ENVIRONMENTAL FARMING ACT SCIENCE ADVISORY PANEL (EFA SAP) CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE



MEETING AGENDA

October 26, 2017

EFA SAP MEMBERSHIP

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

Don Cameron, Terranova Ranch, Member and Chair Jocelyn Bridson, MSc, Rio Farms, Member and Co-Chair

Vicky Dawley, Tehama RCD, Member
Emily Wimberger, CalEPA, ARB, Member
Scott Couch, CalEPA, State Water Board, Member
David Bunn, PhD, Resources Agency, DOC, Member
Tom Hedt, USDA NRCS, Subject Matter Expert

Public Meeting 1:00 to 5:00 PM 1432 Abbott Street Salinas, California 93901

REMOTE ACCESS

Webinar information

Registration URL: https://attendee.gotowebinar.com/register/6520668388160303875
Please note the webinar is on listen-only mode.

For verbal questions and comments, please attend the meeting in person

Presentation materials will be posted at the following link prior to the meeting: https://www.cdfa.ca.gov/EnvironmentalStewardship/Meetings_Presentations.html

Agenda

1.	Introductions	Chair Cameron
2.	Welcome address	Eric Lauritzen, Agricultural commissioner Robert Roach, Assistant Agricultural commissioner
3.	Minutes from previous meeting	Chair Cameron
4.	SWEEP Update	Ravneet Behla, PhD and Scott Weeks, CDFA OEFI
5.	Healthy Soils Program Update • Process for adding new practices to the HSP	Guihua Chen, PhD, CDFA OEFI
6.	Strategic Planning on future topics	Miriam Volat, UC Davis Amrith Gunasekara, PhD, CDFA OEFI
7.	Public Comments	Chair Cameron
8.	Next Meeting and location	Chair Cameron

Amrith (Ami) Gunasekara, PhD, CDFA Liaison to the Science Panel
All meeting facilities are accessible to persons with disabilities. If you require reasonable accommodation as defined by the
American with Disabilities Act, or if you have questions regarding this public meeting, please contact Amrith Gunasekara at
(916) 654-0433.

CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE (CDFA) ENVIRONMENTAL FARMING ACT SCIENCE ADVISORY PANEL

103 Mulford Hall University of California Berkeley Berkeley, CA 94720

> July 20, 2017 1 PM – 5 PM

MEETING MINUTES

Panel Members in Attendance

Don Cameron, Terranova Ranch (Chair and Member)
Vicky Dawley, Tehama RCD (Member)
Scott Couch, CalEPA, State Water Board (Member)
Bruce Gwynne (filling in for David Bunn, PhD., Natural Resources Agency (Member))
Judith Redmond, Full Belly Farm (Member)
Doug Parker, PhD. (Subject Matter Expert)
Tom Hedt, USDA NRCS (Subject Matter Expert)

State Agency Staff and Presenters

Claire Kremen, PhD. Berkeley Food Institute Nina Ichikawa, Berkeley Food Institute Whendee Silver, PhD. UC Berkeley Ravneet Behla, PhD. CDFA Guihua Chen, PhD. CDFA Geetika Joshi, PhD. CDFA Amrith Gunasekara, PhD. CDFA

AGENDA ITEM 1 - Introductions

The meeting was called to order at 1:12 PM. by the Chair, Mr. Don Cameron. Introductions were made. Present at the meeting were all the members noted above under "Panel Members in Attendance". A quorum was established. Retiree Luana Kiger was thanked for her commitment and years of service as a Subject Matter Expert to the Science Panel. New Subject Matter Expert, Tom Hedt, was introduced and welcomed.

AGENDA ITEM 2 – Minutes from Previous Meeting

Chair Cameron introduced the minutes from the May 18, 2017 meeting. A motion was made by Mr. Gwynne to accept the minutes as presented by CDFA staff and the motion was seconded by Mr. Couch. The motion was moved by all members present and accepted without further changes.

AGENDA ITEM 3 – Berkeley Food Institute (BFI) Informational Presentation

Ms. Ichikawa introduced the Berkeley Food Institute. She gave an overview of their vision and mission, explaining their goals and three themes: good food access, fair and healthy jobs and agroecology. BFI is divided into research, policy, and education and

community engagement. Ms. Ichikawa introduced Dr. Kremen, faculty member at the University and co-director of BFI.

Dr. Kremen explained the increased demand for pollinators and the effects of decreased native pollinator populations on sunflowers. She discussed the costs, benefits, barriers and opportunities of diverse farming. Questions to Dr. Kremen and Ms. Ichikawa were facilitated by the Science Panel members and members of the public. Dr. Kremen encouraged the panel and public to provide feedback into the existing and future research she and BFI are engaged with.

AGENDA ITEM 4 – Compost Application on Rangelands Informational Presentation

Dr. Silver introduced the Compost Application on Rangelands research. She gave a short background presentation on her work in reducing carbon dioxide (CO₂) emissions to mitigate climate change. She discussed how CO₂ emissions are still increasing, which is contributing to climate change. Her research uses grasslands to pull CO2 out of the atmosphere and increase soil carbon levels. Experiments on composted fields showed an increase in carbon sequestration and crop yield, as well as low methane emissions. She noted that ongoing projects of interest to CDFA include nitrate consumption by compost piles, causing low soil nitrate production, and the long-term impacts of compost application to rangelands. Dr. Silver and her team are currently processing compost samples and will be providing data on the sequestration of carbon when it becomes available. The present research phase ends in December and all of the sites (San Diego, Santa Barbara, Sacramento and Mendocino) show a net carbon sink when compost is applied. She explained the next steps in compost application research and acknowledged the people, agencies, and organizations involved in the research. Questions and comments from Science Panel members and the public were facilitated by Chair Cameron.

AGENDA ITEM 5 – OEFI Incentive Programs Updates

State Water Efficiency and Enhancement Program (SWEEP) Update Dr. Gunasekara introduced Dr. Behla from the Office of Environmental Farming and Innovation SWEEP who provided an update and preliminary data analysis trends since 2014. Dr. Behla gave a brief introduction on SWEEP and funds allocated since 2014. He discussed the types of projects that are accepted for SWEEP grants and showed mathematical tables describing applications received and projects awarded. He briefly explained the DWR–CDFA Joint Pilot Project objective, goals and funding. Finally, Dr. Behla presented several graphs showing funding, applications, water savings and environmental impact statistics from 2014-2017. Questions and comments were facilitated by Science Panel members and the public.

Healthy Soils Program (HSP) Update

Dr. Gunasekara introduced Dr. Chen and Dr. Joshi who provided an update to the Panel on the Healthy Soils Program. Dr. Chen stated the Healthy Soils Incentives Program did not have any significant changes since the last Science Panel meeting. She explained the eight categories that public comments were placed into. All public comments were summarized and noted.

AGENDA ITEM 6 – Public Comments

Several questions and comments from the public were heard. They included establishing a standardization of measuring for project outcomes, making expectations for collaboration between farmers and researchers clearer, adding funding for on-farm compost facilities, inquiring about when the next HSP phase will be, collaborating with national or international partners on HSP and SWEEP, and plans for socially disadvantaged farmers, language barriers, and projects on Tribal Lands.

AGENDA ITEM 7 – Next Meeting and Location

Dr. Gunasekara stated that the next meeting will be October 26, 2017, in Monterey, CA. The meeting was adjourned at 4:19 pm by Chair Cameron.

Respectfully submitted by:	
Amrith Gunasekara, Ph.D.	Date



SWEEPUPDATE

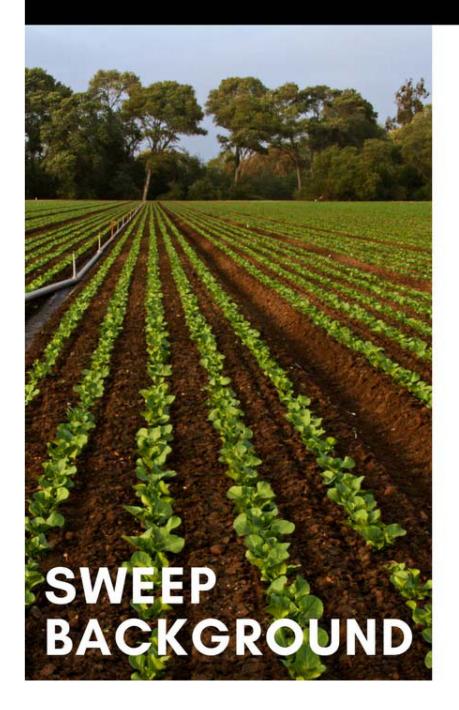
EFA SCIENTIFIC ADVISORY PANEL

10.26.17

RAVNEET BEHLA ENVIRONMENTAL SCIENTIST

SCOTT WEEKS ENVIRONMENTAL SCIENTIST

CAROLYN COOK SENIOR ENVIRONMENTAL SCIENTIST



\$10 million

Emergency Drought Legislation Bill – SB 103 signed by Governor Brown on March 1, 2014

\$10 million

AB 91 allocated additional funds March 27, 2015

\$40 million

The Budget Act of 2015, **SB 101**, (Chapter 321, Statutes of 2015) appropriate funds from the Greenhouse Gas Reduction Fund

\$7.5 million

The Budget Act of 2016, **AB 1613** (Chapter 370, Statutes 2016)

CALIFORNIA DROUGHT, WATER, PARKS, CLIMATE, COASTAL PROTECTION, AND OUTDOOR ACCESS FOR ALL ACT OF 2018.

- Enrolled September
 19, 2017
- Authorizes the issuance of \$4 billion in bonds
- Must be approved by the voters on June 5th
 2018

SB 5 (Chapter 11.6. 80147 (b))
Regional Sustainability for
Drought and Groundwater,
and Water Recycling:

"...funds made available pursuant to this section, up to twenty million dollars (\$20,000,000) shall be available for the State Water Efficiency and Enhancement Program administered by the Department of Food and Agriculture."

PROJECT TYPES



WATER CONSERVATION

- Sensors for Irrigation Scheduling (weather, soil or plant based)
- Micro-Irrigation or Drip Systems

GHG REDUCTIONS

- Fuel Conversion
- Improved Energy Efficiency
- Low Pressure Systems
- Variable Frequency Drives
- Reduced Pumping

MEDIA PROJECTS

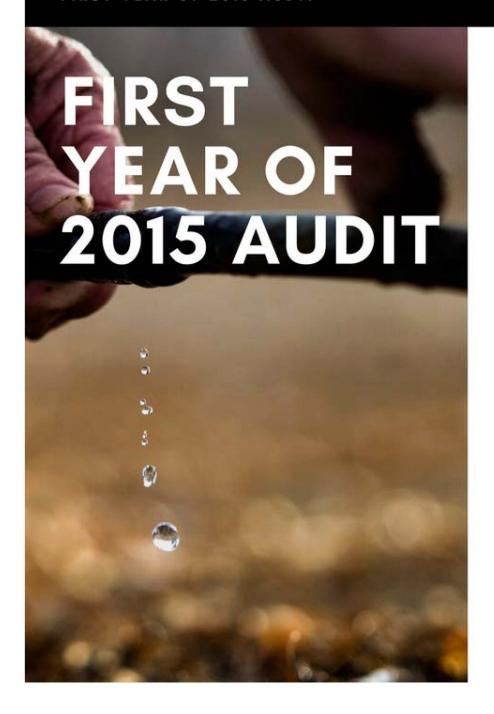
- Producing videos that highlight SWEEP
- Highlight large and small farms as well as innovative projects.
- 3 shot and currently in production.







- Required to audit 10% of the projects (Completed 18%)
- Obtain energy and water records from agricultural operations
- Compute, compare, and report GHG emission reductions to ARB



- Received 2016 data from 22 SWEEP projects
- 4 Projects had substantial issues were not included in analysis:
 - **18** projects were used for this analysis

Total

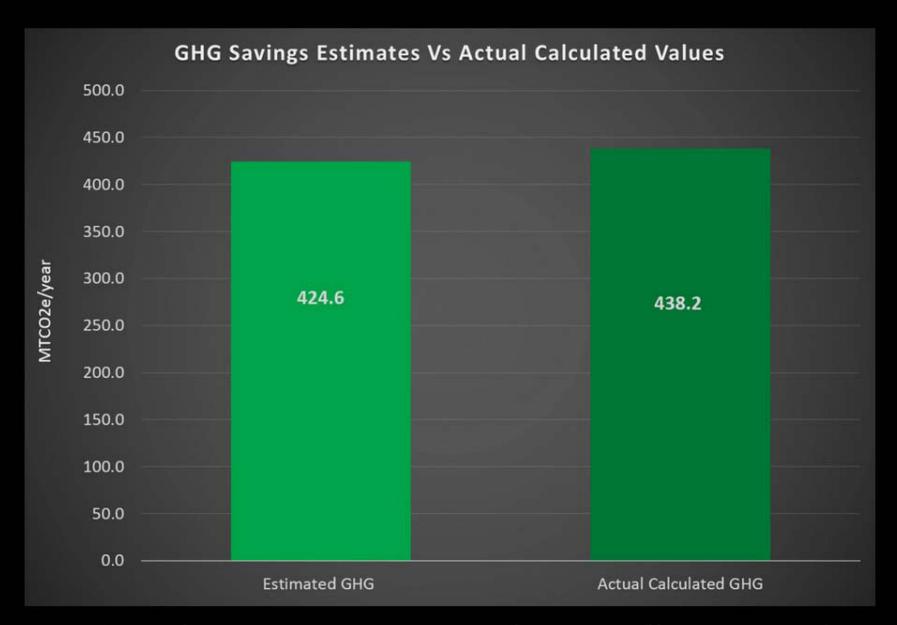
Estimated

GHG and

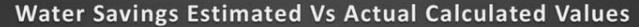
water savings

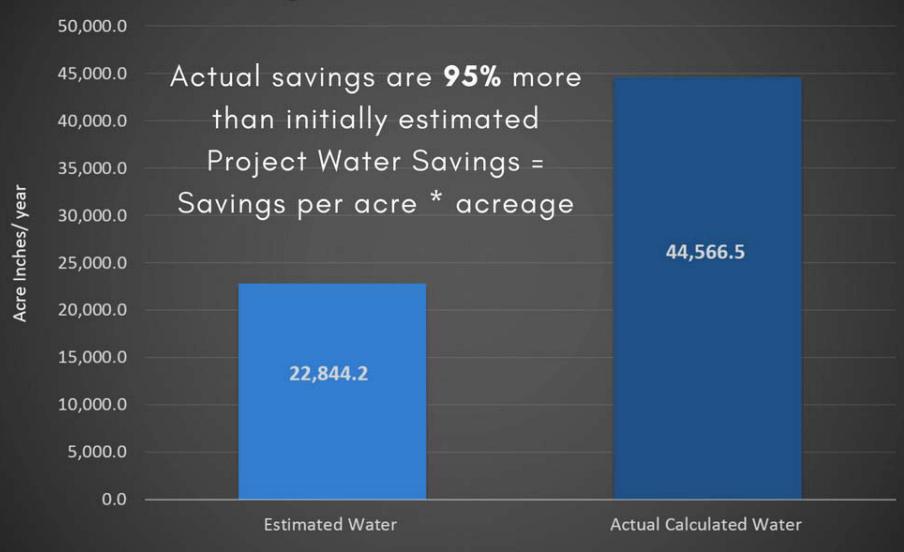
VS.

Total Actual
Calculated
GHG and
water savings



Actual savings are **3%** more than initially estimated Project GHG Savings = Savings per acre * acreage



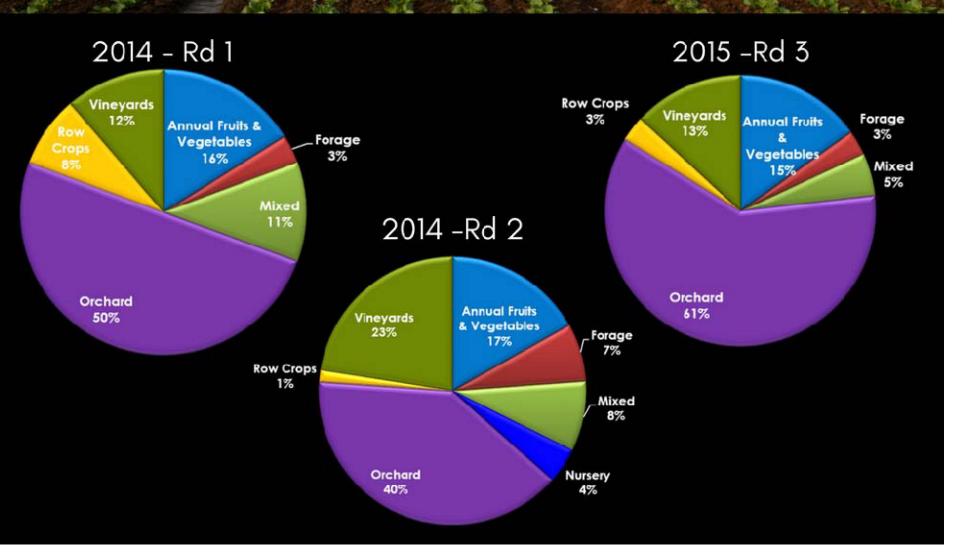


CHCVS WATER SAVINGS

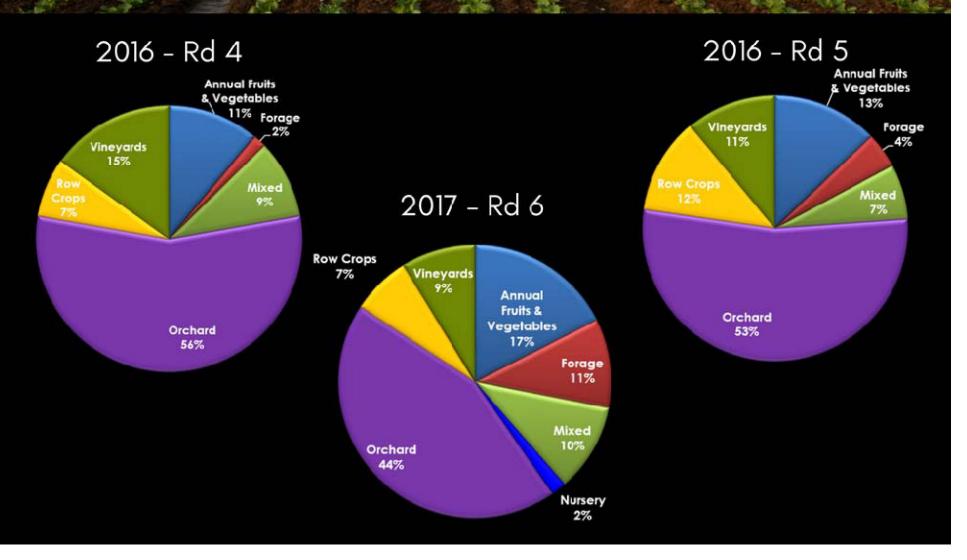
- GHG Calculator more precise than Water Calculator
- Possible reasons:
 - Many projects have young newly planted trees
 - Water table in 2016 may still be low, resulting in more energy to extract water
 - 2017 data should add clarity



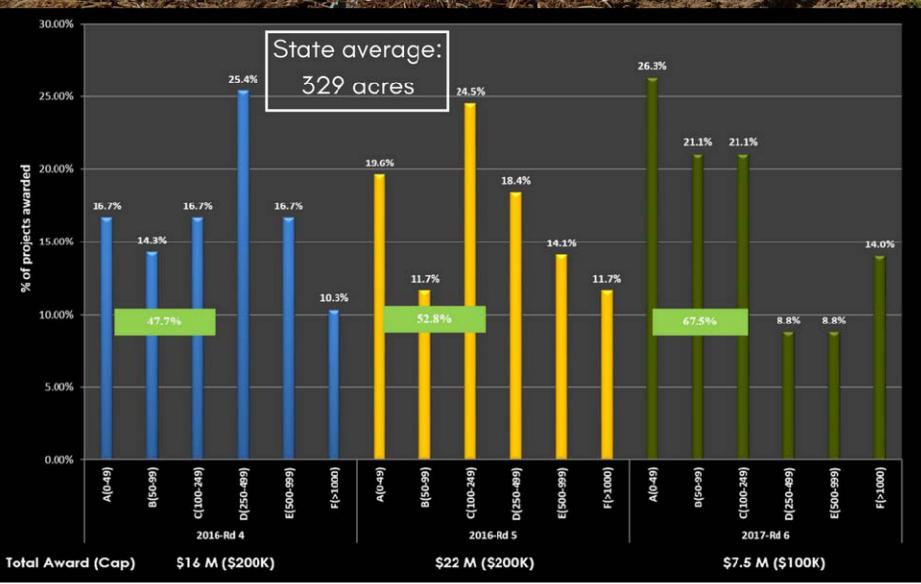
DISTRIBUTION OF PROJECTS AWARDED BY CROP CATEGORY (ROUNDS 1-3)



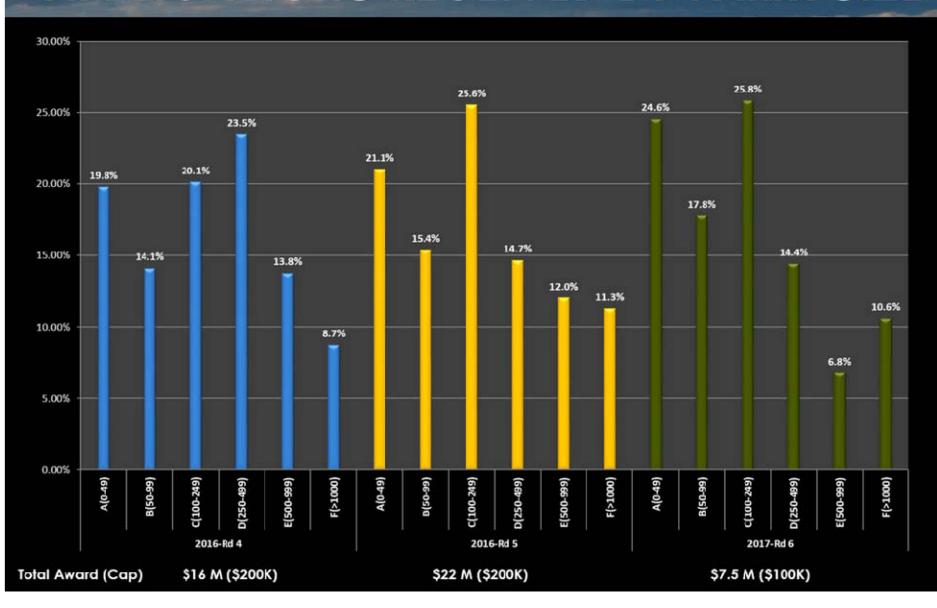
DISTRIBUTION OF PROJECTS AWARDED BY CROP CATEGORY (ROUNDS 4-6)



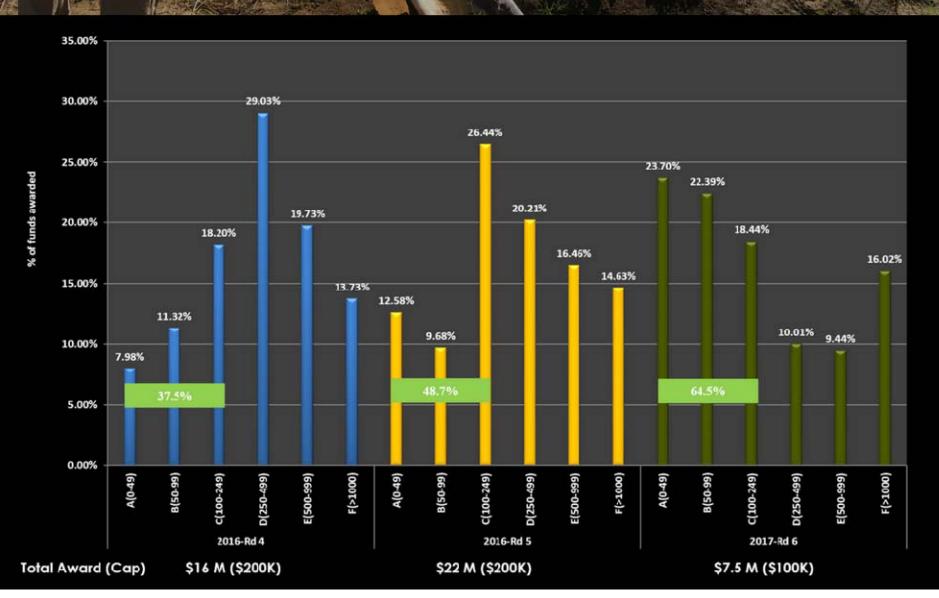
DISTRIBUTION OF NUMBER OF AWARDS BY FARM SIZE (3 ROUNDS)



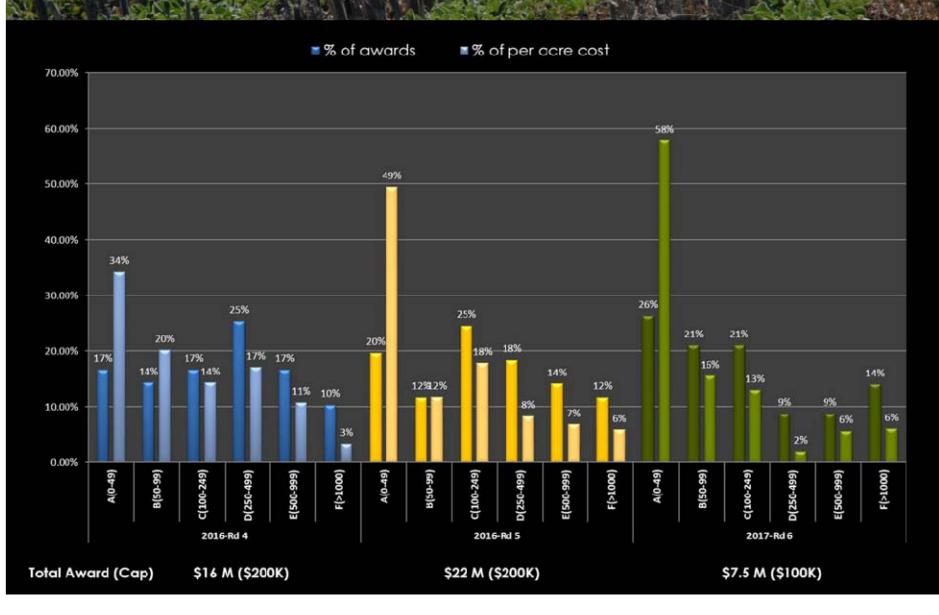
DISTRIBUTION OF NUMBER OF APPLICATIONS RECEIVED BY FARM SIZE



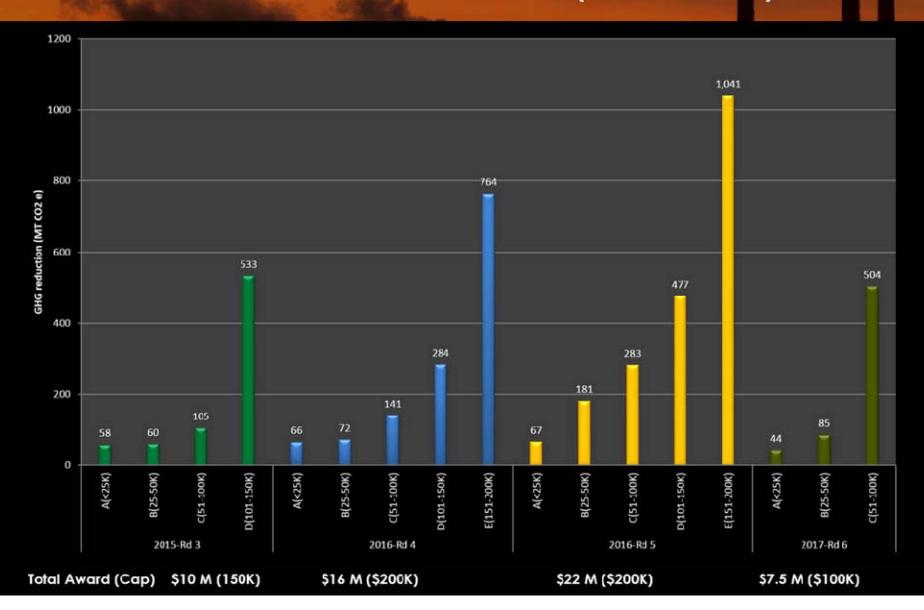
DISTRIBUTION OF FUNDS AWARDED (\$) BY FARM SIZE



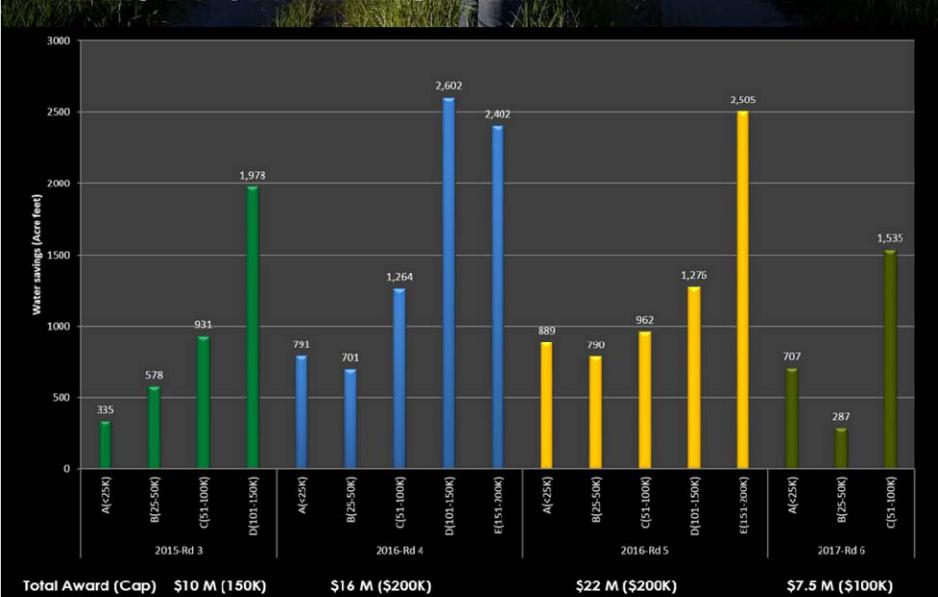
DISTRIBUTION OF NUMBER OF AWARDS AND FUNDS AWARDED PER ACRE BY FARM SIZE



AVERAGE GHG REDUCTION FOR PROJECT LIFE OF 10 YEARS BY FUNDING CATEGORY (4 ROUNDS)



AVERAGE WATER SAVINGS FOR PROJECT LIFE OF 10 YEARS BY CDFA INVESTMENT



SUMMARY OF ANALYSIS

- Projects awarded were fairly well distributed among farm sizes (regardless of the round and award cap).
- Distribution of projects correlate with number of applications received.
- Per acre improvement cost correlate negatively with farm size.
- GHG reduction and water saving positively correlate with the grant money awarded.
- Orchard crops benefited more followed by annual fruits/ vegetables and vineyards. (regardless of SWEEP round).
- (Its too early to follow up and analyze the impact of recent wildfires on SWEEP).

DWR/CDFA JOINT PROJECT

Objective

To demonstrate the potential multiple benefits of conveyance enhancements combined with on-farm agricultural water use efficiency improvements and greenhouse gas reductions

Goals

- Water use efficiency, conservation and reduction
- Greenhouse gas emission reductions
- Groundwater protection
- Sustainability of agriculture operations and food production

DWR FUNDING

\$ 3 million for Agriculture Water Supplier - Proposition 1 §79746(a)(2) (2014)

50% cost sharing (waived/ reduced for DAC/ EDA)

CDFA FUNDING

\$ 3 million for individual agriculture operations – AB1613 (Chapter 370, Statutes 2016)

Cost sharing encouraged but not required

DWR/CDFA JOINT PROJECT SELECTION

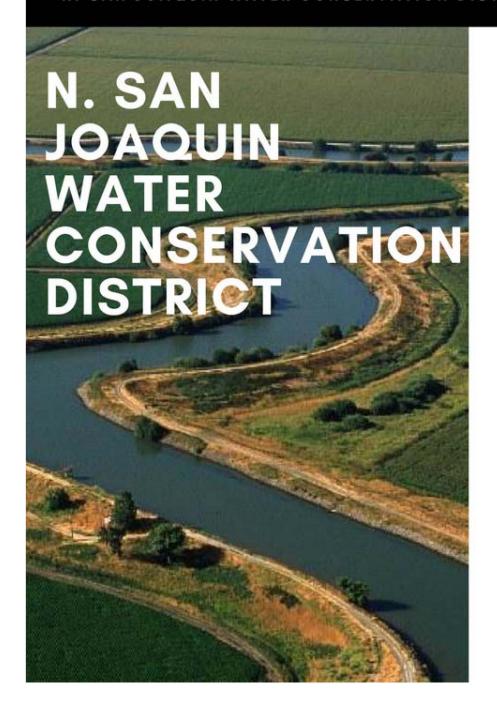
- DWR and CDFA staff acted as technical reviewers and independently scored projects
- 6 Reviewers: 3 from DWR and 3 from CDFA
 - Relevance and importance
 - Feasibility
 - Project Cost
 - Monitoring and Evaluation
 - Magnitude of GHG Reductions
 - Magnitude of Water Savings
 - Other Benefits (DAC, innovation)
 - Adopted an Integrated Regional Water Management Plan
- Reviewers met as a group to make final recommendations for award



DWR/CDFA JOINT PROJECT SELECTION

Ag Water supplier	Ag Operations	Acreage impacted	DWR Funds requested	CDFA Funds Requested
North San Joaquin Water Conservation District	19	1132	\$3,000,000	\$1,650,000
Ducks Unlimited, Inc.	1	200	\$347,00	\$17,700
Shafter-Wasco Irrigation District	3	347	\$847,000	\$504,000
Tulare Irrigation District	8	1941	\$2,111,000	\$1,285,000

Water use efficiency grant awarded to North San Joaquin Water Conservation District DWR has announced \$3 million in funding for the North San Joaquin Water Conservation District. The grant is part of the Agricultural Water Use Efficiency and Enhancement Program. The California Department of Food and Agriculture is also providing \$3 million in funding for the project that will upgrade the district's south system water conveyance and reduce the reliance on groundwater.



- Water district is in a critically overdrafted groundwater basin.
- 7 mile pipeline using Supervisory Control And Data Acquisition (SCADA) control.
- 19 growers funded to install turnouts, IWM systems, and drip irrigation.
- New pump GHG emissions Farmers'
 GHG Savings = Net GHG savings

Projected savings of 97 MTCO2e/yr

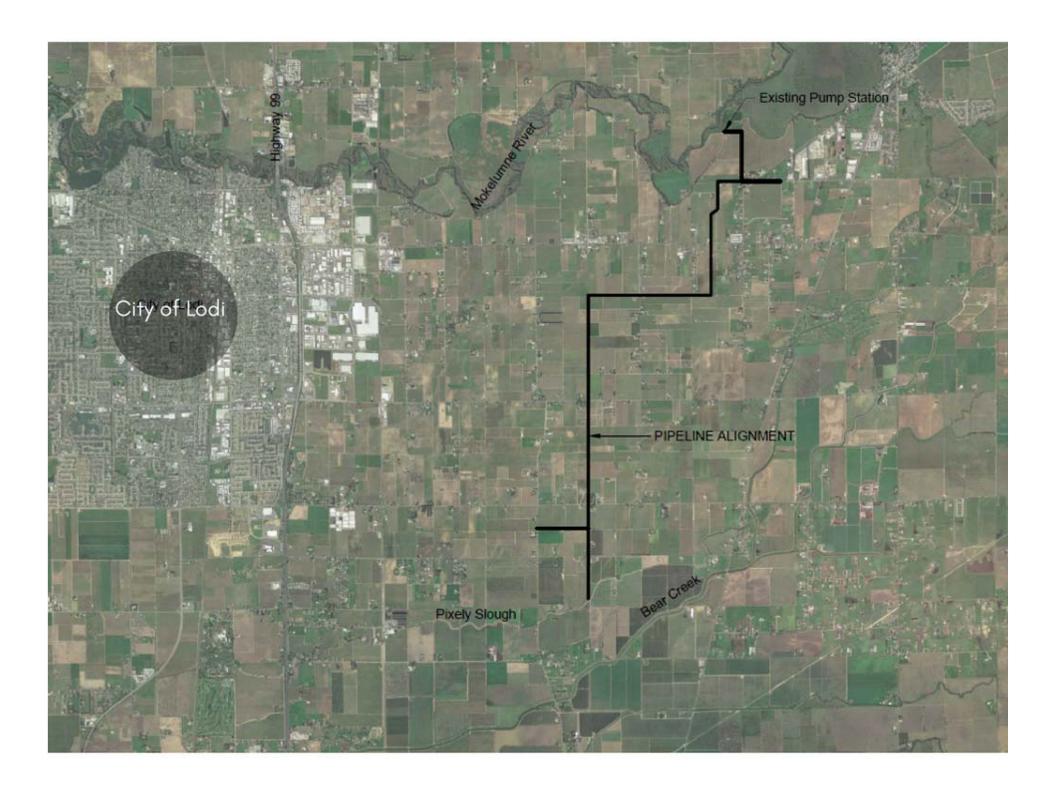
Life of project: 50 years

Project savings: 4,850 MTCO2e



237,745

miles driven by an average passenger vehicle



THANK YOU

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Scott Weeks
Environmental Scientist, CDFA
Scott.Weeks@cdfa.ca.gov

Carolyn Cook, M.Sc.
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ENVIRONMENTAL FARMING ACT - SCIENCE ADVISORY PANEL

OCTOBER 26, 2017 MONTEREY



OUTLINE

- 2017 HSP UPDATE
 - INCENTIVES PROGRAM
 - DEMONSTRATION PROJECTS
- NEW HSP MANAGEMENT PRACTICES
 - SOLICITATION FOR PROPOSALS
 - EVALUATION TIMELINE
- NEW: FUNDING SOURCE FOR HEALTHY SOILS PROGRAM



2017 HSP TIMELINE



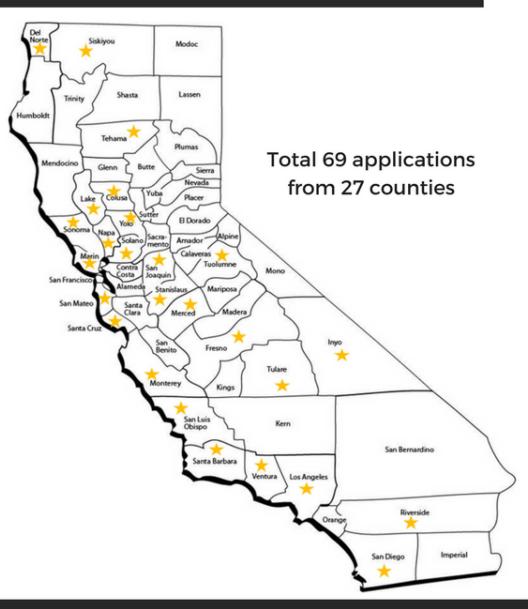
2017 HSP INCENTIVES PROGRAM APPLICATIONS SUMMARY

Category	#	Funds Requested (Million)	Matching Funds (Million)
Received Applications	190	\$ 2.84	\$ 2.64
Incomplete Applications	121	\$ 0.93	\$ 0.77
Complete Applications	69	\$ 1.99	\$ 1.99
Applications Advanced for Technical Review	66	\$ 1.92	\$ 1.96

2017 HSP INCENTIVES PROGRAM APPLICATIONS LAND USE TYPE DISTRIBUTION

Land Use Type	#	Funds Requested (Million)	Percent of total Requested funds
Orchards	20	\$ 0.54	29.0%
Grazed/rangeland	13	\$ 0.43	23.1%
Annual/Perennial mixture	10	\$ 0.38	20.1%
Annual Cropland	16	\$ 0.28	15.2%
Vineyard	10	\$ 0.24	12.6%

2017 HSP INCENTIVES PROGRAM APPLICATIONS DISTRIBUTION BY COUNTY



County	#	County	#
Merced	10	Lake	2
Sonoma	6	Napa	2
San Luis Obispo	5	San Diego	2
Marin	5	Yolo	2
Riverside	4	Los Angeles	1
Santa Barbara	4	Del Norte	1
Colusa	3	Inyo	1
Ventura	3	Monterey	1
Fresno	2	Sacramento	1
Stanislaus	2	San Joaquin	1
Tulare	2	San Mateo	1
Santa Cruz	2	Siskiyou	1
Solano	2	Tuolumne	1
Tehama	2		

FEEDBACK FROM WORKSHOP PROVIDERS



TIME CONSTRAINTS

- · Insufficient time to submit applications.
- · Timing did not work for applicants due to scheduling conflicts.



PAYMENT RATES NOT SUFFICIENT

 Especially for Compost Application, Cover Crop, Herbaceous Vegetative Barriers and Windbreak Establishment



DIFFICULTY TO ENSURE COST SHARING IN YEAR 3



APPLICATION REQUIRED A LARGE AMOUNT OF INFORMATION



PRACTICE IMPLEMENTATION AND MANAGEMENT NEED MORE FLEXIBILITY



TECHNICAL ASSISTANCE: ONE-ON-ONE ASSISTANCE IS MORE EFFICIENT THAN WORKSHOPS

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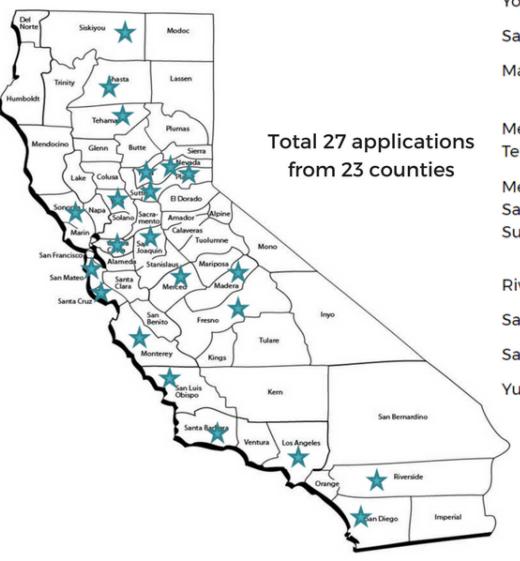
2017 HSP DEMONSTRATION PROJECTS APPLICATIONS SUMMARY

Category	#	Funds Requested (Million)	Matching Funds (Million)
Received Applications	82	\$ 5.9	\$ 3.9
Incomplete Applications	55	\$ 1.3	\$ 0.4
Complete Applications	27	\$ 4.7	\$ 3.5
Applications advanced for Technical Review	25	\$ 4.4	\$ 3.3

2017 HSP DEMONSTRATION PROJECTS APPLICATIONS CROPLAND DISTRIBUTION

Land Use Type	#	Funds Requested (Million)	Percent of total Requested funds
Annual Cropland	7	\$ 1.3	27.8%
Orchards	7	\$ 1.2	26.6%
Grazed/Rangeland	7	\$ 1.2	25.4%
Mixed Cropland	5	\$ 0.7	15.0%

2017 HSP DEMONSTRATION PROJECTS APPLICATIONS DISTRIBUTION BY COUNTY



County	Type A	County	Type B				
Fresno	2	Sonoma	3				
Yolo	2	Yolo	2				
San Diego	2	Los Angeles	1				
Madera	1	Contra Costa	1				
Merced Tehama	1	Monterey	1				
Merced San Joaquin Sutter	1	Nevada* Placer	1				
		San Mateo	1				
Riverside	1	Santa Clara	1				
San Luis Obispo	1	Santa Cruz	1				
Santa Barbara	1	Shasta	1				
Yuba	1	Siskiyou	1				
* Applications were claimed							
as Type A projects without							

GHG measurements.

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 FOR HEALTHY SOILS
 PROGRAM



SOLICITATION FOR PROPOSALS ON NEW HSP MANAGEMENT PRACTICES

- Nutrient Managment (NRCS CPS590)
 - To reduce nitrous oxide (N2O) emissions from Ag. lands
 - Slow or controlled release fertilizers
 - Nitrification inhibitors
 - 15% Reduction in N application rate
- Other NEW management practices
 - Process for Evaluation

TIMELINE FOR EVALUATION OF NEW HSP MANAGEMENT PRACTICES



POTENTIAL REVISION TO CURRENT HSP PROGRAM REQUIREMENTS

- Should continuation of practices that are currently implemented be eligible for funding?
 - Maryland Cover Crop Program Example
- Should CDFA consider increasing payment rates for eligible practices?
 - Feedback from growers and Technical Assistance Workshop providers



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FUTURE FUNDING SOURCE

SB-5

CALIFORNIA DROUGHT,
WATER, PARKS, CLIMATE,
COASTAL PROTECTION, AND
OUTDOOR ACCESS FOR ALL
ACT OF 2018



- Chapter 10. Climate Preparedness, Habitat Resiliency, Resource Enhancement, And Innovation
- 80134. (b) Of the amount subject to this section, the sum of ten million dollars (\$10,000,000) shall be available to the Department of Food and Agriculture for grants to promote practices on farms and ranches that improve agricultural and open-space soil health, carbon soil sequestration, erosion control, water quality, and water retention.

PROGRAM CONTACTS

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Supervisor - Incentive
Programs
Geetika.Joshi@cdfa.ca.gov



POTENTIAL TOPICS TO FOCUS ON FOR EFA SAP

EFA Scientific Advisory Panel

10.26.17

AMRITH GUNASEKARA, PHD CDFA EFA SAP LIAISON

AG TECHNOLOGY AND INNOVATION

- Precision Ag
- Investments including private-public partnerships
- Research needs
- Imaging (drones and satellites)
- Gene editing technologies
- Plant breeding for specific traits
- New soil/pour water testing tools (e.g., quick tests)
- Plant sensors
- Pest control technologies
- Technology growers demonstration and training center





NATIVE PLANT CONSERVATION AND HABITAT FOR MIGRATORY SPECIES

- Incentives to ensure habitat for native plant species on agricultural "private" lands
- Pilot projects (e.g., rice)
- Methods for quantification of benefits
- Research needs
- Partnerships

FARM DEMONSTRATION NETWORK

- Support the network (CDFA is member of it)
- Partners have signed MOU (blog post)
- Conservation tillage is central theme but building carbon is important part of it
- Potential tie in HSP funding into network with additional funding through programs like RCCP
- Establish efforts to grow network
- Invest in efforts to provide local assistance to growers



ENVIRONMENTAL FARMING ACT OF 1995

Division 1, Part 1, Chapter 3, Article 8.5, Sections 560–568, Section 566 (a)

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"The department shall establish and oversee an environmental farming program. The program shall provide incentives to farmers whose practices promote the well-being of ecosystems, air quality, and wildlife and their habitat."

ENVIRONMENTAL FARMING ACT OF 1995

Division 1, Part 1, Chapter 3, Article 8.5, Sections 560–568, Section 566 (b)

"The department may assist in the compilation of scientific evidence from public and private sources, including the scientific community, industry, conservation organizations, and federal, state, and local agencies identifying the net environmental impacts that agriculture creates for the environment. The department shall serve as the depository of this information and provide it to federal, state, and local governments, as needed."

ENVIRONMENTAL FARMING ACT OF 1995

Division 1, Part 1, Chapter 3, Article 8.5, Sections 560-568, Section 568 (1-4)

"(1) Review data on the impact that agriculture has on the environment and recommend to appropriate state agencies data that the panel approves as scientifically valid."

- (2) Compile the net environmental impacts that agriculture creates for the environment
- (3) Research, review, and comment on data upon which proposed environmental policies and regulatory programs are based to ensure that the environmental impacts of agricultural activities are accurately portrayed and to identify incentives that may be provided to encourage agricultural practices with environmental benefits.
 - (4) Assist government agencies to incorporate benefits identified pursuant to paragraph (1) into environmental regulatory programs.

ENVIRONMENTAL FARMING ACT OF 1995

Division 1, Part 1, Chapter 3, Article 8.5, Sections 560-568, Section 569 (a-e)

- Establish Healthy Soils Program
- Include Incentives and Demonstration Projects
- Fund incentives vial with loans, grants, research and technical assistance
- May provide priority funding to DAC and those providing environmental benefits such as improved air and water quality, improved crop yield and reduced soil erosion
- Panel will advice on scientific findings, program framework, guidelines, grower incentive and providing technical assistance.
- Establish a technical advisory committee for demonstration projects
- Work with ARB on Quantification Methodologies and funding guidelines