Another PMAC member there might typically be a cost, but it would likely be relatively small, similar to the cost of an improved rootstock. It would likely rapidly move into the industry.

Public Comment

- None.

Presley – Borate Timber Treatment

Merits

- California is a dominant global producer of sulfuric fluoride. This proposal takes a preventative long-term approach.
- The concept of this new prophylactic approach of developing sensors to better detect the presence of termites so that treatments can be more targeted seems like a good one.
- This proposal could potentially develop methods that could be applied to existing structures.
- This proposal could generate benefits for residents who live in houses constructed with wood.

Concerns

- One of the proposal's main activities is to compile information. This should have been done before the grant proposal was submitted.
- The research work seems to be based outside of California.
- All of the letters of support came from groups outside California. As a program seeking California funding, it would have been good to see more stakeholders in California supporting this proposal.
- The proposal has no connection with UC researchers or other California-based researchers.
- The proposal involves testing a Termatrac iTraker Pro device. There has been previously published work by Siavash Taravati on a similar device called the Termatrac T3i. The PMAC member would have liked to see the proposal include acknowledgements of previous work around similar technologies.
- The team members behind the proposal seem to lack entomology experience.

- The proposal involves testing species of pest outside California, which raises the concern that the tests would not be applicable to species within California.
- There is a preference for a component of the project being based in California.

Points of Clarification

- The proposal's work to demonstrate the effectiveness of borate treatment may not be allowed to be registered in California as the data would not be generated in California.

Public Comment

- None.

Rolshausen – Citrus Screen Houses

Merits

- The proposal would likely address targeted pesticides such as neonics.
- The pesticides targeted in this approach could address the issue of neonic use.
- The proposal considers scalability.
- The proposal is consistent with an IPM approach and SPM roadmap goals.

Concerns

- The proposal involves modelling spraying within a greenhouse. As the project is mainly centered around modeling, it does not fit with SPM goals.
- The aim of the project to model pesticide use does not seem relevant to the purpose of this grant program.
- The research uses abamectin, which is very toxic and can cause chronic toxicity problems.

Points of Clarification

- None.

Public Comment

- None.

Pan – AI for IPM in Tree Nuts

Merits

- The focus on early detection is important in IPM rather than trying to address a problem after it is extensive.
- The proposal addresses application by less resourced growers.
- The proposal addresses how the need for early and frequent scouting is essential to the use of biologicals.
- AI is going to be the wave of the future. The proposal is attempting to integrate AI into IPM efforts.
- It will be necessary to develop cameras with traps that are linked to systems that allow them to identify and separate beneficial insects from harmful insects in the future.
- The proposal builds on systems already in use in storage facilities.

Concerns

- There was not much detail around how AI monitoring will compare with conventional monitoring methods.
- Is it economically feasible, given the cost of the technology?
 - Each unit would need a solar panel, wireless smart probes with cameras, temperature and relative humidity sensors, and LED lights to function. The cost per unit could be substantial.
- Needing many traps per acre could pose issues of cost.
- The proposal does not include information around how well the AI was trained to identify insects.
- A single unit could have issues with monitoring for multiple species at once due to the different species' varying biologies.
- Exploring early detection is interesting, but doesn't seem to tie into reducing or replacing any pesticides.
- There were concerns about the accuracy of the AI model in detecting and identifying insects correctly.

Points of Clarification

- Could the AI monitoring units monitor for multiple species at once?
- The company Semios is already using camera trapping technology with AI to detect navel orangeworm. If this proposal is using separate traps with separate lures, how will it be different from what has already been developed by companies like Semios?

Public Comment

- None.

Shogren – IPM for Eucalyptus Beetle

Merits

- This project proposes a practical, well-designed approach to address the newly invasive eucalyptus beetle in both conventional and organic production and for both landscape and foliage trees.
- There is breadth to what's being proposed, looking at conventional options with a high likelihood of success in order to get a handle on this pest while using low-risk materials.
- The project could help avoid unnecessary ineffective treatments that are often made immediately following arrival of a new pest before IPM programs are developed.
- The proposal could help transition current pest management programs away from disruptive systemic options.
- The proposal should result in reduced pesticide use.
- This proposal provides a long-term IPM strategy moving forward.
- This proposal helps fill the research gap around urban forestry.
- This pest is a huge concern for the urban public, especially in Southern California, including the high cost of removing a dead tree.
- This proposal develops an IPM approach and best management practices that could help reduce the public's widespread overuse and misapplication of very toxic retail

pesticides. People would most likely continue to use products made illegal by new neonic restrictions to mitigate this pest on their own.

- Pesticides currently used for this pest can harm non-target native insect species.
- Eucalyptus is not native to California, but it does have an important ecological role, especially as a host to monarch butterflies, which are a declining species.
- Eucalyptus is commonly used by flower farmers as a component of bouquets, so it is important to that agricultural area. Flower farmers aren't necessarily able to sustain their businesses off of solely native flowers or native plants.

Concerns

- Given the number of quality proposals, focusing on protecting a non-native species, eucalyptus, may not be a funding priority.
- Eucalyptus is a problematic species in many ways, so there are concerns about investing and protecting it rather than trying to replace it with a better adapted, less fire-prone species.
- Overall impacts of the project would be limited, as eucalyptus is not a major crop in California.
- Given fire hazard concerns, replacement of declining eucalyptus trees with other species is also very important.
- Researching how to more effectively use neonic pesticides is not an appropriate use for PMAC funding.
- The proposal could use more detail on methodology, such as trialing monitoring strategies.
- Treatment replicates for in vitro trials are not mentioned. Randomization for in vitro trials is not noted. Analysis of the last experiment is not noted.
- Only one letter of support.
- The scope of work was not adequately detailed.
- The search for systemic pesticides detailed in the proposal is not an adequate consideration. At this point, the investigators should have an idea of what biocontrol agents might and might not be relevant.

Points of Clarification

- Why does the proposal seek funding for individuals whose positions are already funded?

Public Comment

- None.

Khodadadi – Fungicide Effects in Citrus

Merits

- Many letters of support from appropriate groups.

Concerns

- Better understanding of this fungicide's effects on the soil microbiome is needed. It may or may not contribute to improved soil health.

- Skeptical that information developed about changes in the root microbiome would actually result in information that could then be used to reduce overall pesticide use and gain control of the problem.
- Although the overarching concept has merit, there is no rationale provided on specifically selecting oxathiapiprolin or this crop/pest combination for the work.
- The proposal is interesting science but unlikely to lead to a practical outcome.
- The justification is somewhat unclear. The applicant says the impacts of oxathiapiprolin on the rhizosphere microbiome are unclear. Why focus on a single AI and this one?
- Potential impacts seem limited.
- Economic feasibility is not clear.
- It's unlikely that greenhouse pot-bound microbial communities in autoclaved soil will relate realistically to any potential field application of this research.
- Impacts on soil microbiomes are very important. However, this project isn't about alternative management. It's about optimizing fungicide applications rather than replacing them with ecological pest management.
- The PI started with a focus on the fungicide rather than the actual pest.
- One support letter mentioned supporting implementation of research outcomes but did not provide details.
- All but one of the support letters were nearly identical in wording.
- The study design is not described in adequate detail to assess scientific methods.
- Some data analysis methods are not outlined in much detail.
- There was no mention that Trichoderma is apparently commonly used
- This proposal seems like fungicide efficacy testing that the manufacturer rather than DPR should fund.
- The proposal's budget seems high relative to its scope, and there is a lot of summer salary allotted for the PIs.
- Equipment purchase is somewhat substantial at \$10,000. Not an inherent problem, but with so many good proposals, it may be a consideration.

Points of Clarification

- Are the plants showing negative effects that make it seem like the rhizosphere is being disrupted?
- Why focus on a single AI and this one in particular?
- The only pesticide mentioned is the one to be tested. What fungicides are problematic that the biopesticide would replace?

Public Comment

- None.

Ma – Biochemical Fungicide for Powdery Mildew

Merits

- This is a well-conceived project.

- The project has a strong team.
- Letters of support are strong and come from relevant groups.
- These types of studies are critical for understanding how new biopesticides can be incorporated into existing management programs.
- An excellent proposal with potentially large impact and addressing important problems.
- The proposal's outreach component is welcome.

Concerns

- Sustainability Impact Factor is an interesting strategy for attempting to monetize sustainable practices. Is it practical?
- Lacks detail on methodology.
- Data analysis methods are not described.
- Lack of detail on how expenses were accounted for with collaborators.
- The request is for almost \$500,000 to conduct efficacy trials for a private company to bring a product to market. There are other more efficient methods to achieve this goal.
- A study involving a biopesticide that is not yet registered in the US, let alone California, should not be eligible for a PMAC grant.
- This biochemical appears to be an antibiotic, so the potential for contributing to antibiotic resistance in humans or animals needs to be evaluated.
- The focus is only on one AI versus Ding's proposal which would evaluate 10.
- The public interest not clear; it would be better if they tested multiple materials, not all from the same company or with the same company interest.
- The budget is very confusing and large for the work described.
- The budget request to pay salary for the product's company, travel, and other expenses not related to the research.
- Where is the product produced?
- The proposal contained very little about ecological management of PM generally.
- While the product itself is stable, does not require special handling and can be applied via various methods, there is very little here about the ecology of the pest and associated crops. The proposal also includes many treatments with synthetic fungicides.

Points of Clarification

- Why not test Ningnanmycin by itself as opposed to just replacing a treatment? Almost like funding traditional R and D? This PMAC member liked the project, but would want to see it tested alone, even with multiple applications.

Public Comment

- None.

Calderon-Urrea – Nematicide Testing

Merits

- The proposal includes a dissemination plan.
- This could be an efficacious alternative to fumigants for PPN.

- Strong PI

Concerns

- The research supports a private company. Although it would provide overall benefit, it's difficult to separate the proprietary benefits from global benefits.
- In the end, this is an efficacy trial for two bionematicides in order to support their registration by a company. Working with IR-4 through their existing field trial program is a more efficient method to achieve this outcome.
- PMAC funding should not be used for projects that center on efficacy testing of pesticide products that are not registered in the US, let alone California.
- No substantive information about toxicity of these products or the potential for contaminating surface or groundwater is provided.
- It seems like Telluris Biotech should be paying for EPA registration studies, not DPR.
- The proposal reveals that the lead researcher founded this company, which is based in India.
- The gene expression and metabolomics objectives are scientifically interesting but not likely to provide any practical results.
- The proposal describes field trials at the Fresno State farm and in cooperators' fields but these locations may not have a sufficient population of root knot nematodes to provide a good test.
- The proposal says the PIs will collect cost information but lacks mention of any specific staff assigned to this duty.
- The proposal checked state-wide geographic focus, but then also checked Fresno and Stanislaus counties.
- The project addresses an important issue that drives fumigant use. However, not enough information is provided in this proposal to support its claims.
- Letters of support are not strong – having support from a commodity group or independent researchers is important.
- Letters are only from the products' manufacturer, Telluris Biotech, and two San Joaquin Valley growers agreeing to be cooperators in the study. There are no attestations about the quality of work of researchers.
- The applicants seem to have misinterpreted the question about economic feasibility.
- The proposal is looking at alternative nematicides but non-nematicides integrated into this like natural resistance would be more persuasive.
- The proposal could explain the risk of fumigants more.
- The research is only testing bionematicides, not multiple methods. It would be better if they were using products from multiple companies.
- Hypotheses could be better supported; there is some preliminary support but none of the work referenced has been published.
- Budget is very large for the scope of work described.
- Yes, RKN is an important problem. And while using non-host or resistant cultivars is an important strategy, there are other strategies consistent with ecological pest

management approaches. The authors describe the problem very thoroughly except that there was very little about nematode ecology. Biological pesticides can be a good tool in transition to ecological management. As such, it would be important to discuss the impact of the proposed product on the many beneficial nematodes characteristic of healthy, productive soils. While “results indicate that no major changes in soil microorganisms are induced by the use of our products,” an ecological approach would support positive changes limiting the presence and impact of the RKN.

- It’s not clear why a metabolomics study is needed; seems like overkill.
- It wasn't clear in either Objective 2 or 3 when or how often the plantings will be treated with the nematicide. Nematicide rates were not given.

Points of Clarification

- None.

Public Comment

- None.

Brar – Pesticide Residues in Pistachio

Merits

- Well-designed study that addresses an important issue within the pistachio industry.

Concerns

- The investigators should look into the USDA and the Foreign Agricultural Service (FAS), and Technical Assistance for Specialty Crop Grants (TASC), as those entities focus on trade and international issues, which is what this proposal is about.
- An interesting study, but perhaps not as directly tied into IPM as some others.
- It is not clear if it addresses DPR priorities regarding sustainable pest management. The project primarily aims to understand the relationship between application rates, timing, and MRLs, but does not explore alternative management options to mitigate these issues.
- The application meets a few of the sustainability pillars but not many of the priority groups.
- A proposal to address pistachio rejections due to MRL exceedances in EU, which is an important issue but not the focus of this grant program. The work proposed in the first objective should have been done by the IR-4 or the registrants. Also, the study design should be a more extensive time course rather than 1 and 7 days post-application and at harvest. IR-4 has good resources for study design, sample analysis, and good laboratory practices but has not been leveraged for this proposal.
- This project addresses the problem of residues above the MRL levels for EU and other foreign markets; and about the application of synthetic pesticides. It is not about ecological pest management.
- Evaluating how to time pesticide applications to minimize residues in nut tissues is not IPM and could even lead to increased use of these pesticides, which pose health and environmental risks, especially to pollinators.

- The second objective (metabolomics) is scientifically interesting but does not have a practical benefit.
- The proposal lacked detail that other top studies provided.
- Very few details were given in Questions 1-4.
- Details on collection of cost data are not provided.
- The application documents list navel orangeworm as the pest but one letter of support lists Gill's mealybug.
- If pesticide labels are being followed, shouldn't the residual levels fall below the minimum based on data during the registration process?
- It was not specified what role letter writers would play.
- Letters come from the pistachio industry organizations, but they don't speak to the quality or effectiveness of the applicant's similar work.
- Risks are identified more in relation to economic losses due to pesticide residue and just very superficially about human health impacts.
- It mentions alternatives but doesn't really propose an exploration of them or a comparison of residuals. It is unclear if reducing use is mostly aimed at reducing residuals.
- Economic feasibility of the project to implement in the future is unlikely; this project is difficult to duplicate without the right equipment and expert knowledge.
- It is unclear whether suggested changes emerging from this would be possible to implement; possible alternatives are not really mentioned.
- This is not a hypothesis-driven but more an exploratory project. It would be nice to see hypotheses on residue based on what we know, though.
- It would be better to replicate how the pesticides are used in the field rather than doing three applications of everything.
- Processed nut samples would be better to analyze.
- It doesn't seem like this team has done much work with pesticide residue analysis.
- The plot sizes seem too small to prevent cross contamination.

Points of Clarification

- There are local private labs that conduct pesticide residue testing. It is unclear why the investigators proposed to build up technical knowledge at California State University, Fresno instead of working with those local labs and integrating a student learning element in that approach.

Public Comment

- None.

Following discussion of each proposal, public comment was invited. No public comment was received.

Decision on Recommendations

Process Discussion/Questions

During the meeting, PMAC members occasionally raised issues regarding process. Those included:

- In response to a question about when the Alliance Grants could be expected for review, Aimee Norman, Chief, Integrated Pest Management, DPR said that DPR is doing everything they can to get the grants to PMAC members for review as soon as possible, with the knowledge that PMAC members had limited time to review the proposals discussed at that day’s meeting.
- In response to a question about why some proposals included longer answers than the solicitation limits, Aimee Norman said that staff has in certain cases allowed exceptions.
- A PMAC member asked for background information when considering funding proposals similar to projects funded in the past.
 - The facilitator said that DPR is not able to provide that information, however the PMAC members can bring knowledge they have to the discussion.
- Multiple PMAC members said investigators should be encouraged to integrate their projects holistically versus submitting multiple proposals on the same or a similar research area, so that the PMAC can avoid considering competing proposals from the same PI focused on similar issues when limited resources are available.

Re-Ranking and PMAC Recommendations

Following the discussion, 13 PMAC members re-ranked the proposals.

Quorum was confirmed and the re-rankings were reviewed. Re-rankings are shown in the table below. With 13 PMAC members submitting re-rankings, the overall ranking order saw changes: the top two ranked proposals remained the same, the bottom four proposals remained the same, but there was significant reordering among several of the mid-range proposals.

The PMAC’s re-rankings elevated:

- Chloe - High Temp and CSI Effects on Termites
- Siddique - RNAi-based Resistance in Walnut
- Lee (Bedbug) - Bedbug Insecticide Resistance Diagnostic Test
- Dandekar - Rootstock Incorporated Protectants
- Cobb - Biocontrols for Fungus in CA Forestry
- Shogren - IPM for Eucalyptus Beetle

2025 Research Grants Program Final PMAC Proposal Rankings (average of 13 rankers)

Principal Investigator	Project Short Title	Final Ranking	Initial Ranking	Average Rank	Standard Deviation	High	Low
Rijal	Non Chemical Control in Pistachio and Almond	1	1	2.5	2.14	1	9
Gyawaly	Entomopathogens for Walnut Husk Fly	2	2	4.5	3.04	1	11
Choe	High Temp and CSI Effects on Termites	3	6	5.1	2.98	1	11
Siddique	RNAi-based Resistance in Walnut	4	7	7.8	4.12	1	15

Lee (Bedbug)	Bedbug Insecticide Resistance Diagnostic Test	5	10	8.1	3.80	2	16
Sadek	Microwave to Control Macrophomina in Strawberry	6	3	8.3	5.96	2	20
Hasegawa	Receptor Interference Technologies for Insect Pests	7	4	8.3	4.61	1	17
Lee (Dusts)	Dusts for Cockroach Control	8	8	8.5	3.61	1	17
Dandekar	Rootstock Incorporated Protectants	9	13	9.6	4.58	2	16
Cobb	Biocontrols for Fungus in CA Forestry	10	12	9.9	3.63	5	18
Taravati	Low-risk Mosquito Control	11	5	10.5	4.11	4	17
Lee (Sucralose)	Sucralose for Cockroach Control	12	9	10.5	5.00	2	19
Shogren	IPM for Eucalyptus Beetle	13	17	11.5	5.38	4	19
Ding	Biofungicides for Powdery Mildew	14	10	11.8	3.37	6	19
Presley	Borate Timber Treatment	15	14	13.2	5.09	3	21
Pan	AI for IPM in Tree Nuts	16	16	13.5	4.45	6	20
Rolshausen	Citrus Screen Houses	17	15	14.5	3.38	8	20
Khodadadi	Fungicide Effects in Citrus	18	18	18.0	1.84	14	21
Ma	Biochemical Fungicide for Powdery Mildew	19	19	18.4	2.37	15	21
Calderon-Urrea	Nematicide Testing	20	20	18.5	1.28	16	20
Brar	Pesticide Residues in Pistachio	21	21	19.8	1.51	17	21

A PMAC member proposed recommending the entire set of rankings and comments to DPR for its deliberation and decision making. Another PMAC member asked about the rationale for recommending the entire set of proposals. The recommender clarified their suggestion; it is difficult to come to a consensus as to where to draw the line above which proposals are to be considered, and, because DPR makes the final determinations, it makes sense to forward them the entire set of ranked proposals along with the comments given by PMAC members.

Facilitator Ariel Ambruster noted that the PMAC has forwarded the entire grant proposal spreadsheet and comments to DPR in the past, and doing so does not mean the PMAC is recommending all proposals for funding, but rather that the PMAC is forwarding the whole of its discussion to the Director for their consideration.

No PMAC members offered counterproposals.

The PMAC took a roll-call vote on the following:

The PMAC recommends that the entire grant proposal spreadsheet and comments by PMAC members be forwarded to DPR for their consideration.

The proposal was adopted unanimously by 20 PMAC members.

Closing Remarks

Deputy Director Thottathil thanked PMAC members for their interest, commitment and willingness to volunteer, as well as the time they committed to reviewing the proposals and attending the day's meeting.

The next PMAC meeting will take place on May 8, 2025 and will cover the Alliance Grant proposals.