

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

MEETING AGENDA

May 18, 2016

9 AM to 4 PM

California Department of Food and Agriculture

Auditorium

1220 N Street

Sacramento, CA 95814

916-654-0433

LIVE STREAMING VIDEO

Please note that this is video streaming only.

For public comment and questions, please attend in person.

<https://www.cdfa.ca.gov/LiveMediaStream.html>

Additional presentation materials may be posted at the following link prior to the meeting:

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

EFA SAP MEMBERSHIP

Don Cameron, Member and Chair

David Bunn, Resources Agency, Member Jocelyn Bridson, MSc, Member

David Mallory, CalEPA, Acting Member Jeff Dlott, PhD, Member

Luana Kiger, MSc, Subject Matter Expert

Doug Parker, PhD, Subject Matter Expert

- | | |
|---|-----------------------------|
| 1. Introductions | Chair Cameron |
| 2. Updates | |
| • Minutes from previous meetings | Chair Cameron |
| • SWEEP | CDFA staff |
| • CalCAN Report | CalCAN staff |
| 3. CDFA Healthy Soils Incentive Program | |
| • Proposed Programmatic Framework | CDFA staff |
| • Compost Application Rates to Support the CDFA Healthy Soils Incentive Program | CDFA staff |
| • Food hydrolysate and carbon sequestration | Dr. Martin Burger, UC Davis |
| 4. Public Comments | Chair Cameron |
| 5. Next meeting and location | Chair Cameron |

Amrith (Ami) Gunasekara, PhD, CDFA Liaison to the Science Panel

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More information at: <http://cdfa.ca.gov/Meetings.html> and https://www.cdfa.ca.gov/oefi/efasap/meetings_presentations.html

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

Stanislaus County Agricultural Commissioner Office
3800 Cornucopia Way
Room G
Modesto, CA 95358

February 23, 2016

MEETING MINUTES

Panel Members

Don Cameron, Member and Chair
Jocelyn Bridson, MSc., Member
David Mallory (ARB), Member
Jeff Dlott, PhD., Member (phone)
David Bunn, PhD. (Natural Resources Agency), Member
Doug Parker, PhD., Subject Matter Expert
Luana Kiger, MSc., Subject Matter Expert (phone)

State Agency Staff

Amrith Gunasekara, PhD., CDFA
Geetika Joshi, PhD., CDFA
Bailey Smith, MSc., ARB
Cari Anderson, MBA, ARB

AGENDA ITEM 1 - Introductions

The meeting was called to order at 10:05 AM by the Chair, Mr. Don Cameron. Introductions were made. Present at the meeting were all the members noted above under "Panel Members". A quorum was established.

AGENDA ITEM 2 - Updates

Minutes

Chairman Cameron introduced the minutes from the July 17, 2015 meeting. A motion was made by Ms. Bridson to accept the minutes as presented by CDFA staff and the motion was seconded by Dr. Bunn. The motion was moved by all members present and accepted without further changes.

Healthy Soils Initiative

Dr. Gunasekara provided an update to panel members on the status of the Healthy Soils Initiative including a CDFA Healthy Soils Program. The Healthy Soils Program will be designed to provide incentives to farms and ranchers to build carbon and reduce

greenhouse gases on agricultural lands. Also discussed was that CDFA is working to develop compost application rates to support a CDFA Healthy Soils Incentive program since none currently exist. Dr. Gunasekara noted that CDFA, "the Department", is awaiting funding (July 1, 2016) to move forward on a Healthy Soils Program. Members of the panel noted that having a framework developed prior to July 1, 2016, would be useful and would facilitate making funds immediately available to growers as incentives. Members also noted that having the framework for a Healthy Soils Program vetted and discussed at the next Science Panel meeting, including facilitating public comment, would be useful. Dr. Gunasekara stated that consistent with the panel recommendations, a framework for the new program will be developed in coordination with the Air Resources Board and presented at the next Science Panel meeting.

AGENDA ITEM 3 - The State Water Efficiency and Enhancement Program (SWEEP)

Update on program

Dr. Gunasekara provided an update on the State Water Efficiency and Enhancement Program (SWEEP) including the most recent status of the ongoing drought, which is now in its fifth year. Dr. Gunasekara noted the announcement of the next solicitation for applications was previously announced in November 2015 with a closing date for applications on January 8, 2016. A total of \$16 million is available with another \$19 million becoming available in May or June of 2016. Aggregated greenhouse gas and water savings from the first three rounds of SWEEP funding were presented including new requirements for post verification of greenhouse gases and water savings.

ARB QM Methodology and Tool

Ms. Smith and Ms. Anderson were present at the meeting from the Air Resources Board (ARB) to present new requirements for calculating greenhouse gases and water savings. ARB is required to develop quantification methodology (QM tool) for all programs funded by the Greenhouse Gas Reduction Fund (GGRF). SWEEP is funded by GGRF and therefore required to comply with quantification methodologies developed by ARB. ARB worked with CDFA to develop the new tool. The QM tool was presented to the Science Panel for agronomic feedback and public comment. Members were pleased with the use of the Excel platform as many in the agricultural community are familiar with its use. Public comments included having more examples on how the QM tool should be used for drip irrigation and sensors. Suggestions to improve the QM tool were made by members and the public including having units of pressure in pounds per square inch (PSI). Members recommended creating a video of how to use the QM tool for future SWEEP applicants. It was noted by ARB that the new QM tool required a pump test. These new requirements would be included in the next solicitation for applications.

Opportunities for Additional Enhancements – Subsurface Drip Irrigation in Field Crops

Dr. Gunasekara provided background information on the need to incentivize subsurface drip irrigation in field crops to save water and potentially save greenhouse gases. The

potential water savings could be significant since field crops such as alfalfa and corn use flood or furrow irrigation and California has significant acreage of these crops. Dr. Munk and Dr. Putnam, from the University of California, provided presentations to the members to inform and highlight the benefits and limitations of this irrigation technology. Discussions ensued? and included cost of this technology, salinity issues, yields, greenhouse gas reduction potential, experimental plot results and rodent control. Mr. Silas Rosso from California Ag Solutions provided his experiences with using SDI in field crops.

AGENDA ITEM 4 – Public Comment

Public comment and further discussion ensued. Members noted that SDI in field crops is a beneficial technology for water savings and is not exempted from the current SWEEP application process. Dr. Gunasekara inquired if a specific allocation of funds should be made available for this technology in field crops as part of the next SWEEP solicitation and call for applications. Members noted that the current and next SWEEP solicitation does not exclude SDI in field crops and that a specific funding allocation should not be made as part of the next call for SWEEP applications. Other concerns noted that CDFA should not allocate funding amounts to different crop types and there should be wide flexibility on the crops that should be funded by SWEEP.

Members noted that CDFA should highlight that SWEEP considers SDI in field crops and also work with academia to inform growers of SWEEP opportunities. Dr. Gunasekara noted that CDFA will work to provide greater outreach on SDI and field crops in relation to SWEEP.

Public comments were made on the need for technical assistance to assist growers in completing SWEEP applications. CDFA staff noted that there are some potential funding sources outside the GGRF that can support technical assistance and CDFA is working to secure funds for technical assistance. Dr. Gunasekara noted that GGRF funds cannot be used for technical assistance.

AGENDA ITEM 5 – Next Meeting and Adjournment

The data and location of the next meeting will be determined by CDFA and based on member availability. Chair Cameron adjourned the meeting at 3:40 PM.

Respectfully submitted by:

Amrith Gunasekara, Ph.D.

Date

SWEEP UPDATE

EFA SAP
May, 18 2016

Amrith (Ami) Gunasekara, PhD
Science Advisor

Carolyn Cook M.Sc.
Senior Environmental Scientist



SWEEP BACKGROUND

- Emergency drought legislation bill (SB 103) signed by Governor Brown on March 1, 2014.
 - \$10 million
- AB 91 allocated additional funds in March 27, 2015.
 - \$10 million
- Item 8570-001-3228 of the Budget Act of 2015 (Chapter 321, Statutes of 2015) appropriated another \$40 million dollars from the Greenhouse Gas Reduction Fund

.....to invest in irrigation and water pumping systems that **reduce water use, energy use and greenhouse gas emissions.**

SWEEP AUTHORITY

- The SWEEP was implemented under the authority of the Environmental Farming Act of 1995

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

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**

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PROJECT TYPES

Water Conservation

- Weather, Soil or Plant based sensors for irrigation scheduling
- Micro-Irrigation or Drip Systems

AND

GHG Reductions

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



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News Release

CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE

Media Contacts:
Steve Lyle, CDFA Public Affairs, (916) 654-0462
steve.lyle@cdfa.ca.gov



CDFA ANNOUNCES 129 PROJECTS TOTALING \$16 MILLION FOR THE STATE WATER EFFICIENCY AND ENHANCEMENT PROGRAM (SWEEP)



Release #16-013
[Print This Release](#)

SACRAMENTO. April 25, 2016 - The California Department of Food and Agriculture (CDFA) has selected 129 projects totaling \$16 million for the State Water Efficiency and Enhancement Program (SWEEP). SWEEP projects will result in on-farm greenhouse gas (GHG) reductions and water savings.

"With more than 100 grants covering thousands of acres of California farmland, these projects represent real-world gains in water use efficiency and greenhouse gas reductions," said CDFA Secretary Karen Ross. "This program provides an important incentive for our farmers and ranchers to accelerate the adoption of scientifically proven technologies and practices that make our state's agricultural community more sustainable."

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MOST RECENT ROUND OF FUNDING

- 129 projects
- \$15.7 million awarded
- \$9.7 million in matching funds
- 27,787 acres impacted
- Average project size = 215 acres
- GHG reductions are estimated at 5,715 MT CO₂e/year
- Water savings are estimated at 23,375 ac-ft/yr
- Additional quantification ongoing

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UPCOMING SOLICITATION

2nd solicitation of total \$40 million ~ \$18 million

- Anticipate announcing the application period in June 2016
- A change to the solicitation includes the use of an updated GHG Quantification Methodology and GHG Calculator developed by CA Air Resources Board.
<http://www.arb.ca.gov/cc/capandtrade/auctionproceeds/quantification.htm>
- Technical assistance workshops will be made available to applicants thanks to funding from USDA NRCS
<https://www.cdfa.ca.gov/oefi/sweep/docs/2016-CDFA-NRCSTechnicalAssistanceWorkshopsRFP.pdf>

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APPLICATION REQUIREMENTS

- Applicants must establish a baseline water use and GHG emissions from the current system and project savings due to the project. Supporting documentation is required including:
 - Energy bills
 - Water Use Calculator Tool
 - Pump Tests
 - Air Resources Board GHG Calculator Tool
- Awardees must maintain records for 3 years and agree to verifications site visit

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TECHNICAL ASSISTANCE FUNDING

- USDA NRCS collaborating with CDFA to provide grant of \$50,000 to disperse to organizations that will provide technical assistance to farmers during the next application period.
- CDFA currently has an request for applications for this funding posted on the SWEEP webpage.
- Organizations can apply \$2,500 - \$5,000 to provide workshops and ongoing assistance through the duration of the application period.
- Funding awarded on a first come, first serve basis to organizations that demonstrate they can meet the qualifications and deliverable
- Deadline to submit applications is May 20
- Focus on DACs

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THE OFFICE OF ENVIRONMENTAL FARMING & INNOVATION

 **state water efficiency**
and enhancement program

CDFA Home > Office of Environmental Farming & Innovation > State Water Efficiency and Enhancement Program

STATE WATER EFFICIENCY AND ENHANCEMENT PROGRAM

The California Department of Food and Agriculture (CDFA) conducts a competitive solicitation to award projects that implement on-farm irrigation systems that reduce energy use resulting in greenhouse gas emission reductions and water savings through the State Water Efficiency and Enhancement Program (SWEEP).

The CDFA is pleased to announce the 2016 SWEEP Round 1 selection of projects to receive an award of funds.

CDFA Press Release - April 25, 2016

- [2016 Round 1 Selected Projects](#)

CURRENT RECIPIENTS

Recipient Resources

- [2014 Grant Awards \(Round 1\) \(PDF\)](#)
- [2014 Grant Awards \(Round 2\) \(PDF\)](#)
- [2015 Grant Awards \(PDF\)](#)

STAKEHOLDER INFO

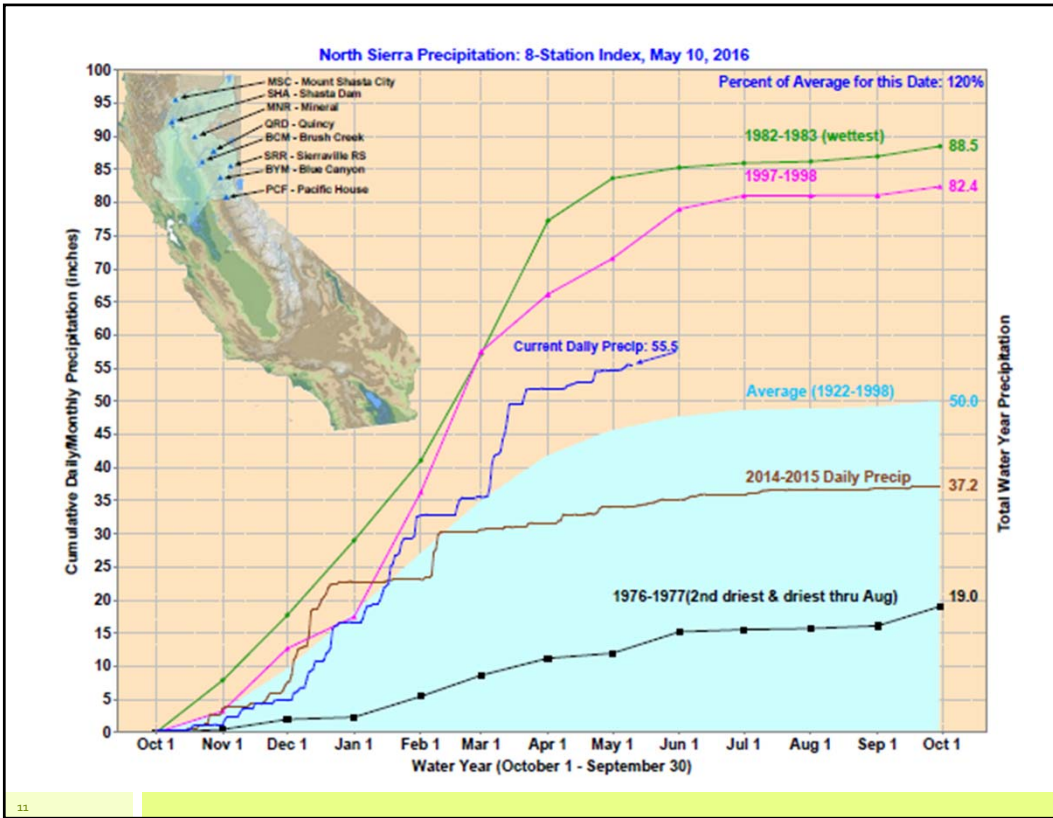
Prior Award Information

APPLICANT INFO

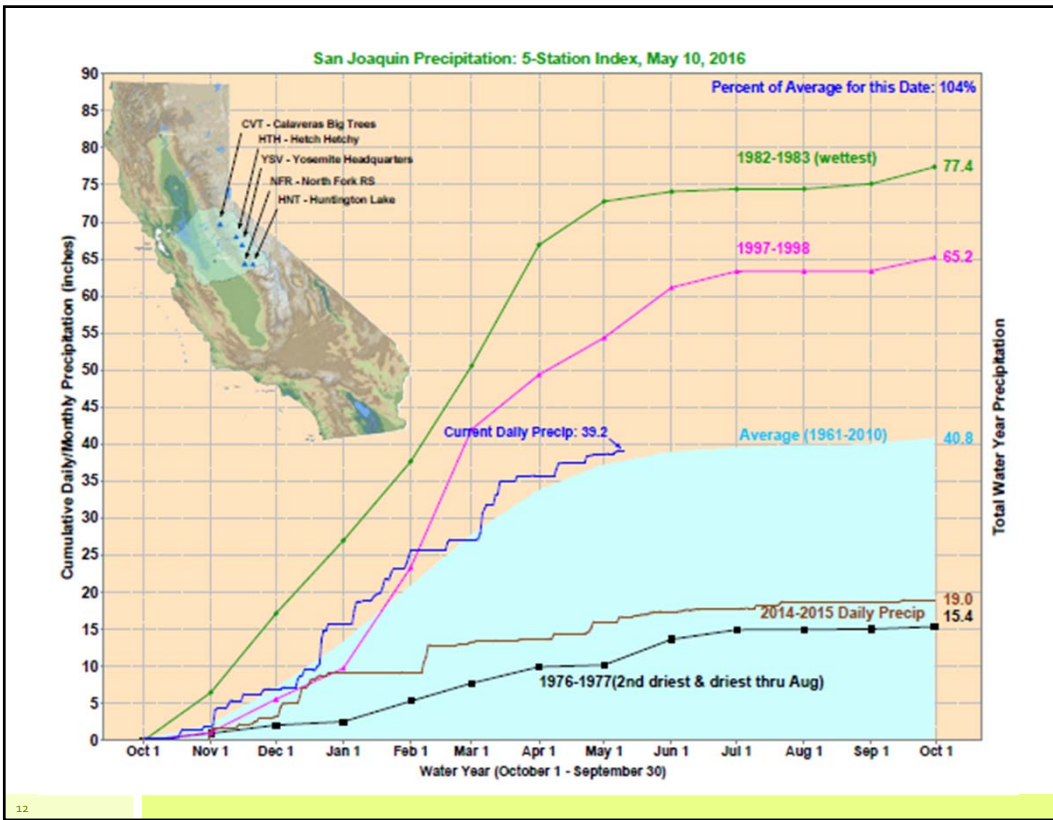
- [GHG Calculator for Fuel Savings](#)
- [USDA NRCS Irrigation Water Savings Calculator](#)
- [Irrigation Training Resources \(PDF\)](#)

www.cdfa.ca.gov/go/sweep

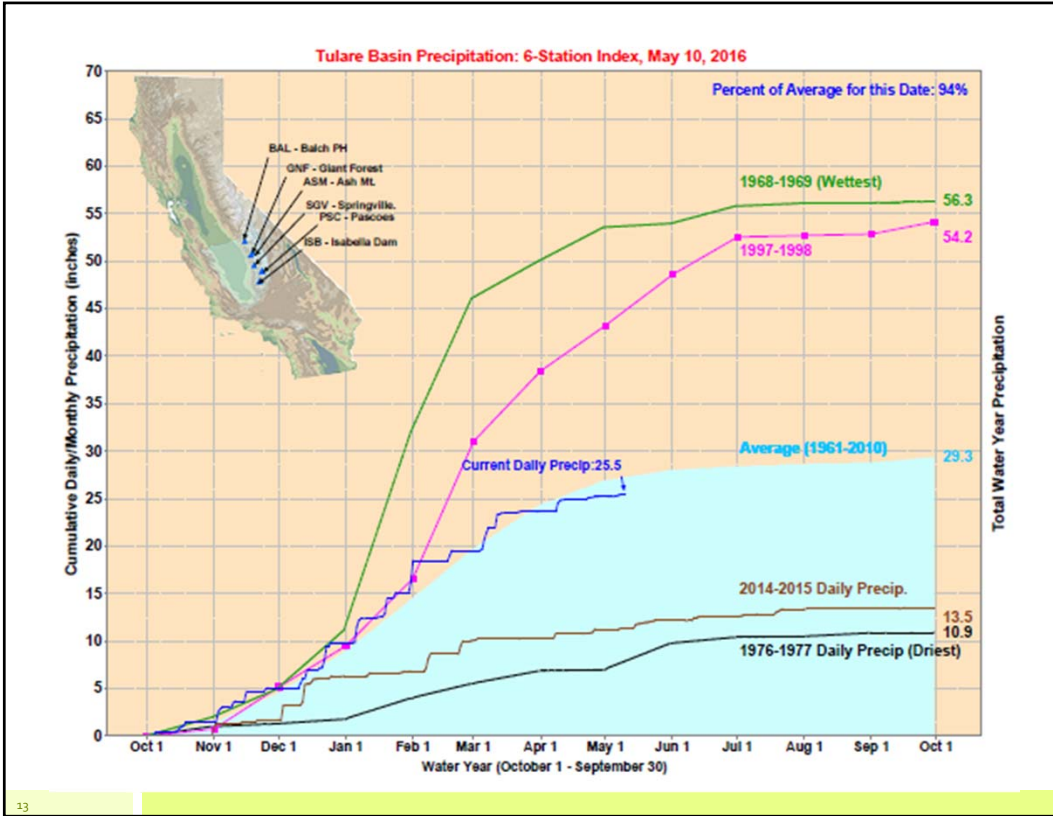
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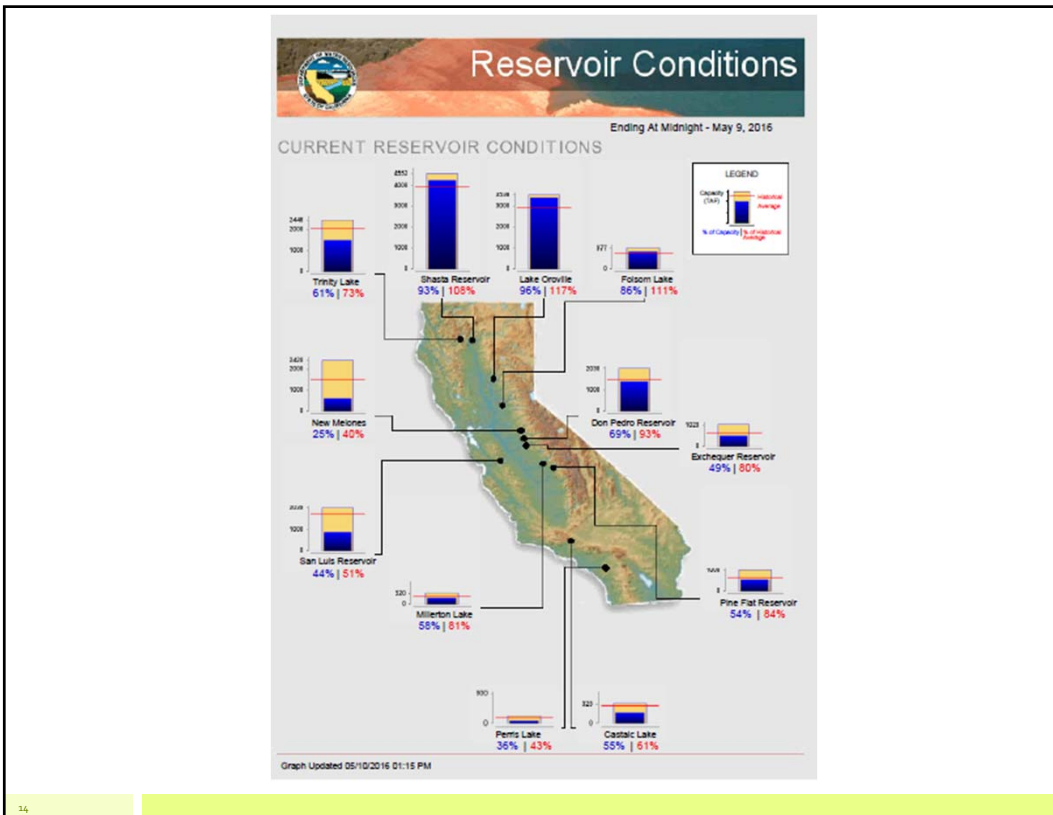
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Thank you for the time and your attention





**HEALTHY SOILS INCENTIVES
PROGRAM**
DRAFT FRAMEWORK FOR DISCUSSION

Geetika Joshi, PhD
Environmental Scientist

ENVIRONMENTAL FARMING ACT - SCIENCE ADVISORY PANEL
CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE
MAY 18, 2016
SACRAMENTO, CA

PRESENTATION OUTLINE

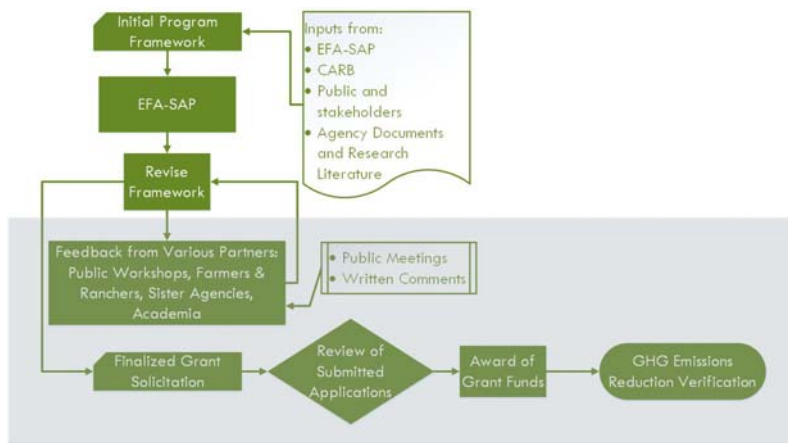
- Objective & Funding
- Program Development Process
- Framework proposed for discussion: Incentives program
- Framework proposed for discussion:
 - Demonstration program
- Partnerships for soil health

OBJECTIVE AND FUNDING

- **Objective:** To build soil carbon and reduce agricultural GHG emissions through incentives.
- Building soil carbon = building soil capacity to retain adequate soil organic matter via the activity of plants and soil organisms.
- Benefits of increasing soil organic matter include:
 - Improved plant health and yields, Increased water retention, Sequestering carbon and reduction of greenhouse gases, Reduced sediment erosion and dust, Improved water and air quality, Improved soil microbial diversity
- CDFA requested \$20 million in the FY 2016-17 budget to develop and administer a new incentive and demonstration program on the CA Healthy Soils Initiative:
 - \$13.8 million for Incentives Program
 - \$4 million for Demonstration Projects

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PROGRAM DEVELOPMENT PROCESS



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FRAMEWORK PROPOSED FOR DISCUSSION: INCENTIVES PROGRAM - ELIGIBILITY

- Eligibility: California farmers and ranchers.
- Projects must be located in CA and result in GHG reductions from agricultural practices for a specified time period, quantifiable using a method determined by ARB.
- Projects funded under this solicitation to use one or more of the eligible **USDA-NRCS Conservation Practice Standards** identified in the RFP, and compost application.
- An agricultural operation to only submit one application using a unique tax identification number per round of funding to allow wide distribution of funds.

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POTENTIAL MANAGEMENT PRACTICES CONSIDERED FOR INCENTIVES

Question – Which management practices shall be considered for incentives through this program?

- CROPLANDS
 - Nutrient Management: improved N fertilizer management/ replacing synthetic N fertilizer • Cover crops • Conservation cover • Herbaceous wind barriers • Vegetative barriers • Riparian herbaceous cover • Contour buffer strips • Field border • Filter strip • Tree/shrub establishment • Windbreak/shelterbelt establishment/ renovation • Riparian forest buffer • Hedgerow planting • No-till • Alley cropping • Multi-story cropping • Mulching • **Application of compost**
- GRAZING LANDS
 - Silvopasture establishment on grazed grassland • **Application of compost**

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QUANTIFICATION METHODOLOGY FOR GHG EMISSION REDUCTIONS

- Per SB 862, the California Air Resources Board (ARB) is required to develop quantification methods for agencies receiving Greenhouse Gas Reduction Fund (GGRF) appropriations.
- ARB, in collaboration with CDFA, is evaluating COMET-Planner, published research, assessment reports and other possible approaches to develop a quantification methodology for the Healthy Soils Incentives Program.

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FRAMEWORK PROPOSED FOR DISCUSSION: INCENTIVES PROGRAM – GRANT SIZE

Question - What should the grant award size be? What should the matching fund requirements be?

- GRANT SIZE
 - Maximum award amount
 - Based on USDA-NRCS Conservation Practice Standards Payment Rates?
 - Other suggestions?
- MATCHING FUNDS
 - Match required or preferred
 - A minimum match %

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FRAMEWORK PROPOSED FOR DISCUSSION: INCENTIVES PROGRAM – APPLICATION

Question - What information would be requested in the grant application and how would GHG emission reductions be verified?

- Applicant would provide information including but not limited to:
 - Description of the proposed project.
 - Estimation of greenhouse gas (GHG) reductions according to an ARB approved methodology developed in consultation with CDFA:
 - Include baseline estimates and supporting documentation
 - Specify the life of the project and how GHG emission reductions will continue to occur over the required timeframe.
- CDFA and ARB will provide guidance for verification of GHG reductions and sequestration once the project is operating.

FRAMEWORK PROPOSED FOR DISCUSSION: INCENTIVES PROGRAM – CO-BENEFITS

Question - Should CDFA generate a list of co-benefits and give additional consideration for funding based on co-benefits?

- Examples of co-benefits include water quality protection.
- Benefits to disadvantaged communities (DACs).

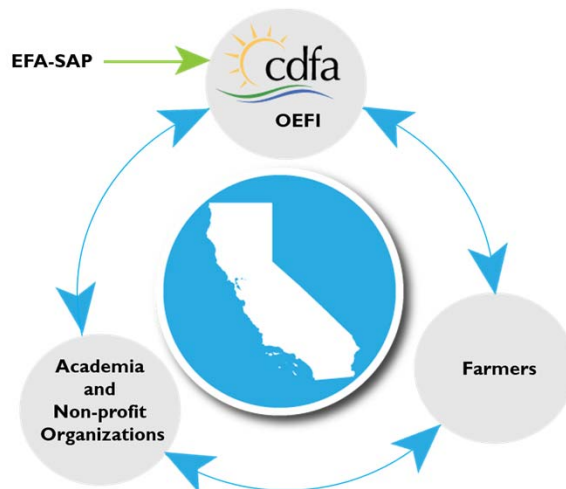
FRAMEWORK PROPOSED FOR DISCUSSION: INCENTIVES PROGRAM – DRAFT TIMELINE

ITEM	ESTIMATED DATES
Program framework development	May – Jun 2016
Public Stakeholder Meetings for Program Design Feedback	Jul – Aug 2016
Development of RFP	Aug – Sep 2016
Notice of Funding availability released and Grant Application Workshops	Sep – Oct 2016
Applications proposals due	Oct – Nov 2016
Proposal evaluation (Technical Review)	Nov – Jan 2016
Announce grant awardees	Feb 2017
Project Implementation to begin	Feb-Mar 2017

FRAMEWORK PROPOSED FOR DISCUSSION: DEMONSTRATION PROJECTS

- *Objective:* Provide funding for projects that achieve soil carbon sequestration and GHG emissions reduction in the field.
- Individual grant amount: To Be Determined based on scope of work and feedback from partners.
- Eligibility:
 - All projects must have field component with quantifiable on-farm GHG emission reductions
 - Partnerships:
 - Ag Operations + Academia and/or Non-profit organizations
 - Ag Operations + Non-profit organizations
 - Academia + Non-profit organizations
 - Outreach and education component (e.g. Field Day)
- Timeline: Similar to incentives program

PARTNERSHIPS FOR SOIL HEALTH THROUGH PROPOSED INCENTIVES PROGRAM



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PROGRAM CONTACTS

Geetika Joshi, Ph.D.

Environmental Scientist

Geetika.Joshi@cdfa.ca.gov

Carla Sanchez

Special Assistant, Climate Change Programs

Carla.Sanchez@cdfa.ca.gov

Amrith Gunasekara, Ph.D.

Science Advisor to CDFA Secretary

Amrith.Gunasekara@cdfa.ca.gov

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**AGENDA ITEM 3.
CDFA HEALTHY SOILS INCENTIVE PROGRAM**

**COMPOST APPLICATION RATES TO
SUPPORT THE CDFA HEALTHY SOILS
INCENTIVE PROGRAM**

5/18/2016

Kelly Gravuer, PhD Candidate
University of California, Davis



BACKGROUND

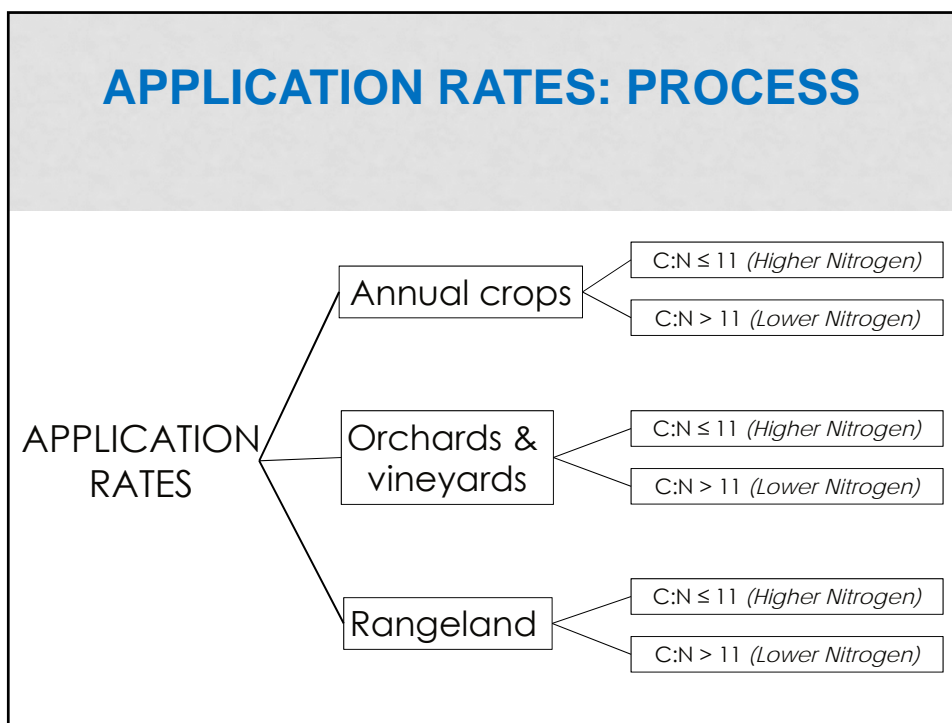
- 2015 - Language in Governor's Budget regarding the Healthy Soils Initiative (HSI)
- HSI: wide multi-state agency effort focused on building carbon in soils to improve soil health
- Carbon sequestration in soils important to reducing atmospheric greenhouse gases while building soil health for food security and agricultural sustainability
- CDFA proposed to have a Healthy Soils Incentive Program
 - Provide \$ to growers to adopt management practices that build soil carbon
- Compost addition: potential Incentive Program practice

COMPOST

- Multiple benefits in soils supported by scientific literature (does not mean gaps do not exist)
- For Incentives Program, plan to incentivize USDA NRCS Conservation Practices with potential to reduce GHG emissions (as identified in COMET-Planner)
 - Working with California Air Resources Board (ARB) to identify practices with best potential to reduce emissions in California
- Compost use is not a stand-alone USDA NRCS Conservation Practice
- To include compost application in CDFA Incentive Program, must develop application rates
- Applications rates must taken into consideration environmental impacts (if any)

APPLICATION RATES: PROCESS

- Developed application rates using scientific sub-committee (met August 28 and September 30, 2015)
- Developed white paper – posted online for public comment (posted online in January, 2016)
- Received public comments for 4 weeks
- Public comment letters posted online
- Have reviewed comments and summarized in next few slides
- Staff recommendations included
- EFA SAP should discuss, take public comment and recommend staff to make changes to white paper
- White paper will be finalized following revisions by staff with EFA SAP recommendations



PROPOSED RESPONSES TO COMMENTS

1. Make clear that ARB is responsible for developing quantification methodology (QM) tool (page 4 and 5)
2. Highlight benefits of compost application (page 4)
3. Define compost and clarify the types of materials that are eligible (page 6)
 - Composted biosolids can be eligible (working to get additional data; page 6)
 - Exclude biochar at this time due to the lack of scientific basis for application rates and lack of information on benefits – may be added during composting process (page 6)
4. Provide online tool to calculate anticipated nutrient release from compost (page 7)

PROPOSED RESPONSES TO COMMENTS

5. Clarify: although compost generally improves soil water and nutrient holding capacity, insufficient data to quantitatively incorporate this into application rate determination at this time (page 8)
6. Include figure of nitrogen cycle for clarity (page 9)
7. Add low but persistent rate of compost organic N mineralization many years after application (does not go to zero) (page 9)
8. After carefully reviewing comments supporting higher application rates, CDFA staff recommends not increasing rates beyond recommendation by scientific subcommittee to support environmental quality
 - can be reviewed as additional California-based data on compost nutrient release rates becomes available

PROPOSED RESPONSES TO COMMENTS

9. After reviewing numerous comments in support of a more precautionary approach to compost application on rangelands, including:
 - many additional scientific papers
 - expert comments on unique aspects of California rangeland dynamics that would not be well-captured by the studies in our literature review of amendment additions elsewhere

CDFA staff recommends reducing rangeland application rates and using compost with lower nutrient content for rangeland applications

 - can also be reviewed as additional multi-year data sets from in-progress California studies becomes available
10. Define priority sites for rangeland compost application and sensitive habitats (Table 5, page 15)

PROPOSED RESPONSES TO COMMENTS

11. Note need for monitoring of incentivized sites (e.g., soil organic matter content; page 17)
12. Note need for technical assistance (page 18)

Crop Type	Compost Type	Moist Compost Application Rate (tons/acre)	Equivalent Dry Compost Application Rate (tons/acre) [†]	% of total plant required N represented by rate
Annual	Higher N (C:N ≤ 11)	3 – 5	2.2 – 3.6	7.3 – 12.1%
Annual	Lower N (C:N > 11) [*]	8	5.3	8.1%
Tree	Higher N (C:N ≤ 11)	2 – 4	1.5 – 2.9	6.8 – 13.6%
Tree	Lower N (C:N > 11) [*]	6 – 8	4.0 – 5.3	8.6 – 11.4%

Compost Type	Moist Compost Application Rate (tons/acre)	Equivalent Dry Compost Application Rate (tons/acre)	Cumulative lbs available N/acre applied at 5 years post-application
Lower N (C:N > 11)	6 – 8	4.0 – 5.3	15.7 – 20.9

THANK YOU

Contact:

Kelly Gravuer
 PhD Candidate, UC Davis &
 Graduate Student Assistant, CDFA
klgravuer@ucdavis.edu

