

Reviewing and Rating 2018-2019 Pest Management Research Grant Proposals

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Funded Projects, 2017-2018 Research Grants

- *Alternatives to soil fumigants in California's fresh market carrot production.* PI: Jörn (Ole) Becker, UC Riverside
- *Utility of Brassica crops for nematode suppression by biofumigation and co-cropping in walnut orchards.* PI: Andreas Westphal, UC Riverside
- *New fruit fly attractants to reduce pesticide use in eradication program.* PI: Spencer Walse, USDA
- *Development of site-specific management of soil pests using molecular quantification, remote sensing, and field scouting.* PI: Alex Putman, UC Riverside

http://www.cdpr.ca.gov/docs/pestmgmt/grants/research/summaries/2017_awards.htm#alternative_fumigants

2018-2019 Pest Management Alliance Grants

- Solicitation released January 3, 2018
- 14 Concepts received February 2
- Invitations to submit proposals February 23
- DPR will fund projects that promote adoption of established IPM practices that reduce use of pesticides of human health or environmental concern through the guidance of a collaborative team of knowledgeable participants known as an Alliance.
- Proposal review will begin April 3



2018-2019 Funding Priorities and Other Details

- We expect to award \$1.1 million dollars, pending administrative approval.
- The funds will be awarded competitively to projects that develop IPM to reduce risks associated with high-risk pesticides.
- DPR will consider proposals requesting \$50,000 to \$500,000.
- DPR expects to fund two to four projects.



Response to the solicitation

- 19 concepts submitted
- 16 applicants invited to submit proposals
 - 13 ag, 2 urban, 1 landscape
- Grants to be awarded by end of March, 2018
- Project start date, July 1, 2018



Reducing risks associated with fumigation by improving current heat treatment and localized treatment technologies

PI: Dong Hwan Choe
Organization: UC Riverside
Amount Requested: \$194,316

Incorporate volatile botanical oils to reduce the temperature and heating time required during heat treatment to achieve drywood termite control. Increase efficacy of localized insecticide treatments targeting drywood termites by incorporation of volatile oils and trail pheromone.

Short title: Choe heat treatment for termites



Testing a sustainable alternative to copper-based spray products to protect California crops against common diseases

PI: Abhaya Dandekar
Organization: UC Davis
Amount Requested: \$439,139

Test efficacy of a broad-spectrum antimicrobial peptide (AMP) as a sustainable alternative to copper-based products. Secondly, counteract resistance development and enhance disease-specific efficacy by supplementing the natural AMP with interfering RNA.

Short title: Dandekar copper based alternatives



Assessing the spread and effects of infestations of the invasive Polyphagous shot hole borer in California ecosystems

PI: Tom Dudley
Organization: UC Santa Barbara
Amount Requested: \$425,000

Build a better understanding of SHB population dynamics and host damage by tracking infestation rates and disease progression over time, conduct host preference and susceptibility trials, and conduct experiments assessing the efficacy of deterrents that may be used to repel SHB.

Short title: Dudley assessing shot hole borer invasion



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

PI: Sandipa Gautam
Organization: UC ANR
Amount Requested: \$493,095

Evaluate effects of low temperature treatments on survivorship of bean thrips and fruit quality for export market. Conduct commercial scale trials, and produce an economic analysis of costs associated with treatment to identify a technically and economically effective postharvest treatment option to control bean thrips.

Short title: Gautam cold treatment for bean thrips



To Spray or Not To Spray? Using Small Cheap IR sensors to Automate Pest Ant Counts

PI: Mark Hoddle
Organization: UC Riverside
Amount Requested: \$413,306

Develop and refine technology to accurately monitor ant activity to treat when action thresholds are crossed using small infrared (IR) sensors that can "count" ants moving in feeding trails. Ant count data will be wirelessly transmitted from IR sensors to smart devices so pest managers can make highly targeted pesticide applications to treat ants in specific areas when needed.

Short title: Hoddle automated ant counts



Trap Cropping for Integrated Pest Management of Nematodes in Carrots

PI: Amanda Hodson
Organization: UC Davis
Amount Requested: \$242,232

Optimize trap cropping with seeded trap crops and by germinating native vegetation through a "wet fallow" treatment. Goals include (1) Screening a range of trap crops for relative nematode susceptibility and practicality, (2) Determining optimum timing for trap crop termination, (3) Validating the method in field trials and modeling nematode degree-days using soil temperature and weather station data.

Short title: Hodson trap cropping in carrots



Improved management of strawberry and lettuce soilborne plant pathogens using microbiome-based disease prediction

PI: Krishna Subbarao / Patrik Inderbitzin
Organization: UC Davis
Amount Requested: \$484,018

Use high throughput DNA sequencing and machine learning techniques to predict pre-plant inoculum densities of major soilborne pathogens in the strawberry-lettuce cropping system, based on the community structure of the soil microbiome.

Short title: Inderbitzin strawberry and lettuce management



Toward Establishing Biologically Reliant Alfalfa IPM in the Southwest USA

PI: Ayman Mostafa
Organization: University of Arizona
Amount Requested: \$346,909

Investigate natural and commercially available entomopathogenic fungi for aphid control in the alfalfa cropping system and the applicability of this control method as part of an integrated pest management approach to control alfalfa aphids in the low desert.

Short title: Mostafa alfalfa IPM



Revisiting Alfalfa Weevil Management in Irrigated Southwest Desert Alfalfa

PI: Ayman Mostafa
Organization: University of Arizona
Amount Requested: \$345,351

Update the economic threshold for AW in the southwest production region, investigate the efficacy of selective vs. broad-spectrum insecticides, and conduct an outreach program to support adoption of new threshold and reduced-risk AW control in alfalfa.

Short title: Mostafa alfalfa weevil management



Reducing pesticide risk by using drones to enhance performance of biological control

PI: Christian Nansen
Organization: UC Davis
Amount Requested: \$161,443

Further develop and test, in experimental settings and commercial strawberry fields, an existing prototype and accompanying software of a drone-mounted dispenser of predatory mites, important natural enemies of spider mites.

Short title: Nansen drones for enhanced biocontrol



Nevada Irrigation District Herbicide Alternatives Research Program

PI: Brian Powell
Organization: Nevada Irrigation District (NID)
Amount Requested: \$333,609

Expand and refine integrated vegetation management by: 1) reducing application of glyphosate by incorporating alternative products and methods; 2) field testing chemical, biological, and mechanical methods that are consistent with IPM principles; 3) analyzing data to inform development of a comprehensive IVM program and plan; and 4) share findings and best practices with stakeholders.

Short title: Powell NID herbicide alternatives



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

PI: Jay Rosenheim
Organization: UC Davis
Amount Requested: \$240,000

Test, in replicated field studies, whether two highly marketed species of mandarins, *C. clementina* and *C. unshui*, are naturally resistant to direct damage by katydids, and determine the mechanism(s) of resistance using preference and performance experiments with katydids, thrips and cutworm.

Short title: Rosenheim mandarin resistance



Evaluation of bait station system efficacy for reduced-risk subterranean termite management in California

PI: Andrew Sutherland
Organization: UC ANR
Amount Requested: \$154,405

Evaluate the efficacy of registered bait station systems for subterranean termite management in single-family homes in southern and northern CA. Will measure termite density and flight activity, confirm termite colony identity based on DNA analysis and determine average time required for termites to find bait stations.

Short title: Sutherland bait stations for termites



Reducing fumigant use in processing tomato by enabling use of resistant cultivars to manage Fusarium diseases

PI: Cassandra Swett
Organization: UC Davis
Amount Requested: \$70,000

Objectives are to: (1) enable resistant cultivar selection through rapid DNA-based diagnosis; (2) preserve resistant cultivar efficacy; (3) identify diagnostic traits and resistant cultivars; and (4) disseminate this information to enable fumigation reductions.

Short title: Swett resistant tomato cultivars



Enhanced application technology for improved economics of anaerobic soil disinfestation as a non-chemical preplant treatment

PI: Andreas Westphal
Organization: UC Riverside
Amount Requested: \$412,214

Use a specialized rototiller with a sealing-compacting roller that may allow foregoing the tarp cover, simplifying irrigation. Field studies will extend detailed investigations of the optimum irrigation and soil temperatures for ASD in differently textured soils.

Short title: Westphal enhanced ASD



Improved nematode threshold level determination in almond

PI: Andreas Westphal
Organization: UC Riverside
Amount Requested: \$471,510

Build an advisory system using DNA extraction from soil samples followed by quantitative real time PCR to assess the frequency of pathogenic organisms for management of almond in California to reduce the use of 1,3-D.

Short title: Westphal nematode thresholds in almond



Scoring and Ranking Process

- Single pool of proposals for review
- All proposals scored on merit, regardless of research focus
- Scoring using reviewers ranks of numerical scores



Today's Goals:

- Identify the proposals PMAC feels are fundable.
- Rank those proposals in order of preference.
- Record strengths and concerns for all proposals.

Folder Contents:

- Agenda
- Ground Rules
- PMAC Score totals
- Presentation
- Proposal Summaries
- Individual scores and comments

Tania Carlone, Associate Facilitator, CSUS Center for Collaborative Policy
Alex Cole Weiss, Assistant Facilitator, CSUS Center for Collaborative Policy



Scores

Project	RANKED SCORES																Avg	High	Low	\$	cumulative \$	
	Rank	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15						R16
Gaulem 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	\$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	\$733,095
Danekar copper based alternatives	3	6	13	3.5	3	12	12	16	3	7.5	2	1.5	3	7	2.5	2	6.62	1	16	\$439,139	\$1,172,234	
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	\$1,584,448
Nansen drones for enhanced 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	\$1,745,891
Choe heat treatment for termites	6	7	ND	14	8.5	5	8.5	7	5.5	5.5	0.5	1	13.1	4	5.5	11	1	7.14	1	14	\$194,316	\$1,940,207
Sweet 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	\$2,010,207
Hoffler automated ant counts	8	13	8.5	5	3	13.5	1	13	15	11.5	0.5	4	5.8	6	5.5	2.5	14	7.86	1	15	\$413,306	\$2,423,513
Missile alpha and	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	\$2,770,422
Sheffield 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	8.86	2	16	\$154,405	\$2,924,827
Indian trap cropping in carrots	11	9	10	11	6.5	11	9.5	5	12	10	11.5	7	8.7	10	16	1	3.5	9.16	1	15	\$242,232	\$3,167,059
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	\$3,638,569
Bojler 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	12.5	10.33	2	16	\$425,000	\$4,063,569
Indehibitor 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	\$4,547,587
Montela alfalfa weevil management	15	10	9	13	15.5	7	13.5	10.5	10	14	3.5	14	16.0	15	15	12.5	12.09	4	16	\$345,351	\$4,892,938	
Powell NID herbicide alternatives	16	14.5	12	15	8.5	6	15	16	9	16	16	14.5	13	8	4	10	12.09	4	16	\$333,609	\$5,226,547	