WHAT IS OPCA?

OPCA works closely with the Department of Pesticide Regulation (DPR) and academic institutions to analyze the economic and pest management impoact of proposed pesticide regulations on production agriculture.

HOW IS OPCA FUNDED?

OPCA is funded by a small assessment of 0.075 cents per dollar of agricultural pesticide sales and from California's General Fund. OPCA receives General Fund money for some grant programs.

RESEARCH

Over *20*

Major reports completed for DPR on proposed regulations since 2018

Over *6*

Published research papers in peer reviewed journals since 2018

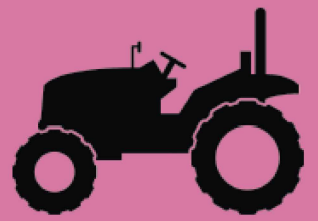
RECENT WORK

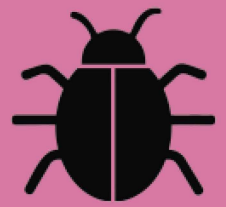
3 reports

and a

published

study on DPR's neonicotinoid regulations





Submitted comments on EPA's draft Herbcide Plan

Served as technical advisors on the Sustainable Pest Management Roadmap

For more info: www.cdfa.ca.gov/oefi/opca

Who we are

Kevi Mace, PhD

Senior Environmental Scientist (Supervisor)

PhD Environmental Science, Policy, and Management, University of California, Berkeley

Brian Gress, PhD

Senior Environmental Scientist

PhD Biology, Syracuse University
Postdoctoral fellow Entomology, University of California, Davis

Benjamin Lee, PhD

Senior Environmental Scientist

PhD in Entomology, Washington State University
Postdoctoral Fellow Entomology, University of California, Davis

Fatemeh Ganjisaffar, PhD

Senior Environmental Scientist

PhD in Entomology, University of California, Riverside
Postdoctoral Scholar, Entomology University of California, Riverside and University of California, Davis

Patricia Bohls

Senior Environmental Scientist

MS in Entomology, University of California, Davis

Our work

1

Coordinate and conduct economic and pest management analyses of DPR proposed regulation related to pesticides

2

Run six grant programs

3

Serve as internal and external agricultural pest management and policy experts for CDFA

1 Our work

1

Coordinate and conduct economic and pest management analyses of DPR proposed regulation related to pesticides

2

Run four grant programs

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1 Regulatory analysis work

- OPCA's function was formed when Department of Pesticide Regulation was created FAC Section 11454.2
- Funded by a supplemental portion (0.075 cents per dollar of agricultural pesticide sales) of the pesticide mill assessment that funds DPR FAC Section 11454.2
- CDFA's consultative role
- Details of this relationship outlined in Memorandum of Understanding (MOU) between CDFA & DPR
  - First MOU signed in 1992 & updated periodically to reflect changes as OPCA's functions have expanded
  - Most recent MOU signed in 2019

1

Regulatory analysis work




CDFA provides information to DPR on the pest management and economic impacts of proposed regulations

CDFA may provide input to DPR on issues related to:

- Suspension or cancellation of pesticide registration/uses
  - Pursuant to FAC sections 12825, 12826, 12988
- Measures adopted to mitigate unacceptable adverse effects
  - Toxic air contaminant determination
  - Groundwater contamination prevention
  - Worker safety

1

CDFA may provide input to DPR on issues related to:

- Special local need registration denied
  - pursuant to Section 136v of Title 7 of US Code
- Emergency exemption from registration denied
  - pursuant to Section 136p of Title 7, Section 18 of FIFRA
- Denial of new pesticide active ingredient registrations

1

Recent projects & analyses

- Economic impact of proposed updates to Notice of Intent filings
- Economic impact of proposed 1,3-D regulations
- Economic and pest management evaluation of nitroguanidine-substituted neonicotinoid insecticides
- Economic evaluation of changing the definition of ‘active’ time for bees
- Estimated cost of the withdrawal of the insecticide chlorpyrifos for six major California crops
- Financial effect of limiting pesticide use near schools for almonds in nine counties depends on soils and weather
- The economic importance of organophosphates in California agriculture
- Economic and pest management evaluation of the herbicide dacthal in California agriculture

Photo from CA Grown

Table from recent report: Estimated increase in pest management costs by crop and year ($1,000s)

1

Crop	2015	2016	2017

Economic and pest management evaluation of the withdrawal of chlorpyrifos: six major California commodities

Prepared for the Department of Pesticide Regulation by the California Department of Food and Agriculture's Office of Pesticide Consultation and Analysis and the University of California

Rachael Goodhue[1], Kevi Mace[1,2], Jessica Rudder[1], Tor Tolhurst[1], Daniel Tregeagle[1], Hanlin Wei[1], Beth Grafton-Cardwell[3], Ian Grettenberger[1], Houston Wilson[3], Robert Van Steenwyk[4], John Steggall[1,2]

[1]University of California, Davis
[2]California Department of Food and Agriculture
[3]University of California, Riverside
[4]University of California, Berkeley

- What is the role of chlorpyrifos in pest management?
- What alternatives to chlorpyrifos exist?
- What are the costs and risks of chlorpyrifos withdrawal?

1 Chlorpyrifos Report: Alfalfa Example

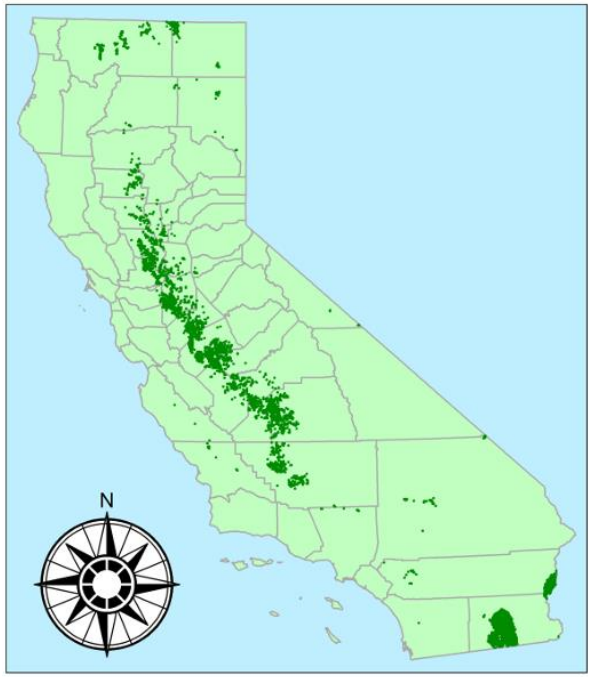

Figure 3. California alfalfa production: 2017

year	month	county	crop	ai	product	acres_treated_ai
2017	July	Merced	Alfalfa	chlorantraniliprole	Dupont Coragen Insect Control	14973.97
2021	July	Riverside	Alfalfa	chlorantraniliprole	Prevathon Insect Control	14248.60
2021	July	Merced	Alfalfa	chlorantraniliprole	Prevathon Insect Control	12936.54
2018	August	Merced	Alfalfa	chlorantraniliprole	Dupont Coragen Insect Control	12619.42
2022	August	Imperial	Alfalfa	chlorantraniliprole	Prevathon Insect Control	12574.00

- Evaluate current insecticide use, assume alternatives will take place of chlorpyrifos to control insect pests

Table 5. Average Annual Acreage Shares of Alternative Insecticides with and without Chlorpyrifos: Alfalfa, 2015–2017

Active ingredient	Chlorpyrifos available (%)	Chlorpyrifos withdrawn (%)
bacillus thuringiensis	1.0	1.2
beta-cyfluthrin	3.0	3.4
chlorantraniliprole	4.3	4.9
cypermethrin	0.1	0.1
dimethoate	15.1	17.0
flonicamid	5.4	6.1
flupyradifurone	5.4	6.1
indoxacarb	11.7	13.2
lambda-cyhalothrin	25.3	28.5
malathion	3.4	3.9
methomyl	2.3	2.6
methoxyfenozide	8.2	9.2
permethrin	3.1	3.5
phosmet	0.1	0.1
spinosad	0.2	0.2
Total	88.6	100

Note: Three years average from 2015-2017. Numbers may not add to 100% due to rounding

1 Chlorpyrifos Report: Alfalfa Example

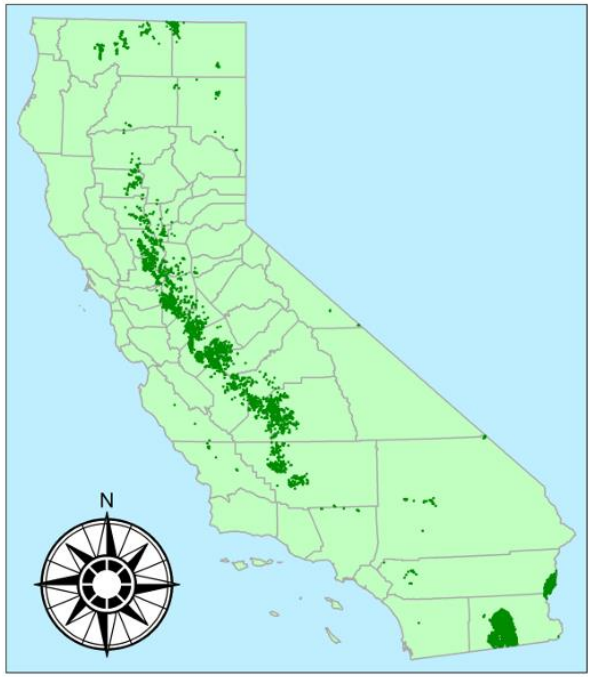

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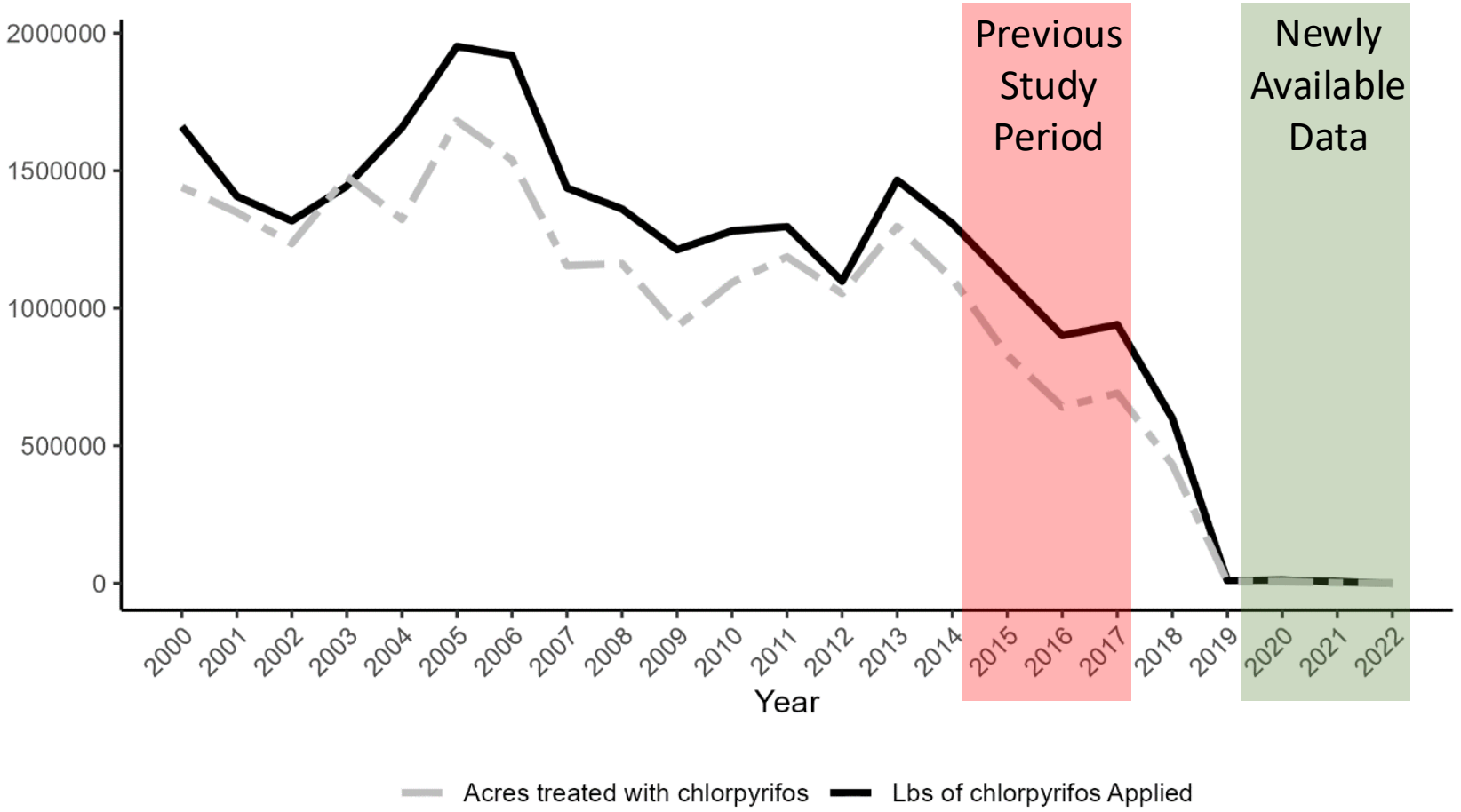
Table 6. Costs Per Acre for Chlorpyrifos and the Composite Alternative: Alfalfa

Active ingredient	Material cost per acre ($)	Cost increase for switching to composite alternative (%)
chlorpyrifos	4.28	221.7
composite Alternative	13.77	-

Table 7. Change in Treatment Costs due to the withdrawal of Chlorpyrifos: Alfalfa, 2015–2017

Year	Chlorpyrifos available($)	Chlorpyrifos withdrawn ($)	Change in cost ($)	Change in cost (%)
2015	954,687	3,071,456	2,116,770	221.7
2016	588,324	1,892,779	1,304,455	221.7
2017	657,458	2,115,201	1,457,742	221.7

1 Chlorpyrifos Report: Retrospective



- How accurate and informative were our predictions?
- How has the industry adapted after chlorpyrifos withdrawal?
- What were the primary drivers of change?

1

Table ES-1: Summary of Annual Cost Differences between Projected and Realized Withdrawal Costs by Crop

Crop	Projected Annual Costs of Withdrawal 2015-2017	Realized Annual Costs of Withdrawal 2020-2022	Difference ($)	Difference (%)
Alfalfa	1,519,138	1,344,641	-174,497	-11.5
Almond	621,196	1,612,752	991,556	159.6
Citrus	982,422	1,265,733	283,311	28.8
Cotton	849,518	807,778	-41,740	-4.9
Grape, raisin and table	2,371,889	2,005,808	-366,081	-15.4
Grape, wine	1,904,648	2,558,610	653,961	34.3
Walnut	805,418	1,197,819	392,402	48.7
Total	**9,054,229**	**10,793,141**	**1,738,912**	**19.2**

1

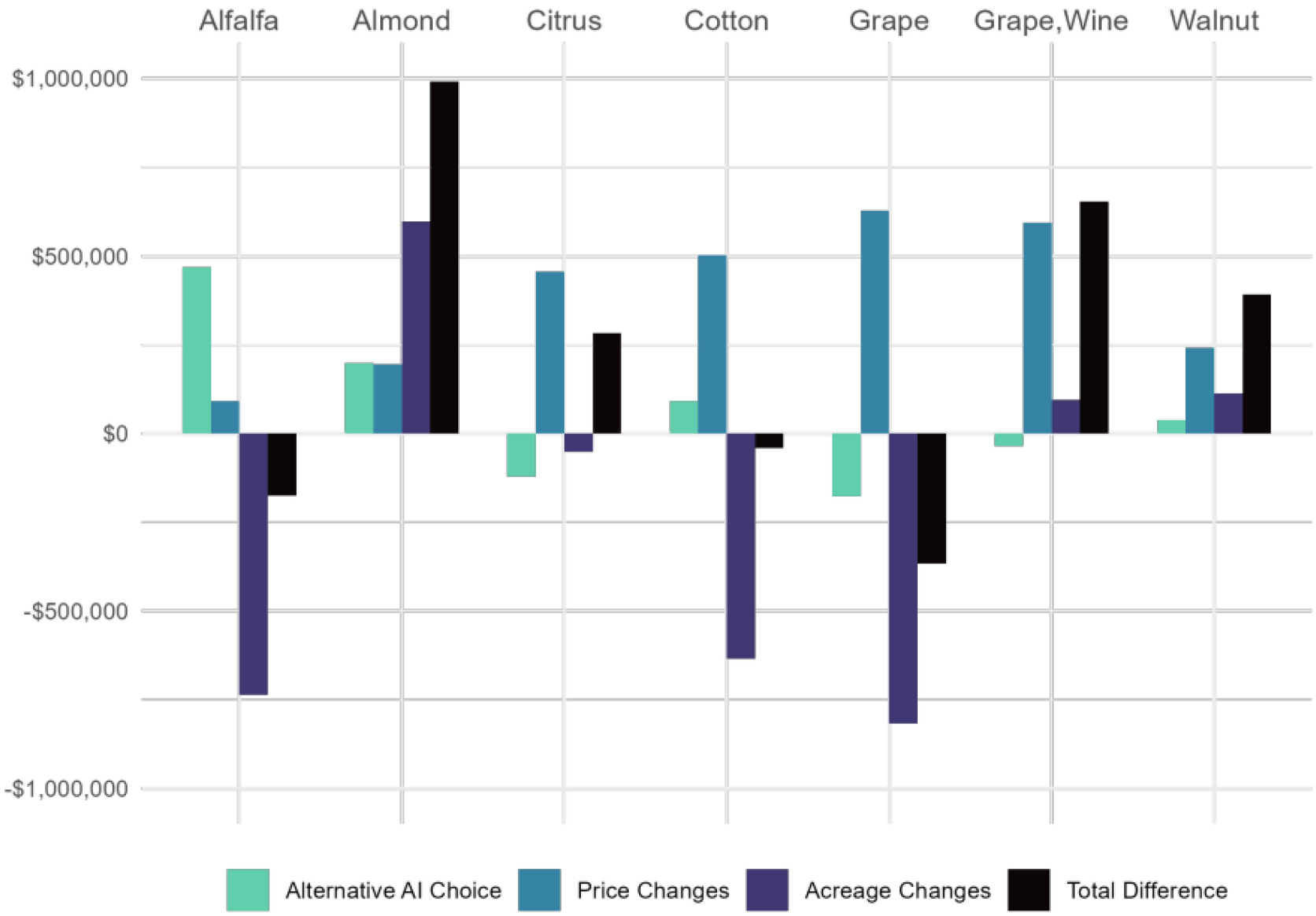


Figure ES-1: Annual Differences between Projected and Realized Withdrawal Costs and Costs Disaggregated into Three Sources by Crop

Our work

1

Coordinate and conduct economic and pest management analyses of DPR proposed regulation related to pesticides

2

Run six grant programs

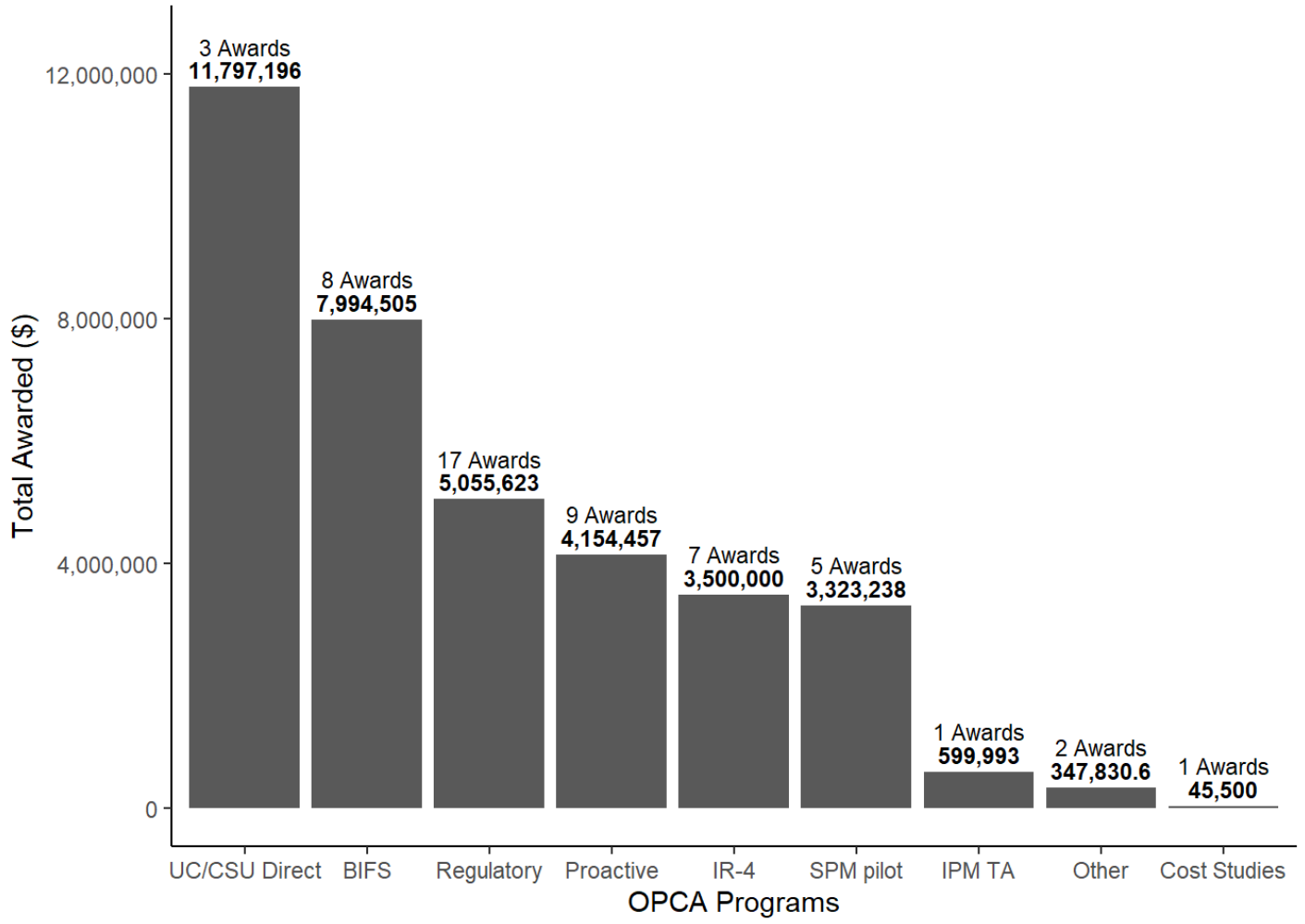
3

Serve as internal and external agricultural pest management and policy experts for CDFA

Before 2019, there were only regulatory awards

- Historically have not done competitive grants
- 2018-2019 BCP to establish Proactive Integrated Pest Management and IR-4
- Multiple years of one time funding for BIFS

Spending since 2018



OPCA Grant Programs

- Biologically Integrated Farming Systems
- Proactive Integrated Pest Management Solutions
- IR-4 support
- Sustainable Pest Management pilots
- Pollinator Habitat Program
- Organic Transitions Pilot Program

Biologically Integrated Farming Systems (BIFS) grant program

Promoting innovative pest management practices

cdfa
CALIFORNIA DEPARTMENT OF FOOD & AGRICULTURE

Office of Pesticide Consultation and Analysis (OPCA)

BIFS history

- BIFS originally ran from 1995 to 2010 and was managed by UC's Sustainable Agriculture Research and Education Program (SAREP) and Community Alliance with Family Farmers (CAFF)
- Began with neighboring almond growers, organic and conventional, wondering how their practices impacted yield and quality. Received SAREP funding to investigate
- Results inspired CAFF and SAREP to launch demonstration projects to reduce ag chemical use
- In 1994, bill was enacted establishing BIFS to provide extension services, training, and financial incentives to participating farmers. BIFS lost funding in 2010
- In 2019, CA effectively banned the insecticide chlorpyrifos; OPCA received $2 million to revitalize BIFS as part of the Chlorpyrifos Alternatives funding
- Current goal is to help growers transition away from biologically disruptive pesticides

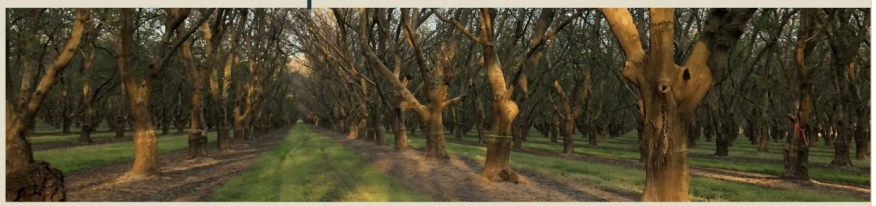
BIFS Projects

Projects typically include three elements

1. On-farm demonstration of an innovative, biologically based farming system that employs sustainable pest management (SPM) strategies
2. A collaborative outreach effort for sharing technical information about farming system
3. Organized program for collecting biological and economic data to inform on-farm decision making and evaluate project success
    - Pest damage, yield, insecticide inputs, costs

Biologically Integrated Orchard Systems (BIOS):

Cover Cropping, Sanitation, & Mating Disruption in Walnuts



Community Alliance with Family Farms (CAFF) invites you to a free on-farm event on Biologically Integrated Orchard Systems (BIOS). We will be highlighting the role and effects of cover crops, the effectiveness of mating disruption, and the importance of winter sanitation, as well as providing updates on the BIOS project in walnut orchards.

Date: November 30, 2021
Location: River Garden Farms in Knights Landing
(RSVP below for address & directions)

Featured Speakers:

Dominic Bruno
Assistant General Manager at River Garden Farms

Hanna Kahl *Ph.D.*
Ecological Pest Management Program Specialist CAFF

Jhalendra Rijal *Ph.D.*
Area Integrated Pest Management Advisor for San Joaquin, Stanislaus, Merced counties at UCCE

Xia Zhu-Barker *Ph.D.* | **Diana Zapata** *Ph.D.*
Assistant Professional Researcher & Postdoctoral Researcher in the Dept. Land, Air, & Water Resources at UC Davis

Schedule of Events:

8-8:30am: Meet & Greet

8:30-10:30am:
Presentations & Discussion on Cover Cropping, Sanitation, & Disruption in Walnuts

10:30-11am:
Cover Crop demonstration by River Garden Farms

REGISTER HERE: https://bit.ly/3jmqbAE

For more information about the event contact ecologicalfarming@caff.org | Learn more about CAFF & BIOS at www.Caff.org

1.5 CDPR and 0.5 INMP **CEUs available** for attendees.

CAFF COMMUNITY ALLIANCE with FAMILY FARMERS

UC CE

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Project Components

- Projects often include large, replicated, side-by-side demonstration plots
  - Conventional standards (e.g. calendar-based sprays with broad-spectrum insecticides)

    vs
  - BIFS alternative (e.g. mating disruption, scouting/monitoring, beneficial insect releases, selective insecticides when needed)
- Project team hosts field days and demonstrate BIFS practices
- Applied experiments within demonstrated plots are allowed
  - e.g. compare different application rates, dispenser density, etc

Projects funded

1. Refinement and implementation of an areawide program for vineyard pathogens and their insect vectors

Project team: Kent Daane (UC Berkeley), Central Coast Vineyard Team, Lodi Winegrape Commission

2. Promoting biologically integrated orchard systems in walnuts in Sacramento and San Joaquin Valleys

Project leader: Sara Tiffany (CAFF), California Walnut Board, UCCE, PCAs

3. Building agroecological partnerships to facilitate integrated pest management in hemp

Project team: Dr. Houston Wilson (UC Riverside), World Cannabis Foundation, Beneficial Insectary, Terpene Belt Farms

4. Optimizing spider mite management through on-farm research and educational outreach of biological control in walnuts and grape production

Project team: Dr. Hanna Kahl (CAFF), commodity groups, pest control advisors, UC Cooperative Extension

2 Projects funded cont.

5. Building sustainable practices for managing insect pests and viruses in California lettuce

Project team: Dr. Ian Grettenberger (UC Davis), USDA-ARS, Wild Farm Alliance, Growers-Shipper Association of Central California, California Leafy Greens Research Board, grower cooperators

6. Demonstration project for watershed-wide transition to pheromone-based navel orangeworm and codling moth management in almond and walnut

Project team: Parry Klassen (Coalition for Urban Rural Environmental Stewardship), UCCE, ESJWQC, California Almond Board, PCAs

7. Improving sustainability of diamondback moth management in cruciferous vegetables

Project team: Dr. Ian Grettenberger (UC Davis), CDFA, UCCE, USDA-ARS, Cal Poly, Grower-shipper Association of Central California, California Leafy Greens Research Board, and PCAs

8. Optimization of steam soil disinfesation for healthy soils and communities around the ag-urban interface of coastal California

Project team: Darry Wong and Janet Broome (UCSC), Smart Steam Applications for Agriculture LLC, USDA-ARS, UCCE, UC Davis, California Strawberry Commission, Santa Cruz County Agricultural Commissioner, California Certified Organic Farmers, Pajaro Valley Unified School District

Proactive Integrated Pest Management Solutions grant program

Investing Early to Protect from Invasive Pests

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Office of Pesticide Consultation and Analysis (OPCA)

- Prepare in advance for likely invasive species
- Reduce the use of broad-spectrum pesticides when an invasive occurs
- Develop a library of pest management tools for new invasions into California

Accelerate Use of Low Impact Management Options

2

Proactive approach

Identify potential invasive species for CA

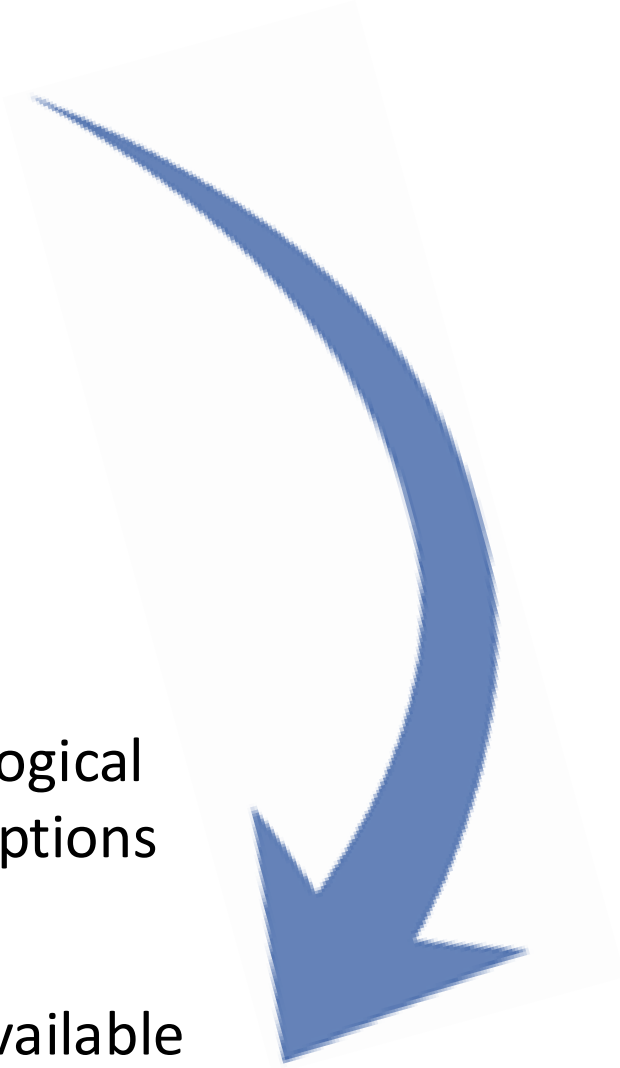
Standard approach

Invasion into California

CDFA starts control program

Research completed to release biological control agents/ use lower toxicity options

Low impact tools available



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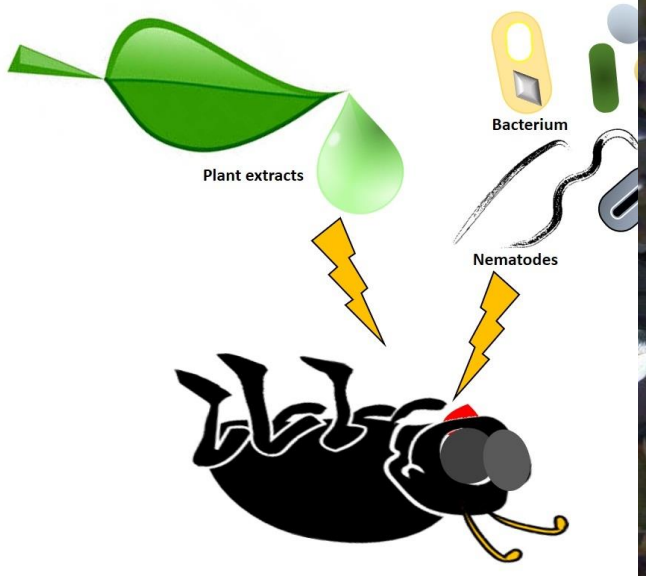
OPCA Proactive IPM Solutions program



- Projects can cover (not exclusive)
  - Classical biological control or testing native biocontrol agents
  - Testing lower toxicity pesticides
  - Creating and testing monitoring program (lures, pheromones)

2

Proactive biological control of spotted lantern fly, *Lycorma delicatula* (Hemiptera: Fulgoridae)

Project leader: Mark Hoddle, UC Riverside

Amount: $543,937

- An egg parasitoid, *Anastatus orientalis*, from the home range of SLF in China
- Host range testing
- Parasitism and host feeding behavior
- Five papers including description of a new genus of North and Central American planthoppers with fourteen new species

The IR-4 Project

Providing Tools to Protect California's Specialty Crops

Photo by
CA Grown

cdfa
CALIFORNIA DEPARTMENT OF
FOOD & AGRICULTURE

THE IR-4 PROJECT
California

Office of Pesticide
Consultation and
Analysis (OPCA)

The IR-4 Project

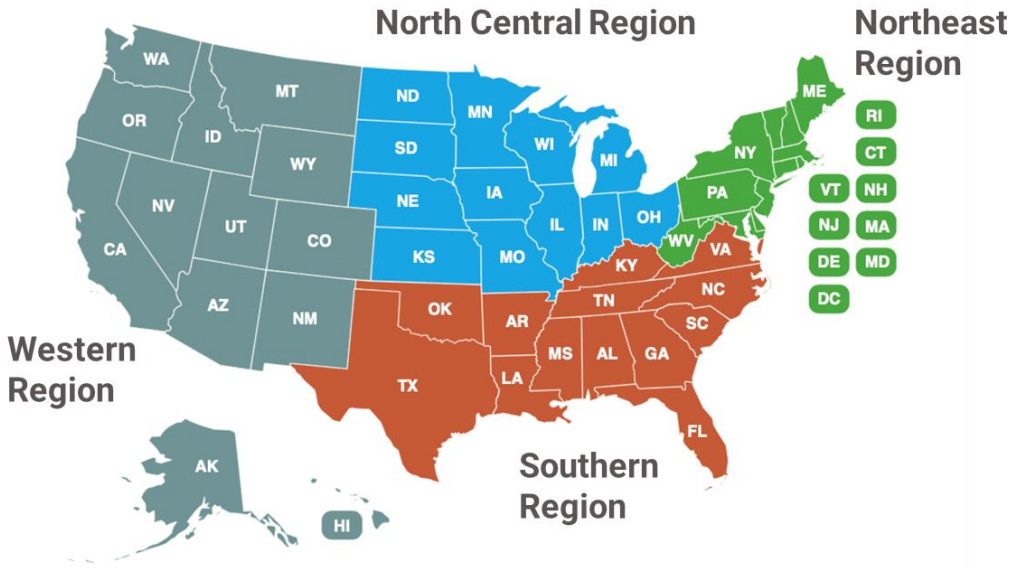
- The National Inter-regional Research Project No. 4 (IR-4) is a USDA funded national project started in 1963
- IR-4 works with growers, extension specialists, registrants, state agencies, and EPA to identify pest management needs for specialty crops
  - Companies seeking registration tend to focus on high-acreage crops that can generate more sales, and leave specialty crops off the label

The IR-4 Project - Regions

IR-4 typically has funding to support around **40 projects** among the 4 regions

California projects compete both nationally and within the Western Region

There is also competition between weed science, entomology, plant pathology



THE IR-4 PROJECT California

Background

- Started in **2018**: Annual funding provided by CDFA to the Western Region IR-4 program (at UC Davis) to focus on California crops ($250K - $600K annually)
  - Focus on products that are reduced risk to the public health and work well in integrated pest management systems
  - Funded **32** Food Use, Integrated Solutions, and Environmental Horticulture Projects
- Stakeholder outreach and organization for the main research sites:
  - UC Davis
  - Kearny Agricultural Research and Extension Center (KARE)
  - UC Riverside

THE IR-4 PROJECT

2 California

Ongoing Projects

- Fungicide registrations for **Olive**, **Kiwi**, **Cherry, Grapefruit, and Tomato**
- Herbicide registrations for **Tomato, Olive, Rice, Peach/Plum,** and **Date Palm**
- Insecticide registration for **Fig, Blueberry, Pomegranate, Melon,** and **Sunflower**

- Control of **Broomrape** and **Organic insecticide** options in **Processing Tomato**
- **Leafhopper** management in **Grapes**
- **Olive Fruit Fly** management
- **Virus** management in **Melons**

Pollinator Habitat Program Grants

- The Pollinator Habitat Program was established by the Budget Act of 2021 (Senate Bill 170, Skinner) to provide grant funding for the establishment of pollinator habitat on agricultural lands throughout California.
- CDFA was directed to administer the Pollinator Habitat Program and to prioritize the planning of native habitats for the benefit of native biodiversity and the use of locally appropriate native plant seed mixes when feasible.
- $11.25 million in Pollinator Habitat Program projects
- $1.9 million in California Native Plant Society projects

2

California Native Plant Society Grants

- 2 Grants totaling ~ $1.9 million
  - Native Plant Propagation Protocols
  - Integration of Detailed Pollinator and Plant Interaction Information
- CNPS will create science-based, publicly available tools for native plant propagation protocols and critical biodiversity data.
- The resources will be integrated into Calscape.org, enabling gardeners, farmers, and landscape professionals to design resilient habitats that enhance ecosystem stability and function.
- The new propagation protocols and plant-pollinator data will be publicly available on Calscape.org in early 2027.

2

Organic Transition Pilot Program

- Program developed in consultation with CDFA's Farm Equity Office, Farm to Fork Office, State Organic Program, organic industry representatives, EFA SAP and public comment
- Received funding from both 2022 and 2023 General Fund
  - "the Organic Transition Pilot Program which shall provide incentives, including, but not limited to, grants, technical assistance, and educational materials and outreach, to farmers and ranchers, with at least a 50 percent priority to socially disadvantaged farmers and ranchers (as defined by the United States Department of Agriculture), who want to transition land to organic certification…"
- Award from $500k to $2M
- Block Grant Style
  - financial assistance of up to $60,000 for an operation
  - technical assistance
  - business planning

Eligible organizations: Non-profits, California Native American Tribes, Resource Conservation Districts (RCDs),University of California, California Community Colleges, or California State Universities

Our work

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3

Recent internal reports, white papers, and publications

- Preliminary estimate of rat damage to almond in 2024
- C3PA chapters: pesticide use after invasion and biodiversity and agriculture literature review
- Contributed to CDFA's Climate Resiliency Report
- Potential conflict between food safety rules and sustainable pest management practices
- Analysis of Ag Order 4.0 insecticide impacts
- Potential impact of EPA's methomyl regulations
- Coordinated CDFA's part of joint comment letter with DPR on EPA vulnerable species pilot
- Assisted in lygus section 18 application
- Potential impact of EPA SGAR regulation
- Report on the history and status of sulfoxaflor
- Report on areas of potential PFAS contamination

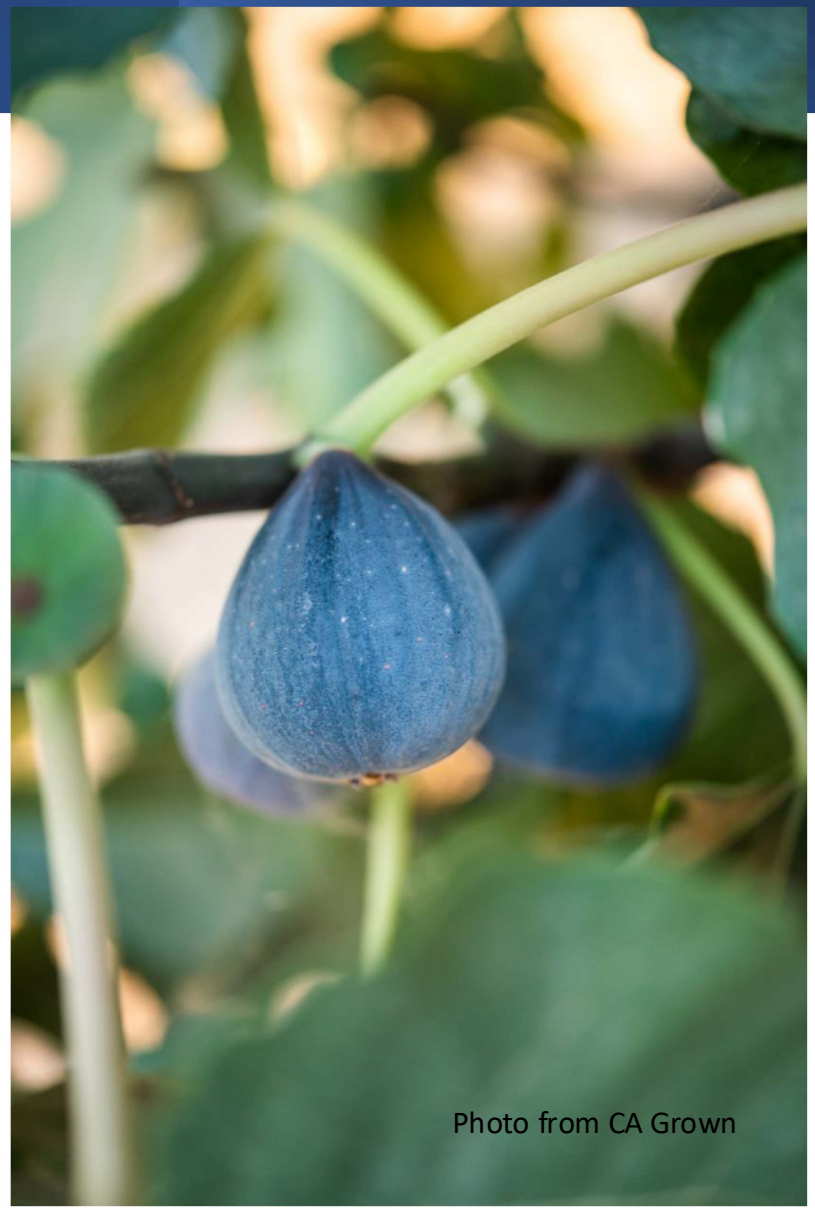
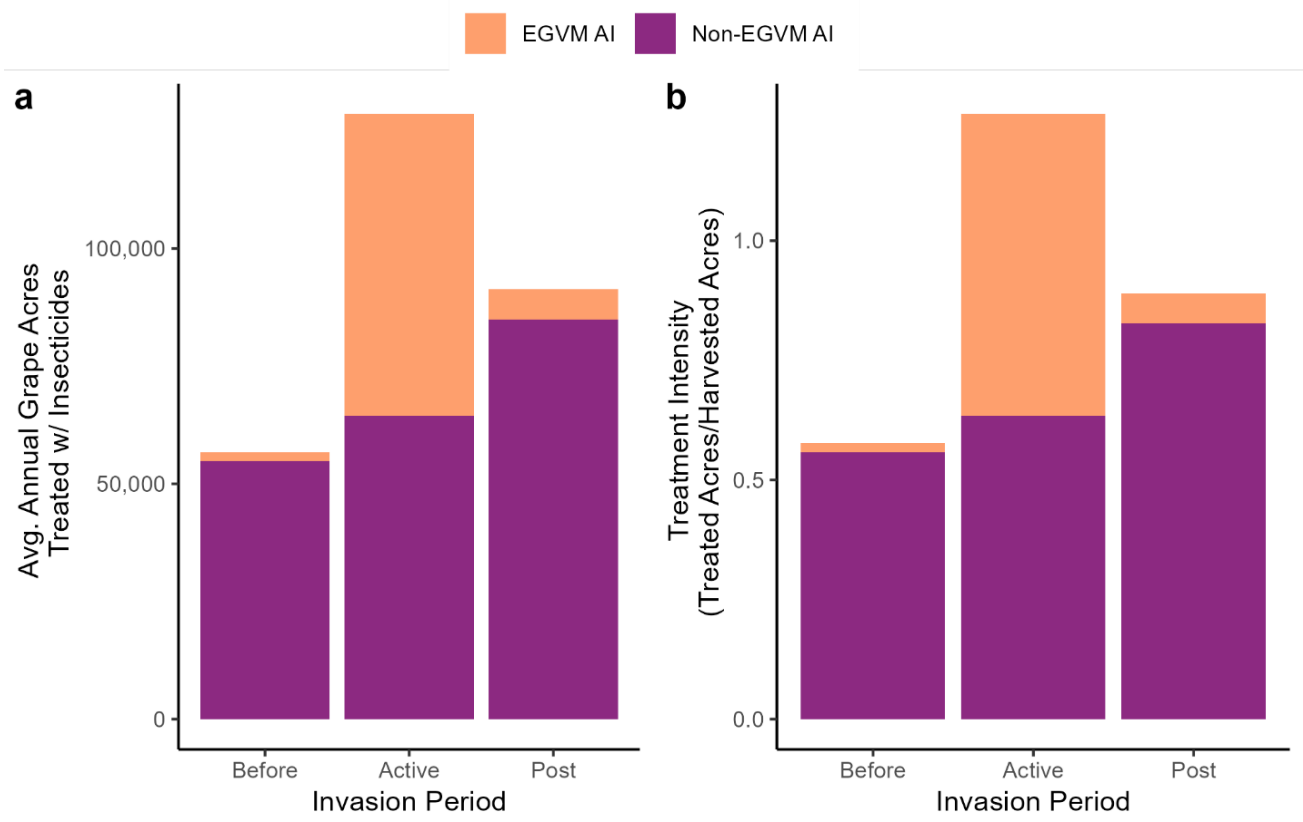


Photo from CA Grown

3

Example from C3PA work



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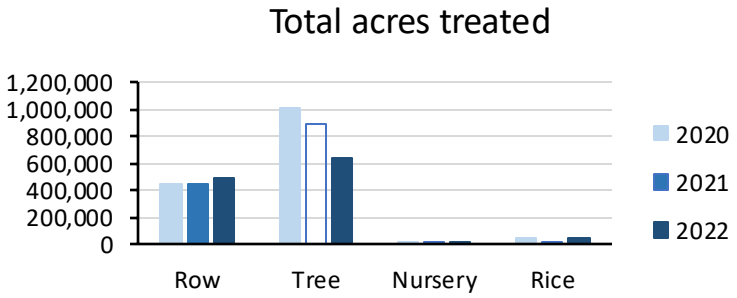
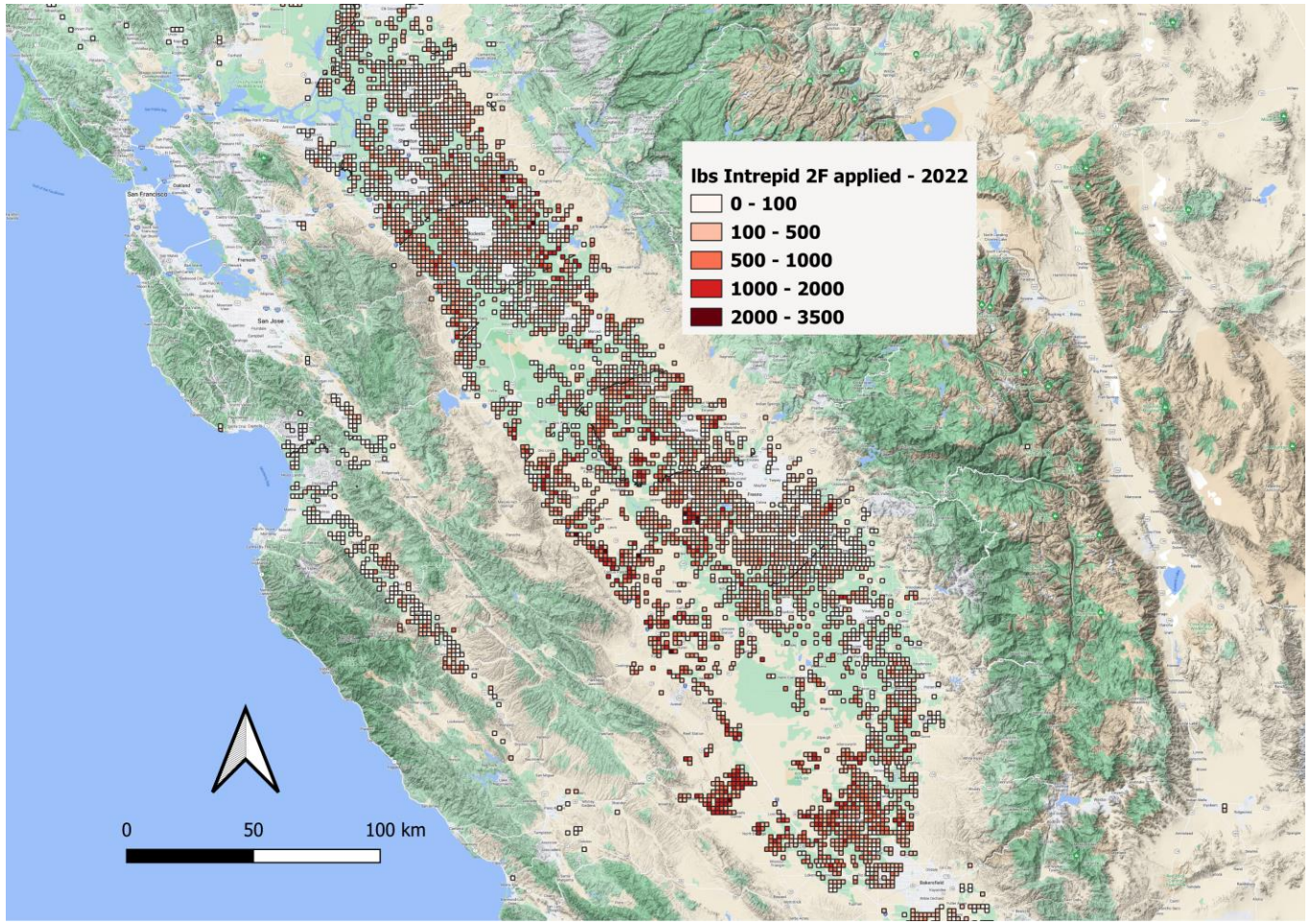
Agricultural use of **Intrepid 2F (2020-2022)**



2020:	1,083,315	292,128	101,166	95,866	67,674
2021:	983,040	273,379	103,959	76,448	58,458
2022:	883,789	82,165	47,477	40,497	33,099



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Recent external research support

- Provided data for UCR lab working on melon pest management guidelines
- Working with CDFW to assess pesticide use in bumble bee historical ranges
- Provided data and input to USDA's Office of Pest Management Programs for a variety of projects
- Provided expertise to UCCE on building a pest tracking app
- Collaboration on a report on organic acres study
- Provide data access and interpretation for UC, UCCE, ANR, and others

3

Comparing sources on organic and conventional acres

Crop	Production Type	PUR Acres	NASS Acres
Almond	Org	38,850	41,059
	All	1,441,693	1,350,000
All other nut crops	Org	13,579	17,672
	All	878,800	828,000
Broccoli	Org	8,559	16,161
	All	81,698	84,800
Tomatoes	Org	13,633	14,991
	All	260,077	249,000
Celery	Org	3,237	6,217
	All	23,303	23,000
Grape, Wine	Org	32,691	34,187
	All	515,257	575,000
Grapes, Other	Org	19,910	21,604
	All	200,227	253,000
Citrus	Org	24,772	25,100
	All		
Spinach	Org	9,741	25,000
	All	35,201	45,600
Carrot	Org	19,956	20,511
	All	69,615	53,700
Lettuce (all)	Org	17,839	43,706
	All	199,160	186,200
Strawberry	Org	4,521	6,741
	All	58,943	42,000

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Memo to US EPA from USDA's Office of Pest Management Programs

EPA's analysis of usage data led to a conclusion of low benefits for acephate use on lettuce, (USEPA, 2024d) noting that acephate is applied to approximately 12% of lettuce acres on average for the years 2017-2021. Stakeholders representing California (California Specialty Crops Councial [CSCC] and CDFA's Office of Pesticide Consultation and Analysis [OPCA]) and Arizona (University of Arizona) producers noted some specific benefits of acephate for their respective regions. For head lettuce in California, OPCA noted the PCT for acephate in 2022 was 41%, representing use reporting considerably larger than EPA's estimate for lettuce nationally. USDA is happy to discuss these and other usage estimates further with OPCA and EPA, given this divergence. In California lettuce, an application of acephate, particularly in the early season, can provide a resistance management benefit for control of thrips that vector Impatiens Necrotic Spot Virus (INSV), which is a particular concern in the Salinas Valley of California. CSCC noted that because thrips control is so critical to viral control, acephate has a good fit as an early season tool, which reserves alternative chemicals with shorter PHI flexibility for use later in the season. Based on data from the Grower-Shipper Association of Central California, OPCA estimated that in 2020, western flower thrips damage caused approximately $100 million in losses for Salinas Valley lettuce producers.

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Committees include:

UC IPM Advisory Committee	DPR's Pesticide Regulation and Evaluation Committee (PREC)	DPR's Pest Management Advisory Committee (PMAC)
California Pollinator Coalition (CPC)	Monarch Butterfly MultiAgency Collaborative Working Group	CDFA's internal Sustainable Pest Management group
CDFA's internal biodiversity group	Pesticide Use Reporting Workgroup (PUR Workgroup)	1,3 D Technical Advisory Committee
DPR's Worker Safety Regulatory Work Group	DPR's Chlorpyrifos Alternatives Workgroup (technical advisor)	DPR's Sustainable Pest Management Workgroup (technical advisor)

Questions?

https://www.cdfa.ca.gov/oefi/opca/