



# SUMMARY | PEST MANAGEMENT ADVISORY COMMITTEE RESEARCH GRANT REVIEW MEETING CALIFORNIA DEPARTMENT OF PESTICIDE REGULATION

February 15, 2018

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## 1. Attendance

### Pest Management Advisory Committee (PMAC) Members

- |  |   |
|--|---|
| 1. Steve Blecker, California Department of Food and Agriculture (CDFA)               | 10. Caroline Cox, Center for Environmental Health         |
| 2. Jim Steed, Pest Control Operators of California                                   | 11. Julia Inestroza, California Citrus Mutual             |
| 3. Jim Farrar, University of California Statewide Integrated Pest Management Program | 12. Kendra Klein, Friends of the Earth                    |
| 4. Terry Gage, California Agricultural Aircraft Association                          | 13. Emily Marquez, Pesticide Action Network North America |
| 5. David Still, California State University Pomona, Agricultural Research Institute  |   |
| 6. Anne Katten, California Rural Legal Assistance Foundation                         |   |
| 7. Brenna Aegerter, University of California Cooperative Extension                   |   |
| 8. David Bakke, U.S. Forest Service (USFS)   |   |
| 9. Kevin Wright, California Agricultural Commissioners and Sealers Association       |   |

### California Department of Pesticide Regulation (DPR)

- |                           |                  |
|---------------------------|------------------|
| 14. Brian Leahy, Director | 18. Doug Downie  |
| 15. Joe Damiano           | 19. Megan Parker |
| 16. Nino Yanga            | 20. John Gerlach |
| 17. Mark Robertson        | 21. Matt Fossen  |

### **Facilitation Support**

22. Tania Carlone, California State University, Sacramento (CSUS)

23. Alex Cole-Weiss, CSUS

## **2. Opening Comments and Background**

### **Introductions and opening comments**

Brian Leahy, DPR Director, welcomed everyone and thanked members for joining the meeting.

Joe Damiano, Branch Chief, Pest Management and Licensing Branch, DPR, informed the PMAC that Mark Robertson, the lead for the DPR grants program, is retiring in May. Mr. Damiano thanked Mr. Robertson for his professionalism and dedication to the program. Mr. Damiano introduced John Gerlach as the grants program supervisor. Dr. Gerlach is a UC Davis graduate, where he studied the rapid evolution of weeds, rangeland issues, and biological invasions. His specialties include star thistle and knapweed. Mr. Damiano encouraged PMAC members to reach out to Dr. Gerlach to support an effective transition of leadership.

Doug Downie, Senior Environmental Scientist, Pest Management and Licensing Branch, DPR, invited PMAC members to attend the 2018 Integrated Pest Management (IPM) Summit which will occur on April 17, 2018. The summit is part of a DPR and University of California Integrated Pest Management Program (UC IPM) collaborative project on Pests, Pesticides, and IPM. He said PMAC members will receive an early registration link, and that several PMAC members are involved in the IPM project that is underway.

### **Background on DPR's Pest Management Research Grant Program, project proposal review, and basic procedures**

Dr. Downie provided PMAC members with an update on the 2018-2019 Alliance Grant Program, which funds projects that promote the adoption of established IPM practices that reduce the use of pesticides of human health or environmental concern through the guidance of a collaborative team of knowledgeable participants known as an "Alliance." The 2018-2019 Alliance Grant Program has \$400,000 available for funding proposals and DPR expects to award 2 projects. Key grant program milestones are as follows:

- The grant solicitation was released January 3, 2018.
- 14 concept proposals were received by February 2, 2018.
- Applicants were invited to submit proposals by February 23, 2018.
- The review period will start April 3, 2018.

The goal of this meeting was to obtain the PMAC's recommendations of Pest Management Research Grant proposals for possible DPR funding. Dr. Downie reviewed the number of responses to the solicitation for the Pest Management Research Grant and key grant program milestones:

- 19 concepts were submitted.
- 16 applicants invited to submit proposals—13 ag, 2 urban, 1 landscape.
- Grants will be awarded by the end of March 2018.
- The project start date is July 1, 2018.

DPR selected 16 project proposals for PMAC members' review. Proposals from outside of California are acceptable if projects are conducted under California conditions. The following table summarizes the proposals:

<b>2017-2018 Research Grant Summary of Submitted Proposals</b>		
<b>Proposal Short and Full Title</b>	<b>Principal Investigator</b>	<b>Budget</b>
<b>Choe heat treatment for termites</b> Reducing risks associated with fumigation by improving current heat treatment and localized treatment technologies	<b>Dong Hwan Choe</b> UC Riverside	\$194,316
<b>Dandekar copper-based alternatives</b> Testing a sustainable alternative to copper-based spray products to protect California crops against common diseases	<b>Abhaya Dandekar</b> UC Davis	\$439,139
<b>Dudley assessing shot hole borer invasion</b> Assessing the spread and effects of infestations of the invasive Polyphagous shot hole borer in California ecosystems	<b>Tom Dudley</b> UC Santa Barbara	\$425,000
<b>Gautam cold treatment for bean thrips</b> Cold treatment as a non-chemical alternative for postharvest management of bean thrips ( <i>Caliothrips fasciatus</i> Pergande)	<b>Sandipa Gautam</b> UC Riverside	\$493,095
<b>Hodde automated ant counts</b> To spray or not to spray? Using small cheap IR sensors to automate pest ant counts	<b>Mark Hodde</b> UC Riverside	\$413,306
<b>Hodson trap cropping</b> Trap cropping for Integrated Pest Management of nematodes in carrots	<b>Amanda Hodson</b> UC Davis	\$242,232
<b>Inderbitzin strawberry and lettuce management</b> Improved management of strawberry and lettuce soilborne plant pathogens using microbiome-based disease prediction	<b>Patrik Inderbitzin</b> UC Davis	\$484,018
<b>Mostafa alfalfa IPM</b> Toward establishing biologically reliant alfalfa IPM in the southwest USA	<b>Ayman Mostafa</b> University of Arizona	\$346,909
<b>Mostafa alfalfa weevil management</b> Revisiting alfalfa weevil management in irrigated southwest desert alfalfa	<b>Ayman Mostafa</b> University of Arizona	\$345,351
<b>Nansen drones to enhance biocontrol</b> Reducing pesticide risk by using drones to enhance performance of biological control	<b>Christian Nansen</b> UC Davis	\$161,443
<b>Powell NID herbicide alternatives</b> Nevada Irrigation District Herbicide Alternatives Research Program	<b>Brian Powell</b> Nevada Irrigation District (NID)	\$333,609
<b>Rosenheim mandarin resistance</b> Reducing pesticide use in citrus by capitalizing on previously-unrecognized innate resistance in mandarin species	<b>Jay Rosenheim</b> UC Davis	\$240,000
<b>Sutherland bait stations for termites</b> Evaluation of bait station system efficacy for reduced-risk subterranean termite management in California	<b>Andrew Sutherland</b> UC ANR	\$154,405
<b>Swett resistant tomato cultivars</b> Reducing fumigant use in processing tomato by enabling use of resistant cultivars to manage Fusarium diseases	<b>Cassandra Swett</b> UC Davis	\$70,000
<b>Westphal enhanced ASD</b> Enhanced application technology for improved economics of anaerobic soil disinfestation as a non-chemical preplant treatment	<b>Andreas Westphal</b> UC Riverside	\$412,214

## 2017-2018 Research Grant Summary of Submitted Proposals

Proposal Short and Full Title	Principal Investigator	Budget
Westphal nematode thresholds in almond Improved nematode threshold level determination in almond	Andreas Westphal UC Riverside	\$471, 510

Dr. Downie then introduced the facilitator Ms. Tania Carlone from California State University, Sacramento. Ms. Carlone reviewed the meeting goals:

- Identify the proposals PMAC considers fundable and unfundable
- Rank those proposals in order of preference
- Record merits and concerns for all proposals
- Provide Grant Program feedback

She encouraged members to contribute their input to help DPR make decisions.

One PMAC member commented that he recused himself from commenting on several projects because the principal investigators (PIs) are associated with the UC IPM program, and asked for clarification about needing to recuse himself from all UC ANR projects. DPR clarified that he did not need to recuse himself from all UC ANR associated projects.

### 3. Rankings Based on Reviewers' Scoring

Prior to the meeting, 11 PMAC members reviewed and scored the 16 proposals. The numeric scores were converted to ranks, where 1 was the most highly regarded proposal and 16 was the least, as presented in the following table:

Project	Rank	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15	R16	Avg	High	Low	\$
Gautam cold treatment for bean thrips	1	4	8	1	1	3	2	4	3.5	4	13	12	ND	1	3.5	7	16	5.53	1	16	\$493,095
Rosenheim mandarin resistance	2	8	2	2	6.5	8.5	7	1	5.5	8.5	3.5	6	ND	7	9	9	3.5	5.80	1	9	\$240,000
Dandekar copper based alternatives	3	6	13	3.5	3	12	12	12	16	3	7.5	2	1.5	3	7	2.5	2	6.62	1	16	\$439,139
Westphal enhanced ASD	4	1	5.5	6.5	12.5	1	6	8	1.5	7	5.5	11	11.6	5	3.5	9	15	6.85	1	15	\$412,214
Nansen drones to enhance biocontrol	5	2	7	9	10.5	2	16	15	3.5	2	2	9	10.2	12	1	5	5.5	6.98	1	16	\$161,443
Choe heat treatment for termites	6	7	ND	14	8.5	5	9.5	7	5.5	5.5	9.5	1	13.1	4	5.5	11	1	7.14	1	14	\$194,316
Swett resistant tomato cultivars	7	16	3.5	12	14	8.5	5	3	7.5	1	1	8	ND	ND	13.5	6	7	7.57	1	16	\$70,000
Hoddle automated ant counts	8	13	3.5	5	3	13.5	1	13	15	11.5	9.5	4	5.8	6	5.5	2.5	14	7.86	1	15	\$413,306
Mostafa alfalfa IPM	9	3	11	9	3	4	11	14	1.5	11.5	7.5	10	7.3	14	2	16	11	8.48	2	16	\$346,909
Sutherland bait stations for termites	10	11	ND	6.5	10.5	16	8	6	11	14	5.5	5	3.6	2	10	14	5.5	8.58	2	16	\$154,405
Hodson trap cropping	11	9	10	11	6.5	11	9.5	5	12	10	11.5	7	8.7	10	16	1	3.5	8.86	1	16	\$242,232
Westphal nematode thresholds in almond	12	14.5	1	9	12.5	15	4	10.5	13.5	8.5	11.5	3	3.6	8	11	12.5	8.5	9.16	1	15	\$471,510
Dudley assessing shot hole borer invasion	13	5	14	16	5	10	13.5	2	7.5	5.5	14	15	ND	9	13.5	12.5	12.5	10.33	2	16	\$425,000
Inderbitzin strawberry and lettuce management	14	12	5.5	3.5	15.5	13.5	3	9	13.5	14	15	13	ND	11	12	9	8.5	10.53	3	16	\$484,018
Mostafa alfalfa weevil management	15	10	9	13	15.5	7	13.5	10.5	10	14	3.5	14	16.0	15	15	15	12.5	12.09	4	16	\$345,351
Powell NID herbicide alternatives	16	14.5	12	15	8.5	6	15	16	9	16	16	16	14.5	13	8	4	10	12.09	4	16	\$333,609

## 4. Discussion of Proposals

Ms. Carlone commented on the larger than usual number of proposals received. She reviewed the proposals in the order of their initial ranking by PMAC members. PMAC members discussed the merits and concerns for all 16 project proposals.

Below is a summary of PMAC members' comments for each of the 16 proposals. Comments reflect individual PMAC member observations, not consensus opinions. Thus, merits and concerns may occasionally appear to be contradictory.

### Gautam cold treatment for bean thrips: Cold treatment as a non-chemical alternative for postharvest management of bean thrips (*Caliothrips fasciatus* Pergande)

#### Merits

- The proposal is well written, well-designed, and easy to follow.
- All the experiments were feasible and applicable to real world situations.
- The economic analysis was solid; there is a defined market.
- The project has opportunity to benefit the citrus industry—it is very practical and relevant.
- The project meets the priorities of the grant program.

#### Concerns

- The sensory evaluation of the effects of the cold treatment on fruit should include taste.
- It is a local problem because of atmospheric [pollution] problems.
- Given where pesticide treatments are occurring, the project is not a high priority.
- Methyl bromide has not been banned for postharvest treatment and the pesticides currently in use are not high risk pesticides.
- It is very expensive and the industry does not appear to be contributing. The state should not fund it at the full amount.
- The project is very expensive.

### Rosenheim mandarin resistance: Reducing pesticide use in citrus by capitalizing on previously-unrecognized innate resistance in mandarin species

#### Merits

- The project expands on existing data and targets potentially resistant cultivars. Good use of existing resources to continue to make a bigger impact.
- There is a strong IPM component. Eliminating one or two early season sprays would be of benefit.
- The project addresses high risk pesticides appropriate to the program.
- The objectives, experimental methods, and budget are all well done.

#### Concerns

- The scale of the problem is not clear.
- The proposal lacks economic analysis which makes it difficult to evaluate the potential impact of the project.

## **Dandekar copper-based alternatives: Testing a sustainable alternative to copper-based spray products to protect California crops against common diseases**

### **Merits**

- The project has a large and diverse team.
- The methodology is strong—positive and negative controls are good for evaluating the results.
- The project demonstrates innovative approach and technologies.
- There is assurance about the safety of the treatments being applied (one of the chemicals proposed is already used in the food industry)—the project has addressed toxicity and residuals issues.
- It is a good idea to get ahead of copper resistance issues.
- The project has the potential to impact a lot of acreage.

### **Concerns**

- Since iRNA is new technology should it be funded from this program?
- It is unclear if the project is a priority issue—copper is not a high risk pesticide.
- The iRNA technology targets housekeeping genes and if the targeted genes are conserved many non-target species could be affected which would make it a big challenge to implement.

## **Westphal enhanced ASD: Enhanced application technology for improved economics of anaerobic soil disinfestation as a non-chemical preplant treatment**

### **Merits**

- It is exciting to see the progress being made with the ASD technique, which is a viable alternative to fumigants.
- The project addresses a high risk pesticide and is an important area for IPM.
- Great replacement for fumigation, reducing the use of plastics is good, and the rolling compaction method is new.

### **Concerns**

- It is unclear what key ASD parameters are being measured (e.g., moisture, oxygen, and temperature) in order to define success.
- The proposed technique might not work well on sandy soils.
- Skeptical of the use growth chamber studies as soil moisture, oxygen, and temperature are not reflective of field conditions. This is the least effective and valuable part of the proposal—suggest removing this part.
- The proposal does not clarify the number of field trials at nurseries.
- The farm trials may be happening too late in the project timeline.
- Unclear methodology and justification.

## Nansen drones for enhanced biocontrol: Reducing pesticide risk by using drones to enhance performance of biological control

### Merits

- It is important to explore the use of drones and biocontrols are a perfect fit for the technology; good use of new technology.
- The proposal has a straightforward hypothesis and objective and is easy to grasp.
- The project has great potential to lead to further meaningful reductions in pesticide use.
- Miticides are clearly high risk.
- Targeting hotspots is a good IPM approach.
- The proposal is innovative and well written.
- It is important to reduce the cost of placement of biocontrol agents.
- Drones are important for low-toxicity approaches like this.

### Concerns

- The timing of predatory mites release might not be right for the biology of the species as you have to target the hot spots before the population builds and hot spots may be difficult to identify at that stage.
- In apple orchards it has not been shown to be effective so first do hand applications to test.
- There is a need for more preliminary research on the efficacy of the biocontrol method before delivery is addressed.
- Staffing needs to be carefully considered.
- Concerned about the development of flight stability software—this already exists and is in use by the agricultural industry.
- There is not enough information about the missions (e.g. acreage, runs).
- The proposal seems driven by the interest in the technology rather than the specific problem to be addressed. Misplaced focus on the drone payload technology instead.
- The project needs to be better integrated into existing grower practices. The growers who are using drones are already forward thinking—the drone component has already been engineered.
- Concerned about the future of the “bug bot”—whether it will be open source or sold to a company.
- Detection needs to be better integrated into the approach. The practical implementation in the field is limited unless there is additional instrumentation (to capture wind speed and direction). Biology is underdeveloped in the methods.
- Existing visualization software is not advanced enough to spot outbreaks. Since you are in the field already just hand apply.
- The proposal is weak on the economic analysis.
- The proposal did not include letters of support from people who will actually be using the technology in the fields (e.g., industry, extension).

## **Choe heat treatment for termites: Reducing risks associated with fumigation by improving current heat treatment and localized treatment technologies**

### **Merits**

- The proposal resubmission addresses comments from last round.
- The proposal included good letters of support.
- The project approach is reasonable and the methodology is sound.
- Advancing the capability of heat treatment is of great benefit.
- The project addresses an important problem.
- The proposal includes a good economic analysis.

### **Concerns**

- The project's potential for making a difference in consumer behavior is small. Termite control businesses cannot offer guarantees on localized heat treatment, and consumers are primarily concerned with guarantees. The industry needs something to help quantify the scope of the infestation in order to provide guarantees to consumers.
- The project needs to consider the timing of the test treatments and locations since season and geographical (Northern vs. Southern California differences in temperature may affect treatment results).

## **Swett resistant tomato cultivars: Reducing fumigant use in processing tomato by enabling use of resistant cultivars to manage Fusarium diseases**

### **Merits**

- The project addresses high risk pesticides and a tough problem.
- The potential benefits are high given the cost.
- The budget is reasonable.
- The project addresses an important area of investment (breeding resistant crops).
- The project will likely produce valuable information to the growers in real time. There are good preliminary data.
- The project is an important contribution to the long-term effort to breed resistant crops.

### **Concerns**

- The budget seems too low. There is not enough detail in the budget to determine where the gap might be. Note that one of the other committee members stated that Swett has other tomato industry support.

## **Hoddle automated ant counts: To spray or not to spray? Using small cheap IR sensors to automate pest ant counts**

### **Merits**

- The project demonstrates great use of technology and encourages remote monitoring.
- The project builds upon existing research, and is practical and achievable.
- Spatial autocorrelation is the right approach.



- The economic analysis is sound.
- Monitoring is a key component of IPM.
- The project addresses the potential reduction of high risk pesticide and is applicable to other crops.
- The proposal represents the best return on cost for the large cost proposals.
- Very useful for moving into the future, bug counts need to be known as right now farm advisors are just guessing.
- The project has the potential to have broad impact—an accurate calculation of thresholds helps counter fears that drive decisions.

### **Concerns**

- Proposal was not well written. There was repetition of work already done, and it is unclear what is being expanded upon. The task budget does not add up to the total funding request.
- The economic impact is not well stated and will the data remain in the public domain [Yes]?
- The data on number of “unnecessary sprays” is not clear.
- The intellectual property issues are not clear—concern about potential proprietary nature of the outcome. There might already be funding for this if it’s a private enterprise.
- Developing copyrighted technology is not an appropriate use of public funds.

### **Requested Clarification**

- What will remain in the public domain and what will be proprietary?

## **Mostafa alfalfa IPM: Toward establishing biologically reliant alfalfa IPM in the southwest USA**

### **Merits**

- The project addresses an important crop with a lot of acreage. Impact potential could be high.
- The project would provide a good alternative to pyrethroids and organophosphates.
- The background/preliminary data are good.
- The project is high priority due to drift incidents from alfalfa fields, and ambient levels of pesticides in the air.
- The project approach is original.

### **Concerns**

- The project doesn’t work on establishing new thresholds for aphids.
- It is not clear how the identification of a resistant fungus in the field would be taken forward in the lab—study design is not clear regarding fungi use.
- It is potentially difficult to culture the fungi at a scale that would be relevant—do not have pathologist on the team.

- It is not clear what ecological conditions are needed to support the fungi—climatic patterns might not be reliable. Implementation might require specific understanding of localized ecological conditions.
- The proposal is sloppy.

### **Sutherland bait stations for termites: Evaluation of bait station system efficacy for reduced-risk subterranean termite management in California**

#### **Merits**

- The project addresses an important problem.
- The approach is straightforward.
- There is a strong team.
- This proposal is a resubmission and addresses previous comments and concerns.

#### **Concerns**

- The experimental setup does not seem like it would yield good data—too much variability.
- The project will not make a difference to use of high risk pesticides since it will have very little impact to consumer choice. Baits are more of a marketing tool rather than a treatment tool in the industry today. Baits are useful for extending confidence in the protection of structures, but not as a primary treatment approach.
- The sample size is too small—probably need double the size.

### **Hodson trap cropping in carrots: Trap cropping for Integrated Pest Management of nematodes in carrots**

#### **Merits**

- There are many fumigants used in carrots.
- The background and preliminary data show promise for this alternative.
- The project demonstrates an innovative approach.
- The proposal included clearly defined roles.

#### **Concerns**

- The experimental design does not reflect field conditions—concerned that data obtained in growth chambers regarding degree days will not be enough. The controlled experiments are not balanced by field trials.
- The study design is unlikely to convince growers.
- The proposal did not include letters of support from the carrot industry, organic growers, or any cooperating grower.
- The approach may not work, since the threshold for nematodes in carrots is zero.
- Wet fallow does not seem like an effective approach.

## Westphal nematode thresholds in almond: Improved nematode threshold level determination in almond

### Merits

- The approach is solid—quantitative, straightforward, builds upon existing approaches.
- The project is viable and feasible.
- The project uses a large soil sample for the PCR, which gives them a lot more power to understand what is happening the field.
- This is a good potential approach for monitoring nematodes over time.

### Concerns

- The budget and roles need more specificity.
- The project is costly. Prefer to fund more projects at smaller amounts.
- The project is more about selective fumigation rather than substitution of better alternatives to fumigation.
- The economic analysis was not very robust.
- Fumigants also address other crucial pests in almonds—the project might not actually reduce fumigant use if limited to nematodes.

## Dudley assessing shot hole borer invasion: Assessing the spread and effects of infestations of the invasive Polyphagous shot hole borer in California ecosystems

### Merits

- The project addresses an important pest that has the potential to impact multiple areas (e.g. riparian areas, urban tree cover, avocado industry) and impacts are connected to other dynamics in the state (e.g., forest restoration, fire).
- The project has a strong team.
- The study design focuses on finding genetic resistance, which offers promise for breeding.
- The feeding deterrent objective is strong.

### Concerns

- The economic analysis of the pest's impact is difficult to quantify.
- The proposal did not make a strong case that the target pesticides are high risk.
- The proposal did not include a support letter from the avocado industry.
- The project is potentially duplicative of research efforts being conducted at UC Riverside—not clear how this project is additive or different from existing efforts.
- Research methodology is flawed (e.g. using dead branches does not support finding genetic resistance; need to address water availability and stress).

## **Inderbitzin strawberry and lettuce management: Improved management of strawberry and lettuce soilborne plant pathogens using microbiome-based disease prediction**

### **Merits**

- The project targets pesticides that are high risk.
- The study design includes a “back-up” plan (greenhouse).
- The project diagram was very helpful.
- Demonstrates an innovative approach.

### **Concerns**

- The research methods and approach do not achieve objectives fully (should use metagenomics approach and informatics).
- The project is costly.
- The outcomes might not be applicable to smaller growers—concerned they will only be available to the largest growers.
- The confidence interval for modeling (80%) is not likely to convince growers.
- The project draws on limited data—a lot is left in the soil.

## **Mostafa alfalfa weevil management: Revisiting alfalfa weevil management in irrigated southwest desert alfalfa**

### **Merits**

- Updating thresholds for alfalfa weevil is important. The project targets pesticides that are high risk.
- The logic model was very helpful.
- Inclusion of surveys is a good approach.
- The project has high potential impact given crop acreage.

### **Concerns**

- The project is very similar to a current research project.
- The outreach component is not justified in the scope for the budget.
- The proposal needs to address what has changed to make more information necessary—cannot just say the information is outdated.
- The approach does not seem to address primary pest problems in alfalfa fields.

## **Powell NID herbicide alternatives: Nevada Irrigation District Herbicide Alternatives Research Program**

### **Merits**

- The project has a high impact potential by engaging irrigation districts—this is an underserved group.
- The project addresses an important problem.
- The team is well-qualified.
- The economic analysis is sound.

- The treatment is straightforward and logical.

### **Concerns**

- The project does not have a weed scientist or a statistician.
- There are more efficacious alternatives than what is being proposed.
- It is debatable whether the project addresses a high risk pesticide.
- Do not see a need for the project.

### **Requested Clarification**

- Will the applications of the project be proprietary in California and/or Australia?

## **5. Revised Rankings and Summary Recommendations**

Based on the discussion, PMAC members who had participated in the initial review re-ranked the 16 proposals. Re-ranking results are shown in the table below:

Project	Rank	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	Avg	High	Low	\$
Rosenheim mandarin resistance	1	2	2	4	6	2	2.5	1	2	3	3	3	2	9	3.19	1.00	9.00	\$240,000
Swett resistant tomato cultivars	2	3	3	ND	3	3	1	2	13	4	5	4	3	1	3.75	1.00	13.00	\$70,000
Gautam cold treatment for bean thrips	3	9	1	6	12	1	5	4	1	2	2	2	4	6	4.23	1.00	12.00	\$493,095
Westphal enhanced ASD	4	5	4	3	9	7	7	8	9	1	1	1	1	3	4.54	1.00	9.00	\$412,214
Choe heat treatment for termites	5	10	7	2	2	5	8	6	10	6	4	7	5	7	6.08	2.00	10.00	\$194,316
Hodde automated ant counts	6	4	6	7	5	4	4	13	5	15	10	15	8	4.5	7.73	4.00	15.00	\$413,306
Nansen drones to enhance biocontrol	7	12	9	11	8	11	2.5	15	4	5	6	6	7	8	8.04	2.50	15.00	\$161,443
Westphal nematode thresholds in almond	8	1	13	1	4	6	9	10	6	12	12	13	13	13	8.69	1.00	13.00	\$471,510
Dandekar copper based alternatives	9	15	5	5	1	9	6	12	3	16	15	15	16	2	9.23	1.00	16.00	\$439,139
Dudley assessing shot hole borer invasion	10	14	8	9	15	8	13	3	12	7	9	11	11	4.5	9.58	3.00	15.00	\$425,000
Mostafa alfalfa IPM	11	8	12	12	10	12	10	14	7	9	7	9	6	15	10.08	6.00	15.00	\$346,909
Hodson trap cropping	12	13	11	13	7	10	15	5	14	8	8	10	10	10.5	10.35	5.00	15.00	\$242,232
Sutherland bait stations for termites	13	11	15	8	11	14	11	7	15	14	11	14	12	13	12.00	7.00	15.00	\$154,405
Inderbitzin strawberry and lettuce management	14	7	16	10	13	13	12	9	11	13	13	16	14	10.5	12.12	7.00	16.00	\$484,018
Mostafa alfalfa weevil management	15	6	14	15	14	15	14	11	8	11	14	12	15	13	12.46	6.00	15.00	\$345,351
Powell NID herbicide alternatives	16	16	10	14	16	16	16	16	16	10	16	8	9	16	13.77	8.00	16.00	\$333,609

Ms. Carlone asked if PMAC members considered any of the proposals to be unfundable. PMAC members discussed the list of projects and agreed that projects ranked 1-6 are fundable. There was a divergence of opinion amongst members on projects ranked 7 and 8. PMAC members agreed that all projects ranked below 8 are not fundable. PMAC members expressed that all submitted proposals should receive comments.

## **6. Grant Program Process Feedback**

PMAC members were invited to provide feedback to DPR on the Grant Program review process. Several individuals expressed that the number of proposals to review was too large. A committee member encouraged DPR to let people know that high cost proposals need to be very high caliber and very complete.

The following summarizes PMAC members' suggestions for improvements:

- Adjust the review process to make it more linear for the reviewer in terms of evaluating the proposal on the required criteria.

- Improve the FFAST system.
- Make it clearer that PMAC members are the intended audience for proposals so PIs are encouraged to write to the review committee (i.e., avoid scientific jargon).
- The solicitation focus should be clear that proposals need to address high risk pesticides.
- In the case of many proposals to review, consider breaking up the list into smaller groups so not everyone has to review all proposals.
- Limit the number of proposals received to ten and limit to one proposal per PI.
- Eliminate the preliminary proposal section or highlight where the secondary proposal begins.
- Consider adding a logic model as a proposal requirement.
- Consider establishing a cap of \$330,000 in order to fund three proposals.
- Review history of maximum caps to make sure it is set at an appropriate level.
- Suggestion to add to the metrics, “Are the roles of the personnel adequately described?”

## 7. Closing Remarks

Director Leahy concluded the proposal review discussion by thanking PMAC members for reviewing and commenting on the proposals. There was great discussion on important issues, and he encouraged PMAC members to attend the April IPM summit. He also told PMAC members that DPR has a new legislative director, Ken Spence, and encouraged PMAC members to introduce themselves and help provide background information on the grants process.

### Upcoming PMAC Meeting

- May 10<sup>th</sup>, 2018