USING INCENTIVES TO DRIVE INNOVATION AND ACHIEVE 2025 GOALS

Jesse Roseman, *Almond Board of California*

Geetika Joshi, *CDFA*

Carlos Suarez, *NRCS*

Aaron Tarango, *San Joaquin Valley Air Pollution Control District*

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Jesse Roseman, *Almond Board of California*

Incentives and Almond Orchard 2025 Goals

- Agencies have a wide range of incentives available for growers to adopt new practices
- Many incentivized practices support achievement of 2025 Goals
  - Irrigation and nutrition management improvements
  - Low-dust harvesters
  - Whole orchard recycling
  - Mating disruption
  - Groundwater recharge

INCENTIVES OFFERED BY AGENCIES IN THESE CATEGORIES			
2025 Goal	NRCS	CDFA	SJV Air District
Water			
Harvest Dust			
Zero Waste			
Pest Management			

THE ALMOND CONFERENCE 2020 JOIN THE JOURNEY

USING INCENTIVES TO DRIVE INNOVATION AND ACHIEVE 2025 GOALS

Aaron Tarango,

San Joaquin Valley Air Pollution Control District

california almonds
Almond Board of California

SAN JOAQUN VALLEY AIR POLLUTION CONTROL DISTRICT AG INCENTIVE PROGRAMS

San Joaquin Valley Air Pollution Control District
Almond Board of California
December 10, 2020

Ag Operation Definition

- "**Agricultural operations**" is defined from the California Air Resources Board's (ARB) Regulation for In-Use Off-Road Diesel Vehicles (Title 13 CCR § 2449): and means (1) the growing or harvesting of crops from soil (including forest operations), and the raising of plants at wholesale nurseries, but not retail nurseries, or the raising of fowl or animals for the primary purpose of making a profit, providing a livelihood, or conducting agricultural research or instruction by an educational institution, or (2) agricultural crop preparation services such as packinghouses, cotton gins, nut hullers and processors, dehydrators, and feed and grain mills. Agricultural crop preparation services include only the first processing after harvest, not subsequent processing, canning, or other similar activities. For forest operations, agricultural crop preparation services include milling, peeling, producing particleboard and medium density fiberboard, and producing woody landscape materials.

Incentive Programs for Ag Equipment

- **Ag Tractor Replacement (Self-Propelled)**
  - Must be a Tier 0, 1 or 2
  - Must purchase a Tier 4
  - Includes – Shuttle Trucks, Sweepers, Shakers, Self-Propelled Harvesters, Brush Shredder, Sprayers

Cotton Pickers, Articulated Wheel Loaders, Backhoes & Motor Graders (advertised hp rating)	SJVAPCD Incentive
All Horsepower Ratings	$650/hp
Agricultural Tractors (advertised hp rating)	SJVAPCD Incentive
25-74	$300/hp
75-149	$350/hp
150 +	$500/hp
Specialty Equipment (advertised hp rating)	SJVAPCD Incentive
25-109	$450/hp
110+	$500/hp

Incentive Programs for Ag Equipment

- **Alternatives to open Ag burning**
  - $600/acre with soil incorporation (Max of $60,000)
  - $300/acre without soil incorporation(Max of $30,000)

- **Low Dust Harvesting Equipment – Pilot Program**
  - $1.6m funded 29 projects
  - 50% incentive
  - Targeted Air Shed Award $10.3m
  - The new program will be launched early 2021

Incentive Programs for Ag Equipment

- **Ag Pump Repower**
  - Tier 3 to Tier 4f
  - Tier 3 or 4i to electric
- **Electrified Dairy Feed Mixing**
  - Reduce diesel emissions from tractors/other mobile equipment at Valley Dairies and confined animal feeding operations (CAFO's)
  - Provided up to 65% of the total cost of the project with a maximum of $30,000/ton

Contacts

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  - aaron.Tarango@valleyair.org
- www.valleyair.org/grants/
- Ryan Delmanowski – Senior Specialist (Strategies & Incentives)
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  - Ryan.Delmanowski@valleyair.org

- Submit all applications to grants@valleyair.org

USING INCENTIVES TO DRIVE INNOVATION AND ACHIEVE 2025 GOALS

Geetika Joshi, *CDFA*

cdfa
CALIFORNIA DEPARTMENT OF FOOD & AGRICULTURE

HEALTHY SOILS PROGRAM

Geetika Joshi, Ph.D.

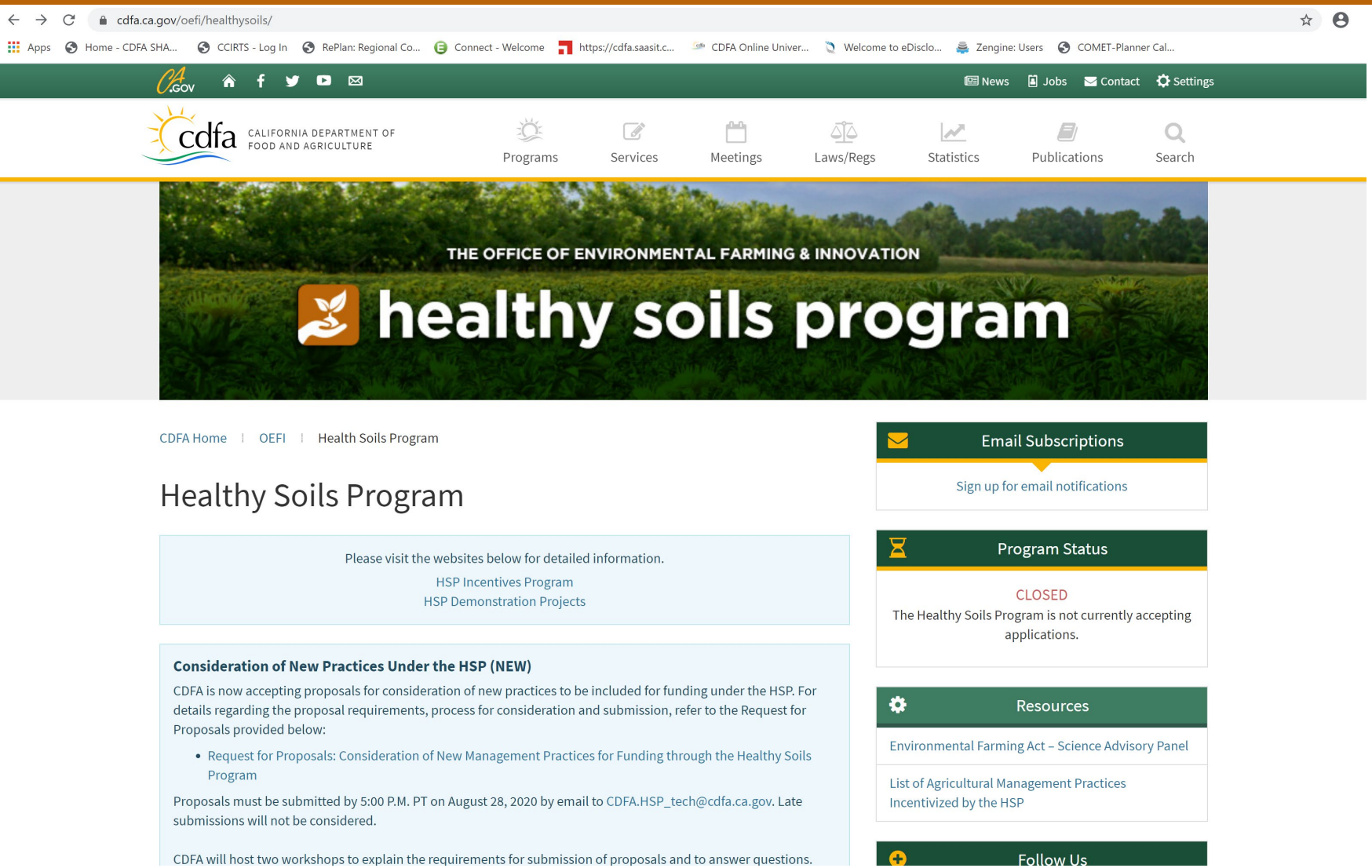
Senior Environmental Scientist (Supervisor, HSP)

Office of Environmental Farming and Innovation (OEFI)

PROGRAM BACKGROUND

- The Healthy Soils Program (HSP) stems from the California Healthy Soils Initiative, a collaboration of State agencies and departments to promote the development of healthy soils on California's farmlands and ranchlands.
- The HSP has two components:
  - The HSP Incentives Program provides financial assistance of up to $100,000 for implementation of conservation management that improve soil health, sequester carbon and reduce greenhouse gas (GHG) emissions.
  - The HSP Demonstration Projects showcase California farmers and rancher's implementation of HSP practices. Type A Projects are required to collect GHG data in addition to outreach (up to $250,000 award), Type B Projects only have outreach requirement (up to $100,000 award).
- The HSP has received $50.5 million in funding till date through California Climate Investments and Prop 68.

PROGRAM WEBSITE



Main Website:
https://www.cdfa.ca.gov/oefi/healthysoils/

HSP Incentives Program:
https://www.cdfa.ca.gov/oefi/healthysoils/IncentivesProgram.html

HSP Demonstration Projects:
https://www.cdfa.ca.gov/oefi/healthysoils/DemonstrationProjects.html

HSP IS DRIVEN BY HEALTHY SOILS PRACTICES

- Practices incentivized by the HSP achieve quantifiable greenhouse gas (GHG) reductions through soil carbon sequestration (i.e., enhancement of soil organic matter), increase soil health and provide additional co-benefits.
- Most of the practices incentivized through the HSP are Conservation Practices under the USDA-NRCS Environmental Quality Incentives Program (EQIP).
- Two practices, Compost Application and Whole Orchard Recycling, are currently only supported through the HSP.
- The HSP Incentives Program provides financial incentives through standard payment rates established for each practice on a unit (per acre) basis.
- Payment rates are doubled from EQIP payment rates to cover the full cost of practice implementation (EQIP has a cost-share expectation).
- For CDFA-only practices, rates were developed based on surveys, subject matter expert consultations and revised based on Program data submitted in earlier years.

PRACTICES INCENTIVIZED BY THE HSP

Practices for Croplands

1. Alley Cropping (USDA NRCS CPS 311)
2. Compost Application (certified compost or on-farm produced compost)
3. Conservation Cover (USDA NRCS CPS 327)
4. Conservation Crop Rotation (USDA NRCS CPS 328)
5. Contour Buffer Strips (USDA NRCS CPS 332)
6. Cover Crop (USDA NRCS CPS 340)
7. Field Border (USDA NRCS CPS 386)
8. Filter Strip (USDA NRCS CPS 393)
9. Forage and Biomass Planting (USDA NRCS 512)
10. Grassed Waterway (USDA NRCS CPS 412)
11. Hedgerow Planting (USDA NRCS CPS 422)
12. Herbaceous Wind Barrier (USDA NRCS CPS 603)
13. Mulching (USDA NRCS CPS 484)
14. Multi-story Cropping (USDA NRCS CPS 379)
15. Nutrient Management (USDA NRCS CPS 590) (15% reduction in fertilizer application only)
16. Residue and Tillage Management – No-Till (USDA NRCS CPS 329)
17. Residue and Tillage Management − Reduced Till (USDA NRCS CPS 345)
18. Riparian Forest Buffer (USDA NRCS CPS 391)
19. Riparian Herbaceous Cover (USDA NRCS CPS 390)
20. Strip Cropping (USDA NRCS CPS 585)
21. Tree/Shrub Establishment (USDA NRCS CPS 612)
22. Vegetative Barriers (USDA NRCS CPS 601)
23. Windbreak/Shelterbelt Establishment (USDA NRCS CPS 380)

PRACTICES INCENTIVIZED BY THE HSP

Practices for Orchards and Vineyards

1. Compost Application (certified compost or on-farm produced compost)
2. Conservation Cover (USDA NRCS CPS 327)
3. Cover Crop (USDA NRCS CPS 340)
4. Filter Strip (USDA NRCS CPS 393)
5. Mulching (USDA NRCS CPS 484)
6. Hedgerow Planting (USDA NRCS CPS 422)
7. Nutrient Management (USDA NRCS CPS 590) (15% reduction in fertilizer application only)
8. Residue and Tillage Management – No-Till (USDA NRCS CPS 329)
9. Residue and Tillage Management – Reduced Till (USDA NRCS CPS 345)
10. Whole Orchard Recycling
11. Windbreak/Shelterbelt Establishment (USDA NRCS CPS 380)

PRACTICES INCENTIVIZED BY THE HSP

Practices for Grazing Lands

1. Compost Application (certified compost or on-farm produced compost)
2. Hedgerow Planting (USDA NRCS CPS 422)
3. Prescribed Grazing (USDA NRCS CPS 528)
4. Range Planting (USDA NRCS CPS 550)
5. Riparian Forest Buffer (USDA NRCS CPS 391)
6. Silvopasture (USDA NRCS CPS 381)
7. Tree/Shrub Establishment (USDA NRCS CPS 612)
8. Windbreak/Shelterbelt Establishment (USDA NRCS CPS 380)

PRACTICES INCENTIVIZED BY THE HSP

Additional Practices for Demonstration and Data Collection (Type A Demonstration Projects Only)

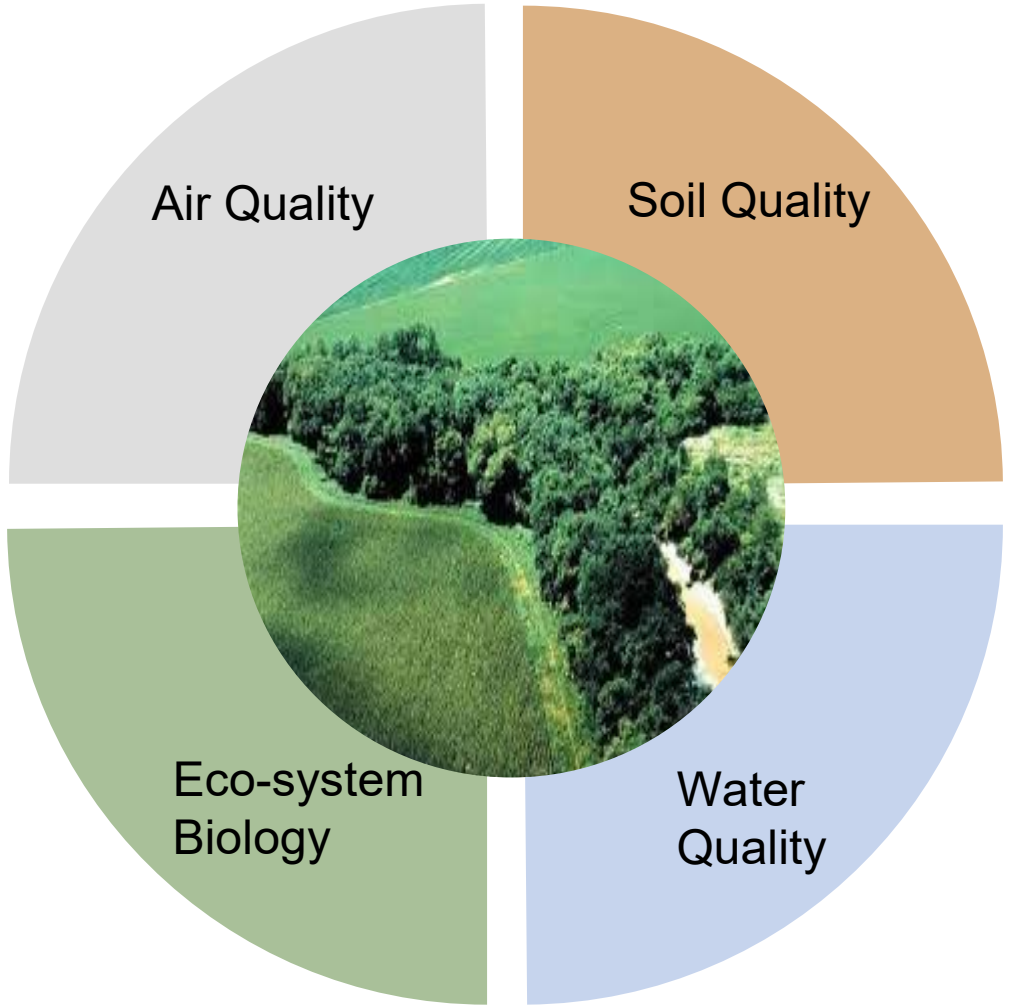
1. Anaerobic Digestate Application
2. Microbial Inoculation with Compost Tea
3. Mycorrhizal Application
4. Nutrient Management (CPS 590) (Replacing Synthetic N Fertilizer with Soil Amendments such as beef feedlot manure, chicken broiler manure, chicken layer manure, other manure, dairy manure, sheep manure and swine manure).
5. Nutrient Management (CPS 590) (Use of Nitrification Inhibitors).
6. Nutrient Management (CPS 590) (Use of Slow Release Fertilizers).
7. One-time Compost Application at rates higher than currently supported by Healthy Soils Program once every ten years.
8. Vermicompost Application

HOW DO HSP PRACTICES REDUCE GHGs AND ENHANCE SOIL HEALTH?

- Through direct addition of carbon-rich amendments (e.g. compost, mulch)
- Through reducing disturbance of the soil surface, which reduces oxidation of soil organic matter and compaction (e.g. reduced or no-till)
- Through adding temporary or permanent plant biomass to the land, resulting in enhanced soil biological activity through soil microbes and plant roots, resulting in increased soil organic matter:
  - Temporary biomass: seasonal cover crops
  - Permanent herbaceous biomass (e.g. conservation cover)
  - Permanent woody (tree) biomass (e.g. windbreak, silvopasture)
- Though reduction of synthetic nitrogen fertilizer use, which results in nitrous oxide emissions.

ADDITIONAL CO-BENEFITS OF HSP PRACTICES

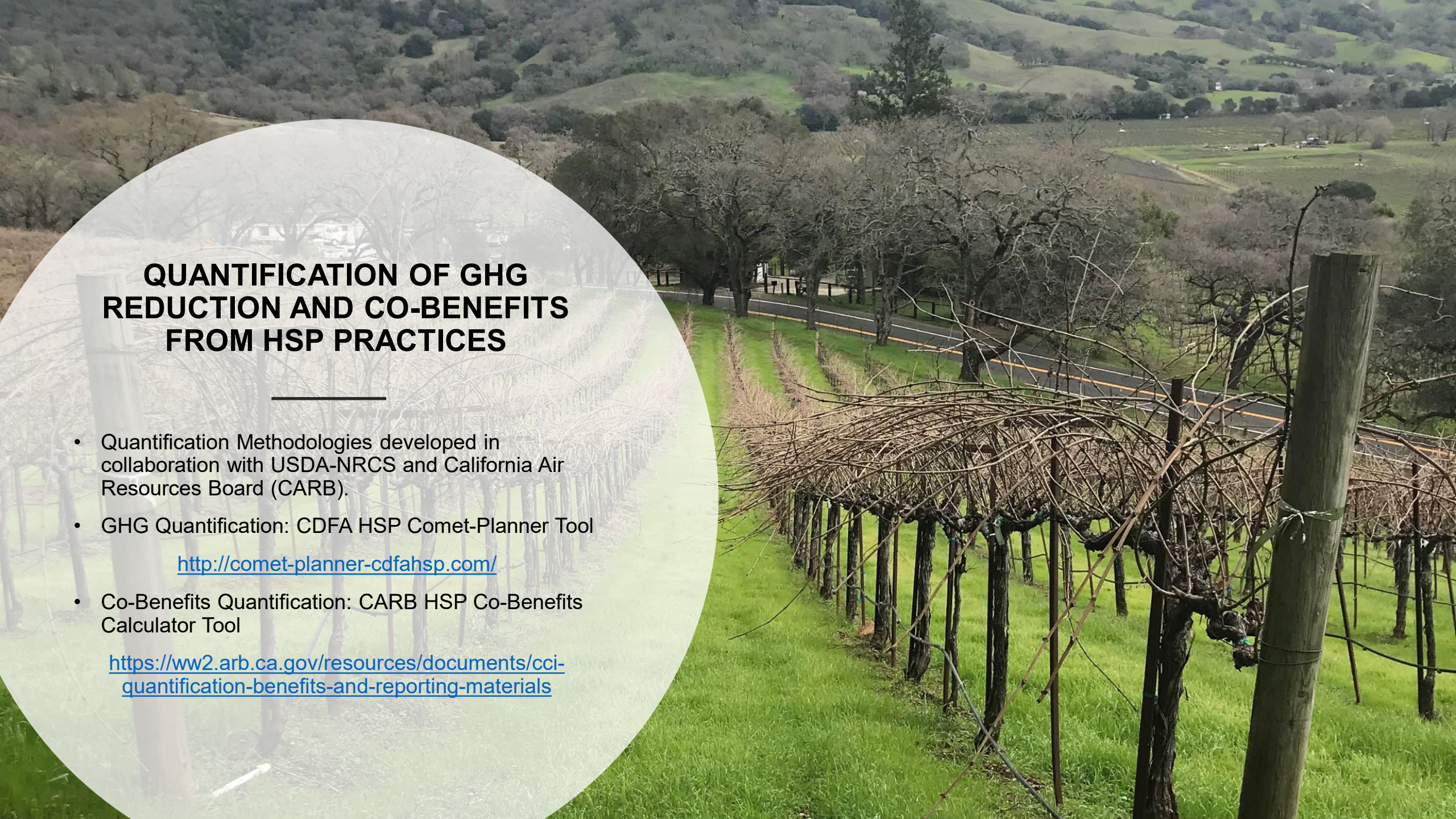
- Reduced tractor passes can avoid diesel emissions and particulates generation (e.g. reduced or no-till)
- Reduced erosion can avoid dust generation (e.g. cover crop)



- Reduced soil erosion and soil compaction, conservation of moisture and maintaining a more even soil temperature (e.g. Mulching)
- Reduction in sheet and rill erosion by as much as 75% (e.g. Stripcropping)
- Improved water infiltration due to reduction in soil compaction by animals (e.g. Prescribed Grazing)

- Potential reduction in deposition of animal fecal material away from water bodies (e.g. Prescribed Grazing)
- Promotion of ecologically stable plant communities and pollinator species (e.g. Prescribed Grazing, Hedgerows)
- Maintenance or improvement in riparian vegetation (e.g. Riparian Forest Buffer)
- Potential pathogen reduction (e.g. Conservation Crop Rotation, Field Borders and Windbreaks)

- Reduced N-leaching from slow-releasing forms of N or lower N-application rates (e.g. compost application, 15% reduction in N-fertilizers)
- Protection of stream banks from erosion, reduced run-off and protection of surface water quality (e.g. Riparian Forest or Herbaceous Buffers, Grassed Waterways)



QUANTIFICATION OF GHG REDUCTION AND CO-BENEFITS FROM HSP PRACTICES

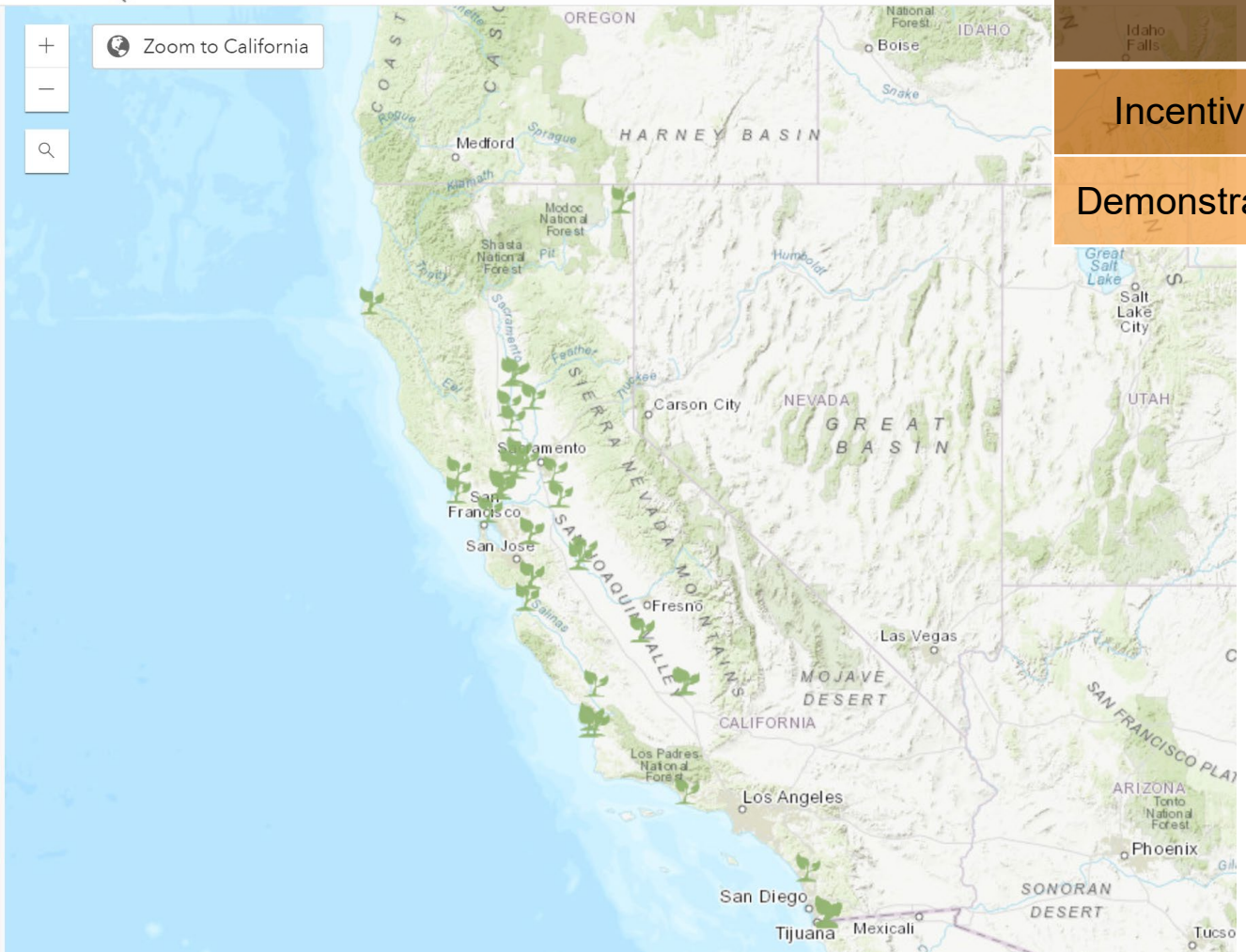
- Quantification Methodologies developed in collaboration with USDA-NRCS and California Air Resources Board (CARB).
- GHG Quantification: CDFA HSP Comet-Planner Tool

  http://comet-planner-cdfahsp.com/
- Co-Benefits Quantification: CARB HSP Co-Benefits Calculator Tool

  https://ww2.arb.ca.gov/resources/documents/cci-quantification-benefits-and-reporting-materials

PROJECTS FUNDED 2017-2020

CALIFORNIA CLIMATE INVESTMENTS PROJECT MAP



Project Type	Total Projects Funded	Total Dollars Awarded	Total GHG Reductions ($MTCO_2e$)*	Total Acres of Practices *
Incentives	576	$34 M	103,000	54,000
Demonstration	67	$8.2 M	9,000	4,000

Almond Growers Funded:
2017: 11 projects, $315,589
2018: 13 projects, $793,665
2020: 107 projects, $8 million

Practices funded on almond orchards:
Compost Application, Cover Crops, Hedgerows, Mulching, Windbreak, No-Till, Nutrient Management, Riparian Forest Buffer, Filter Strip, Whole Orchard Recycling

* Numbers are rounded down to nearest round figure.

VIDEOS OF HSP AWARDEES

CDFA CLIMATE NEWS PLAYLIST ON YOUTUBE

https://www.youtube.com/watch?v=T8vtVcwfjEk&list=PLxjMt4BmzMYasCKoAUewX0Vy2yk1LWNd_

HSP DEMONSTRATION FIELD DAYS

- Demonstration must projects have an on-farm component in their project.
- On-farm field days mandatory to conduct for grant recipients for each of the three years of the grant term.
- Field days must include 120 different farmers and rancher attendees.
- Grant recipients must showcase information including but not limited practice implementation techniques, project benefits and successes and lessons learned.
- Recipients provide outreach and education in multiple languages when possible.
- List of upcoming field days available on CDFA HSP website:

https://www.cdfa.ca.gov/oefi/healthysoils/docs/HSP-DemoProjects_OutreachEvents.pdf

TECHNICAL ASSISTANCE

Locations of UC Community Education Specialists

- CDFA's Climate Smart Agriculture Technical Assistance (TA) Grants
- University of California Climate Smart Agriculture Communication Education Specialists
- Provide assistance with preparing and submission of HSP Incentives Program grant applications, planning and implementation of projects, outreach related to the HSP, multi-lingual support.
  - List of TA providers: https://www.cdfa.ca.gov/oefi/healthysoils/docs/2020_HSP_Incentives-TAPWorkshops.pdf
  - In 2020, TA providers conducted 40 workshops to assist HSP applicants and helped assist in submission of 174 applications.
    - Assistance was provided in Spanish, Chinese, Hmong and Portuguese languages in addition to English.

ADDITIONAL FUNDING OPPORTUNITIES AT CDFA

- State Water and Efficiency Program (SWEEP)
  - 217 almond projects funded by SWEEP for a total of $20.5 million since 2014.
  - https://www.cdfa.ca.gov/oefi/sweep/
- Specialty Crop Block Grant Program (SCBGP)
  - https://www.cdfa.ca.gov/Specialty_Crop_Competitiveness_Grants/
- Fertilizer Research and Education Program (FREP)
  - https://www.cdfa.ca.gov/is/ffldrs/frep/
- Proactive IPM Solutions Program
  - https://www.cdfa.ca.gov/oefi/opca/proactive-ipm.html
- Biologically Integrated Farming Systems Program
  - https://www.cdfa.ca.gov/oefi/opca/bifs.html

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THE ALMOND CONFERENCE 2020 JOIN THE JOURNEY

USING INCENTIVES TO DRIVE INNOVATION AND ACHIEVE 2025 GOALS

Carlos Suarez, *NRCS*

california almonds
Almond Board of California

NRCS
Programs & Services
Carlos Suarez
State Conservationist
USDA Natural Resources Conservation Service

Farm Bill Programs

- **Environmental Quality Incentives Program & Conservation Stewardship Program**
  - $94M obligated through 1,473 contracts on more than 407,000 acres
  - In 2020, we received a sizable boost in our CSP funding, totaling $8.2 million
  - Conservation Planners can help find the best program to support your management objectives

- **Regional Conservation Partnership Program**
  - $7.6M obligated through 178 contracts on more than 45,000 acres
  - Partnerships leverage support and provide unique opportunities to growers

- **Conservation Innovation Grants**
  - Public and private sector innovation in resource conservation
  - California $750,000; National $15 Million; National On-Farm Trials $25 Million

Air Quality

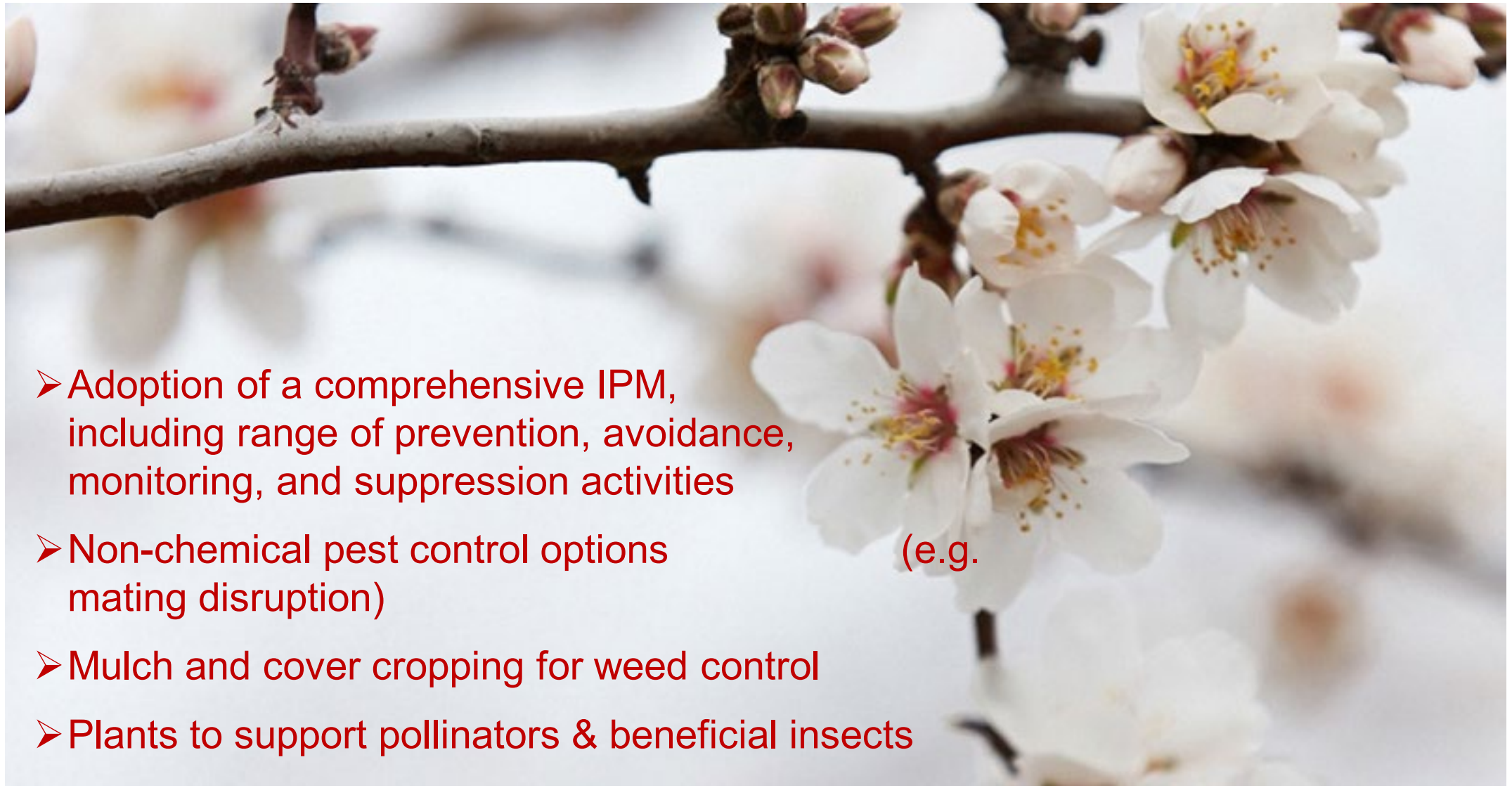
- The Environmental Quality Incentive Program applies air quality practices towards a variety of treatments intended to reduce agricultural air pollution.
- Offered statewide, proposals for using “low dust” harvesters within any PM designated nonattainment area of California will receive a higher priority.
- Improving diesel exhaust emissions is accomplished by replacing with new “like” equipment powered by the cleanest emissions-certified nonroad diesel engines available.
- New this year, chip and incorporate orchard biomass onsite to avoid burning and return tree carbon to the soil.

Irrigation practices & Groundwater recharge

- Irrigation: NRCS wants to help producers reduce water use by improving system efficiency, either by entire system or component upgrades. NRCS can also help with Irrigation Water Management, by optimizing irrigation scheduling with increased soil moisture monitoring that assists the producer to decide when to irrigate.

- Groundwater: NRCS is developing new standards and EQIP program procedures to help irrigation districts and producers address Groundwater Overdraft in their areas. NRCS plans to provide incentives for recharging aquifers using Managed Aquifer Recharge or dedicated recharge basins.

Integrated Pest Management and Pollinator Support



- Adoption of a comprehensive IPM, including range of prevention, avoidance, monitoring, and suppression activities
- Non-chemical pest control options (e.g. mating disruption)
- Mulch and cover cropping for weed control
- Plants to support pollinators & beneficial insects

Contact your nearest USDA Service Center

United States Department of Agriculture

Natural Resources Conservation Service

www.ca.nrcs.usda.gov

Thank You!
THE ALMOND CONFERENCE
2020
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