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

MEETING AGENDA
(Science Panel members only)
9:00 am to 12 pm
9:00 am – Nitrogen Harvester, Castroville, CA 95012
10:30 am – Elkhorn Slough Reserve, Watsonville, CA 95076

August 26, 2016
1 PM to 4 PM
University Cooperative Extension Office
1432 Abbott Street
Salinas, CA 93901
916-654-0433

Call-in information:
1-877-238-3903
Passcode – 6655460#

LIVE STREAMING VIDEO
Please note that this is video streaming only.
For public comment and questions, please attend in person.
https://attendee.gotowebinar.com/register/1005756647949574145
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, 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	Katie Filippini, MSc and Scott Weeks
• Healthy Soils Initiative and Program	Geetika Joshi, PhD
• Compost Application Rates to Support the CDFA Healthy Soils Incentive Program	Amrith Gunasekara, PhD
3. Presentations to the Panel	
• Trace Genomics	Poornima Parameswaran, PhD
• AutoAgronom Israel Ltd – Request for collaborations	Roi Adar and Dr. Yoseph Shoub
4. Public Comments	Chair Cameron
5. 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.
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

California Department of Food and Agriculture
Auditorium
1220 N Street
Sacramento, CA 95814

May 18, 2016

MEETING MINUTES

Panel Members

Don Cameron, Member and Chair
Jocelyn Bridson, MSc., Member
David Mallory (ARB), Member
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
Kelly Gravuer, PhD candidate, CDFA

AGENDA ITEM 1 - Introductions

The meeting was called to order at 9:07 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 February 23, 2016 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.

The State Water Efficiency and Enhancement Program (SWEEP)

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 is anticipated in June 2016. Aggregated greenhouse gas and water savings from the first three rounds of SWEEP funding were presented. All project information

from previous rounds has now being included on the SWEEP website under a link titled "Stakeholder Info". Dr. Parker requested staff to establish a link between the CDFA SWEEP website and the Air Resources Board (ARB) website where the SWEEP projects have been visually presented on an online California state map.

CalCAN Report

The California Climate Action Network (CalCAN) had requested CDFA an opportunity at this meeting to present to the Science Panel a new report on their evaluation of SWEEP. CalCAN presented their findings of SWEEP and has made available the report on their website. http://calclimateag.org/sweep-progress-report/. CalCAN noted that some counties, such as Imperial, have not received any SWEEP funding. Dr. Gunasekara noted that additional outreach activities will be provided in that county for the next round of funding. Discussion ensured on establishing a funds cap one entity could receive. Suggestions were provided and Dr. Gunasekara noted that prior to the next solicitation for application for SWEEP, a cap would be established which will be consistent with other incentive program like SWEEP at the federal level.

AGENDA ITEM 3 – CDFA Healthy Soils Incentive Program
Proposed Programmatic Framework

Dr. Joshi provided an overview of a framework for a Healthy Soils Incentive Program if funding is allocated. The Healthy Soils Program will be designed to provide incentives to farms and ranchers to build carbon and reduce greenhouse gases on agricultural lands. The framework was presented at this meeting at the request of Science Panel members. The request was made at the previous Science Panel on May 18, 2016. The framework presentation included estimated timeframes if funding was allocated. Discussion ensued including comments from the Science Panel members. Important points included using USDA NRCS to discuss the conservation practices, use of Resource Conservation Districts in the verification component, ensuring an user-friendly application process (especially for smaller agricultural operations), establishment of a funding cap per operation, eliminate duplicate funding with USDA NRCS, recognize the multiple benefits of practices, study established quantitative tools already available and create partnerships with industry to establish demonstration projects. The discussions facilitated public comment. Comments from the public included discussion on grant award size and recognize benefits already being done by growers.

Compost Application Rates to Support the CDFA Healthy Soils Incentive Program

Kelly Gravuer, a graduate student with UC Davis assisting CDFA, presented work completed on establishing compost use application rates to support a CDFA Healthy Soils Incentive Program. This work is a continuation of work completed through previous Science Panel meetings where a literature review, white paper report and public comment was facilitated to establish compost use application rates to support a CDFA Incentive Program that is designed to build soil organic matter in California agricultural operations. CDFA had received several comment letters and a summary of those comments were provided to the Science Panel as part of a PowerPoint presentation. Ms. Gravuer noted that CDFA will work closely with CalRecycle to establish a definition for compost and also the State Water Board on the nutrient

component of the white paper document on compost use rates. Dr. Gunasekara noted that CDFA is in the process of revising the application rates based on the public comments and those rates will be presented to the Science Panel at the next meeting in August. Public comment was facilitated and a comment was made on the benefit of having a food safety section. There were comments also on the importance of defining compost in the white paper report. It was also noted that incentivized compost would be from a permitted or otherwise authorized facility under state law and subject to state inspections.

Food hydrolysate and carbon sequestration

Dr. Martin Burger presented a scientific presentation on the importance of food hydrolysate for building microbial communities and organic matter in soil. Discussion and public comment was facilitated.

AGENDA ITEM 4 and 5 – Public Comment and future meetings

Public comment was facilitated followed by discussion. The date and location of the next meeting is August 26, 2016 and will be in Salinas, California. Chair Cameron adjourned the meeting at 2:16 PM.

Respectfully submitted by:

_____ _____

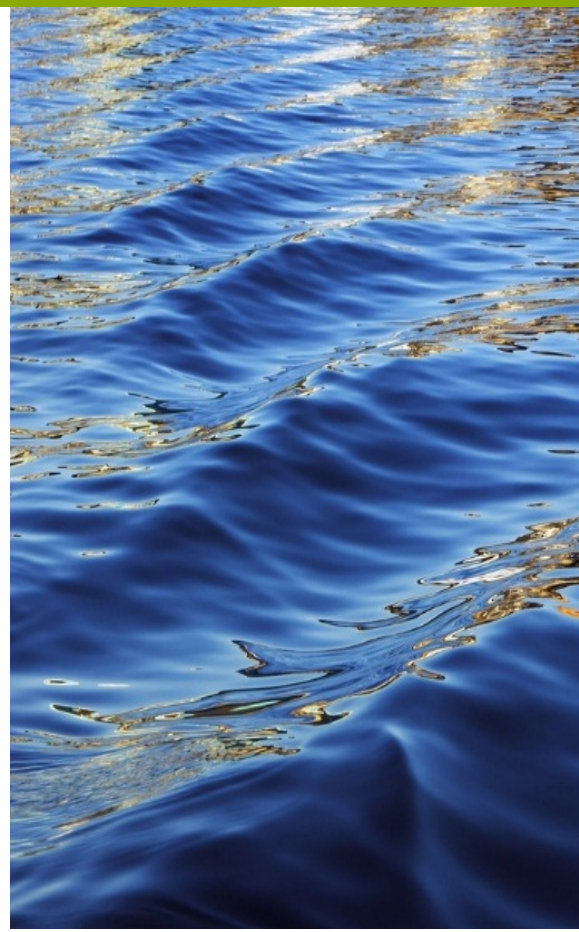
Amrith Gunasekara, Ph.D. Date

SWEEP UPDATE

EFA SAP
August, 26th 2016

Scott Weeks
Environmental Scientist

Katie Filippini
Environmental Scientist



cdfa CALIFORNIA DEPARTMENT OF FOOD & AGRICULTURE

NEW STAFF FOR SWEEP

Katie Filippini
Environmental Scientist

- Saint Mary's College B.S. Biology; UC Santa Barbara M.S. Environmental Management
- Worked in CDFA's Plant Department on invasive plant control, insect trapping, phytosanitary issues

Scott Weeks
Environmental Scientist

- Graduated from Texas Tech University in 2013 with a B.S. in Biology
- Previously worked for SWRCB, PG&E and USDA:ARS
- Comes from a Ranching family from Siskiyou County

Responsible for project coordination during installation phase, post-project verification activities and GHG and Water Saving quantification following for three years of required reporting

SWEEP BACKGROUND

- **$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: Budget Act of 2015**, Item 8570-001-3228 (Chapter 321, Statutes of 2015) appropriate funds 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

- **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"***






PROJECT TYPES

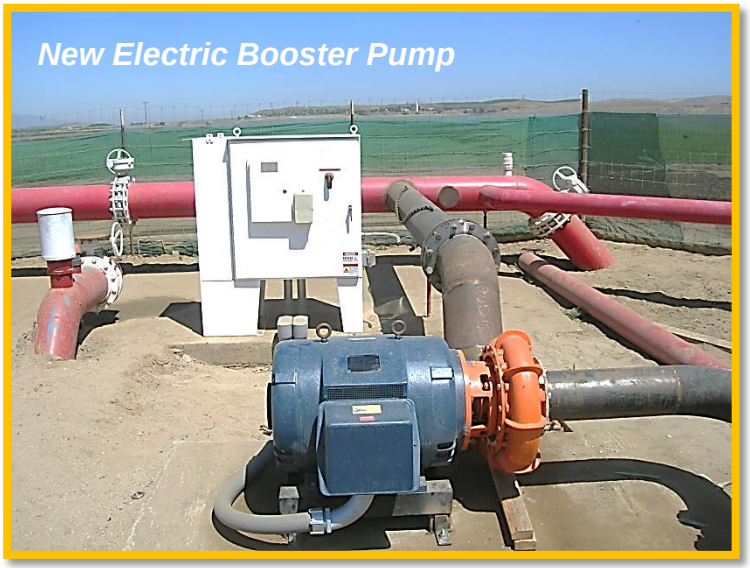
Water Conservation

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

AND

GHG Reductions

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



MOST RECENT ROUND OF FUNDING – SWEEP ROUND I

- $16 million awarded
- $9.5 million in matching funds

- 128 projects
- 27,300-acres impacted
- 213-acres average project size

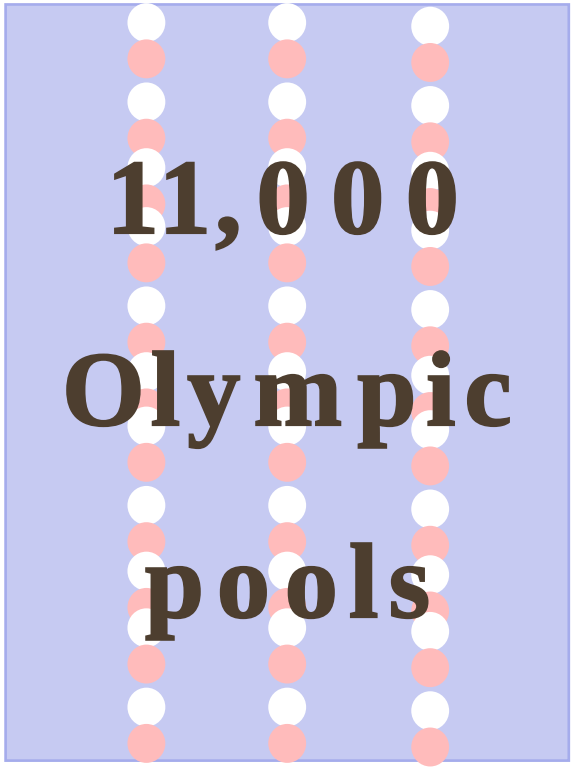
- GHG Reductions: 5,635 MT CO_2e/yr
- Water Savings: 22.267 ac-ft/yr

EQUIVALENCY RESULTS

SWEEP 2016 Rd 1

GHG and water yearly savings are equivalent to:

Global Warming



Water Consumption

RECENT SOLICITATION

2nd solicitation of total $40 million ~ $17 million

- Announced the application period in June 2016
- Completed August 5th 2016
- **Solicitation changes** include: 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** were be made available to applicants thanks to funding from USDA NRCS

https://www.cdfa.ca.gov/oefi/sweep/docs/2016-CDFA-NRCSTechnicalAssistanceWorkshopsRFP.pdf

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

- Awardees must maintain records for 3 years and agree to verifications site visit

GHG Calculator developed by CA Air Resources Board

California Air Resources Board (ARB)
Greenhouse Gas Emission Reduction Calculator for the
California Department of Food and Agriculture (CDFA)
State Water Energy Efficiency Program (SWEEP)
Greenhouse Gas Reduction Fund
Fiscal Year 2015-16

General Project Information		
Input Data	Pre-Project	
Irrigated Project Area (acres)		
Funds requested ($)		
Pump fuel or electricity use (gallons, scf, kWh)		
Fuel type		
Fuel Emissions Factor	#N/A	
Life of Project (yrs)		
Pump and Motor Enhancement and Replacement - This Section required for all applicants		
Input Data	Pre-Project	Post-Project
Motor Rated Horsepower (hP)		
Operational Hours (hr) (if Known) - If unknown, leave cell blank		
Motor Efficiency (%)		
Pump Efficiency (%)		
System Pressure (ft)	User may override system pressure if known	User may override system pressure if known.
Pumping depth (ft)		
Discharge pressure (ft)		
Friction losses (ft)		
Are you installing a VFD?	N/A	
VFD Efficiency (%)		
Irrigation System Enhancement (for systems utilizing pumps)		
Input Data	Pre-Project	Post-Project
Water savings (from NRCS) (%)	N/A	
Fuel Conversions and Renewable Energy		
Input Data		Post-Project
Renewable energy capacity (kW)		
New fuel type		
Fuel Emissions Factor		#N/A
Fuel conversion		No change
Conversion Factor		1

SWEEP 2016 Round II

- **268** completed grant applications
- Totaling **$34,330,134**
- Average amount requested is **$128,000**

- **126** Incomplete Applications
- Totaling **$5,276,629**
- Average amount requested is **$42,000**

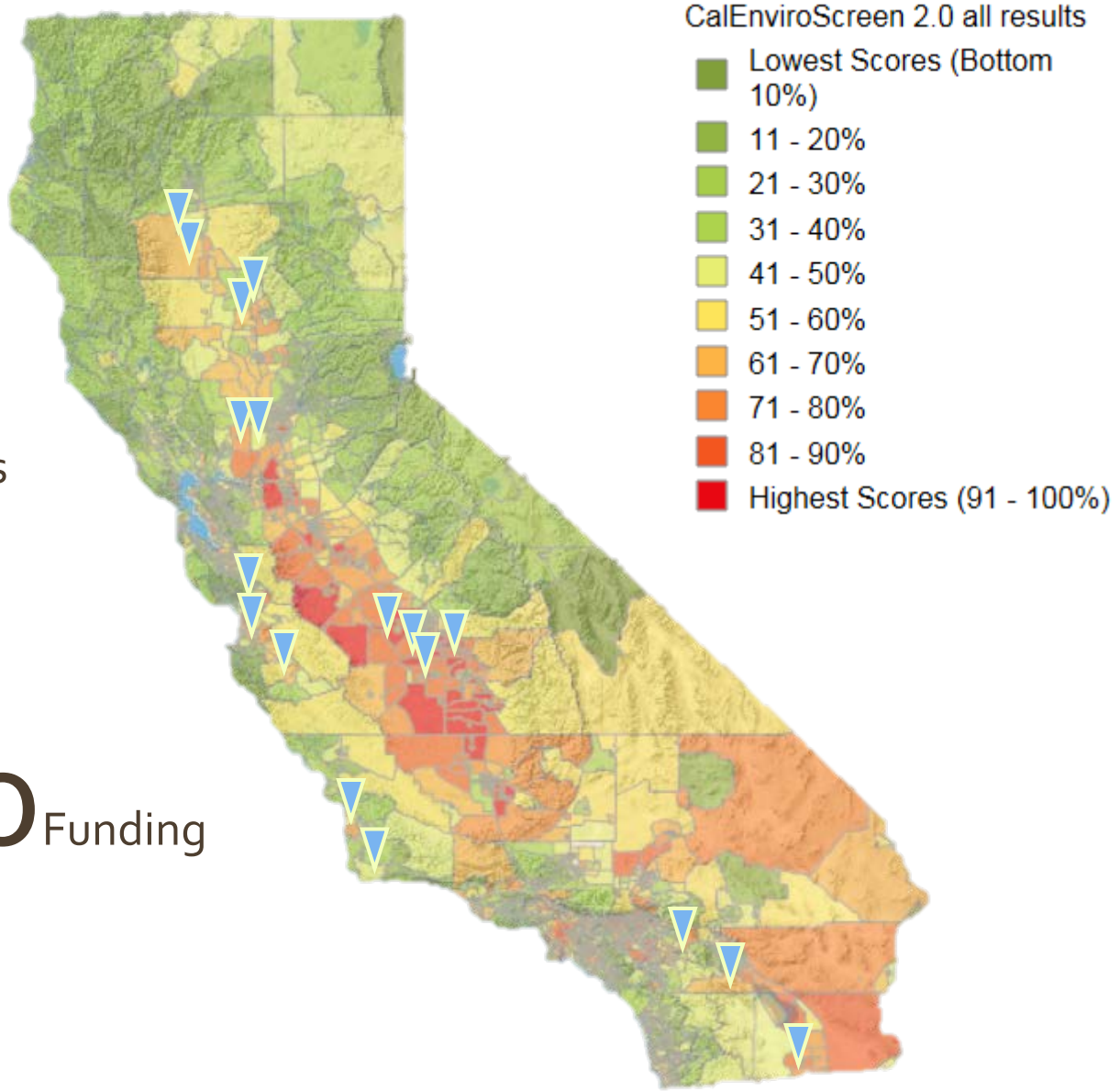
- **$17,000,000 allocated for grants**

USDA-NRCS TECHNICAL ASSISTANCE WORKSHOPS

23 Workshops

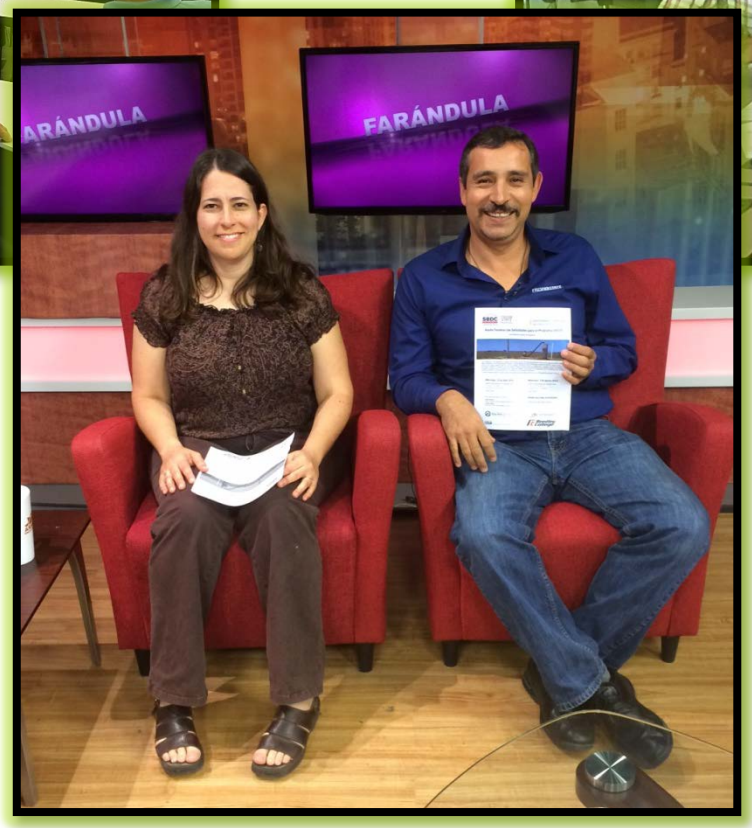
11 Organizations

$50,000 Funding



Technical Assistance Workshop

UC Cooperative Extension Fresno



Ruth Dahlquist- Willard and Felipe Perez

These Fresno Technical Assistance Workshops were taught in three languages (Hmong, Spanish, and English) Incorporated Univision TV and directly impacted 60 individuals

AWARDED PROJECT EXAMPLE

Henry Pruitt Anderson, III SWEEP Project

$150,000 - Tulare CA

80 Acres of almonds

- Changing from flood to drip irrigation
- Installation of soil moisture sensors and weather stations
- Solar array and VFD and flowmeter

- Estimated Water Savings of **23.9 acre in/year/acre**
- GHG Savings of **0.0130 MT CO_2e/year/acre**

Flow meter

Solar Array

Double lined drip irrigation

COLLABORATION WITH RESOURCE CONSERVATION DISTRICT

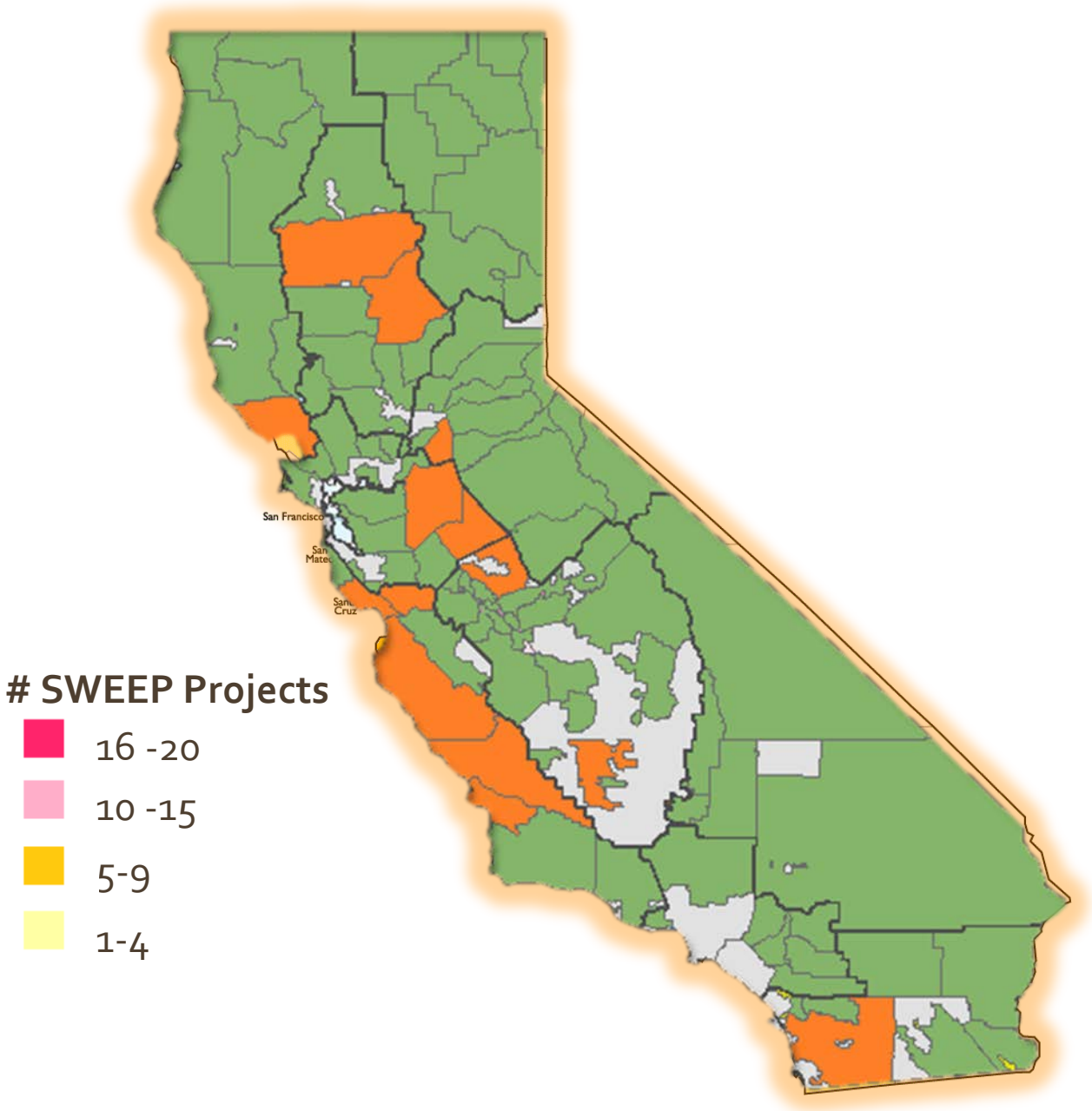
- Contracted with the RCDs to conduct onsite project verifications

- RCDs verify projects were implemented in accordance with the Grant Agreement SOW and take photos of project components

Brian Hockett, NW Kern RCD

CONTRACTED STATEWIDE with RCDs

128 Projects for Verification



RCD Partners

1. Butte County
2. Coastal San Luis
3. East Merced
4. East Stanislaus
5. Greater San Diego
6. Loma Prieta
7. Monterey County
8. North West Kern
9. San Joaquin
10. Santa Cruz
11. Sloughhouse
12. Sonoma
13. Tehama County
14. Upper Salinas Las Tables

Thank you for the time and your attention

Katie Filippini – Environmental Scientist
California Department of Food & Agriculture
Katherine.Filippini@cdfa.ca.gov

Scott Weeks – Environmental Scientist
California Department of Food & Agriculture
Scott.Weeks@cdfa.ca.gov

HEALTHY SOILS INCENTIVES PROGRAM

UPDATES TO DRAFT FRAMEWORK FOR DISCUSSION

Geetika Joshi, PhD
Environmental Scientist

ENVIRONMENTAL FARMING ACT - SCIENCE ADVISORY PANEL
CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE
AUGUST 26, 2016
SALINAS, CA

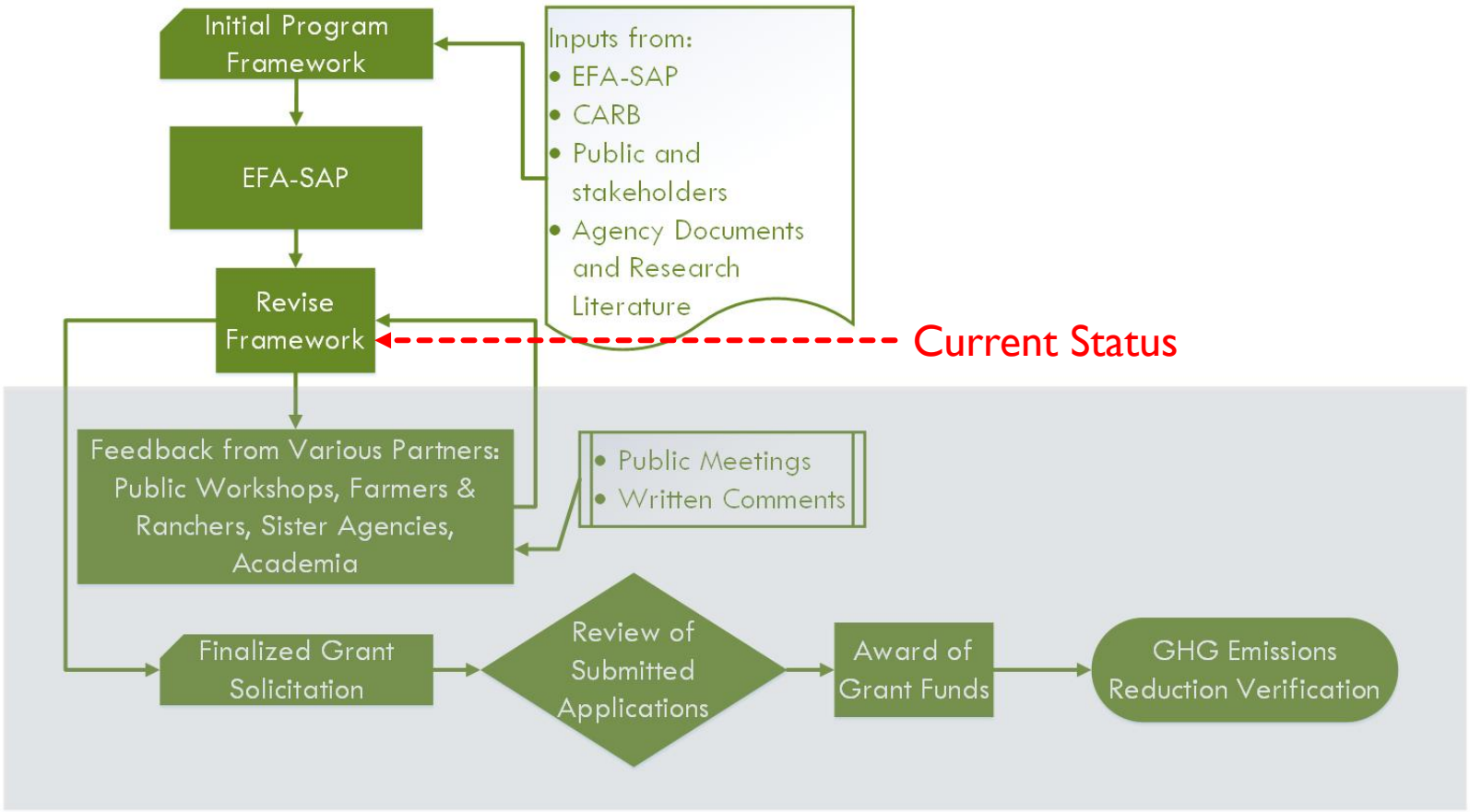
PRESENTATION OUTLINE

- Objective & Funding
- Program Development Process
- Framework proposed on May 18, 2016, including:
  - Current status
  - Potential management practices for incentives program

OBJECTIVE AND FUNDING

- *Objective*: To build soil carbon and reduce agricultural GHG emissions through incentives.
- 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
- *Status*: Funding not yet received.

PROGRAM DEVELOPMENT PROCESS



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 grant solicitation, and/or 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.

POTENTIAL MANAGEMENT PRACTICES CONSIDERED FOR INCENTIVES

- 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**

STATUS: MANAGEMENT PRACTICES INCLUDED FOR INCENTIVES

Tentatively included:

- Improved Fertilizer Management (590a)
- Mulching (484)
- Cropland Compost Application (Not an NRCS Practice)
- Grassland Compost Application (Not an NRCS Practice)
- Herbaceous Cover:
  - Herbaceous Wind Barriers (603)
  - Vegetative Barriers (601)
  - Riparian Herbaceous Cover (390)
  - Contour Buffer Strips (332)
  - Field Border (386)
  - Filter Strip (393)
- Woody Cover:
  - Windbreak/ shelterbelt establishment/renovation (380)
  - Riparian Forest Buffer (391)
  - Hedgerow Planting (422)
  - Silvopasture (381)

STATUS: MANAGEMENT PRACTICES IN CONSIDERATION FOR INCENTIVES

MANAGEMENT PRACTICE	STATUS	COMMENT
No-till (329)	Under consideration.	Permanence of carbon sequestration and definition of reduced-till being discussed.
Reduced-till (345)		
Cover Crops (340)		Additional resource use and water use being discussed.

STATUS: MANAGEMENT PRACTICES NOT INCLUDED FOR INCENTIVES

MANAGEMENT PRACTICE	STATUS	COMMENT
Replacing Synthetic Nitrogen Fertilizer (590b)	Not included.	Already covered under 590a and compost application.
Conservation Cover (327)		Practice requires complete land use change, elimination of crop yield; does not prevent new cropland conversion elsewhere, can be undone.
Tree/shrub establishment (612)		Practice requires complete land use change, does not prevent new cropland conversion elsewhere. Incentivizes conversion to tree crops.
Alley Cropping (311)		Incentivizes certain farm commodities over others. May be considered in Round 2.
Multi-story Cropping (379)		

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.

FRAMEWORK PROPOSED FOR DISCUSSION: INCENTIVES PROGRAM – GRANT SIZE

- GRANT SIZE
  - A maximum of $75,000 per award (suggested)
  - $4,500 - $590,700 for 300 acres (NRCS-EQIP; depending on practice)
- MATCHING FUNDS
  - Match preferred
  - NRCS-EQIP funds allowable as match

FRAMEWORK PROPOSED FOR DISCUSSION: INCENTIVES PROGRAM – APPLICATION

- 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.
- In finalized grant solicitations, CDFA and ARB will provide additional guidance for ongoing tracking and reporting of net GHG benefits from project activities.

FRAMEWORK PROPOSED FOR DISCUSSION: INCENTIVES PROGRAM – CO-BENEFITS

- CDFA will generate a list of co-benefits to be given additional consideration during application review.
- Benefits to disadvantaged communities (DACs) – based on ARB guidance; preferred but not mandatory.

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 grant solicitation	Aug – Sep 2016
Grant solicitation 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 net GHG benefits from soil carbon sequestration or GHG emissions reduction in the field.
- Individual grant amount: To Be Determined.
- Eligibility:
  - Projects *must* have field/on-farm component with quantifiable GHG emission reductions
  - Partnerships:
    - Ag Operations/Industry Groups + Academia and/or Non-profit organizations and/or RCDs
    - Ag Operations/Industry Groups + Non-profit organizations/RCDs
    - Academia + Non-profit organizations/RCDs
  - Outreach and education component (e.g. Field Day)
  - In finalized grant solicitations, CDFA and ARB will provide additional guidance for ongoing tracking and reporting of net GHG benefits from project activities

PROGRAM CONTACTS

Geetika Joshi, Ph.D.

Environmental Scientist

Geetika.Joshi@cdfa.ca.gov

Amrith Gunasekara. Ph.D.

Science Advisor to CDFA Secretary

Director, Office of Environmental Farming and Innovation

Amrith.Gunasekara@cdfa.ca.gov

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

Revisions since May 2016 meeting and final proposed rates

Amrith Gunasekara, Science Advisor to the Secretary
and Manager, Office of Environmental Farming and Innovation, CDFA

Kelly Gravuer, PhD Candidate, University of California, Davis

August 26, 2016

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

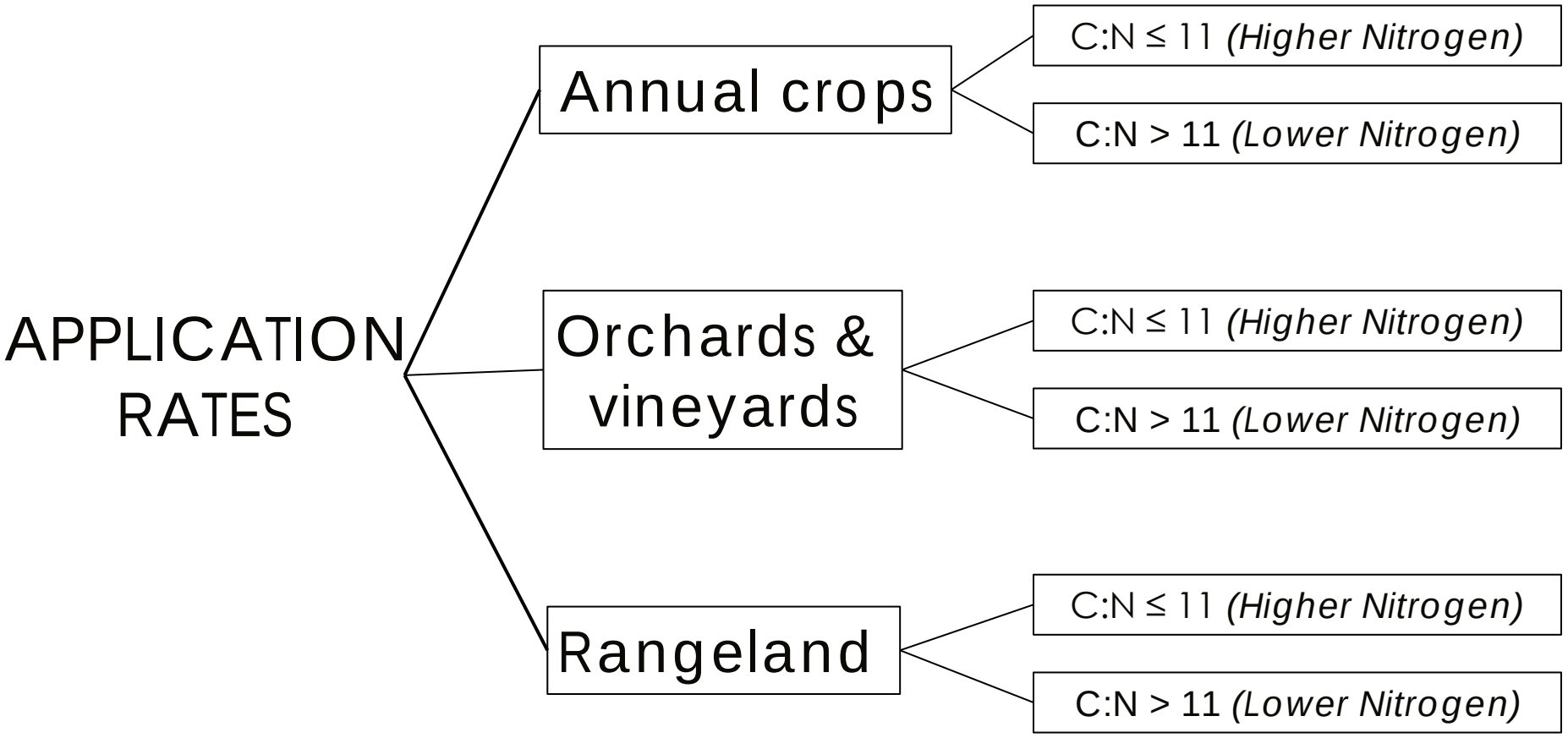
COMPOST

- 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; posted these comments online
- At May 18, 2016 EFA SAP meeting, proposed updates to white paper in response to public comments
- Recorded feedback from EFA SAP and additional public comments at May meeting
- Revised white paper in response to May meeting comments and feedback – those revisions summarized in next slides
- Seeking EFA SAP recommendation to finalize white paper and any feedback on implementation

APPLICATION RATES TO DEFINE



REVISIONS

1. Clarified eligibility of "desert grassland" and "burned" rangeland sites (previously all "ineligible"):
   a. Compost application on desert grassland sites where vegetation is dominated by invasive Eurasian grasses, such as cheatgrass (*Bromus tectorum*), may be considered as part of an overall restoration strategy, where grazing is present.
   b. Compost application as a strategy for rehabilitating select burned sites may be considered, where grazing is involved.

2. Removed "*% of total plant required N represented by rate*" column from summary tables and presented this information as text instead – the tables now show only the recommended rates. Hope is that this will increase clarity for growers.

REVISIONS

3. Lower N compost application rate for annual crops: changed from 8 tons to 6-8 tons to provide more flexibility for growers
4. Added a section to address concerns that some growers may have about plant pathogens in compost; contains brief review of relevant literature on this issue with citations for further reading, if desired.
5. Clarified role of Carbon Farm Plans (or equivalent conservation plans):
   a. Producers with such plans are welcome to apply to incentives program for cost-share of rates listed in white paper
   b. Such documents *are not required* for participation in the incentives program at this time
   c. Goal is for technical assistance and planning services to be equally available to all California producers

PROPOSED COMPOST APPLICATION RATES TO SUPPORT A CDFA INCENTIVE PROGRAM

System	Management	Crop Type	Compost Type	Moist Compost Application Rate (tons/acre)	Equivalent Dry Compost Application Rate (tons/acre)†
Cropland	Conventional	Annual	Higher N (C:N ≤ 11)	3 – 5	2.2 – 3.6
Cropland	Organic	Annual	Higher N (C:N ≤ 11)	3 – 5	2.2 – 3.6
Cropland	Conventional	Annual	Lower N (C:N > 11)	6 – 8	4.0 – 5.3
Cropland	Organic	Annual	Lower N (C:N > 11)	6 – 8	4.0 – 5.3
Cropland	Conventional	Tree	Higher N (C:N ≤ 11)	2 – 4	1.5 – 2.9
Cropland	Organic	Tree	Higher N (C:N ≤ 11)	2 – 4	1.5 – 2.9
Cropland	Conventional	Tree	Lower N (C:N > 11)	6 – 8	4.0 – 5.3
Cropland	Organic	Tree	Lower N (C:N > 11)	6 – 8	4.0 – 5.3
Rangeland	--	--	Lower N (C:N > 11)	6 – 8	4.0 – 5.3

System	Management	Crop Type	Compost Type	Moist Compost Application Rate (tons/acre)	Equivalent Dry Compost Application Rate (tons/acre)†
Cropland	Conventional	Annual	Higher N (C:N ≤ 11)	3 – 5	2.2 – 3.6
Cropland	Organic*	Annual	Higher N (C:N ≤ 11)	3 – 5	2.2 – 3.6
Cropland	Conventional	Annual	Lower N (C:N > 11)	8	5.3
Cropland	Organic*	Annual	Lower N (C:N > 11)	8	5.3
Cropland	Conventional	Tree	Higher N (C:N ≤ 11)	2 – 4	1.5 – 2.9
Cropland	Organic*	Tree	Higher N (C:N ≤ 11)	2 – 4	1.5 – 2.9
Cropland	Conventional	Tree	Lower N (C:N > 11)	6 – 8	4.0 – 5.3
Cropland	Organic*	Tree	Lower N (C:N > 11)	6 – 8	4.0 – 5.3
Rangeland	--	--	Higher N (C:N ≤ 11)	5(–10)	3.5(–7.1)
Rangeland	--	--	Lower N (C:N > 11)	15(–30)	9.8(–19.6)

THANK YOU

Contact:

Kelly Gravuer

PhD Candidate, UC Davis &

Graduate Student Assistant, CDFA

klgravuer@ucdavis.edu