Agricultural Water Quality (AWQ) Program

Agricultural Best Management Practices (BMPs) & Resources

County of San Diego
Dept. of Agriculture, Weights & Measures
Agricultural Water Quality (sandiegocounty.gov)

*This is a recorded webinar.

Agenda

- **Presentations** (3 - 4 PM)
  - Natural Resources Conservation Service (NRCS) – Isabel Garcia
  - University of California Cooperative Extension (UCCE) – Gerry Spinelli
  - Agricultural Water Quality Program (AWQ) – Kim Greene
  - Resource Conservation District of Greater San Diego (RCD) – Joel Kramer
- **Q&A** (4 - 4:30 PM)

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Isabel Garcia

Natural Resources Conservation Service (NRCS)

Conservation Practices | NRCS (usda.gov)

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NATURAL RESOURCES CONSERVATION SERVICE (NRCS)

ISABEL GARCIA

ESCONDIDO FIELD OFFICE ENGINEER

WHO IS NRCS:

Our 6 mission goals:

- high quality, productive soils
- clean and abundant water
- healthy plant and animal communities
- clean air
- an adequate energy supply
- working with farms and ranchlands

WHAT IS EQIP:

The Environmental Quality Incentives Program (EQIP)

- Voluntary conservation initiative that provides financial and technical assistance to agricultural producers to treat natural recourse concerns on eligible lands.

WHO CAN USE EQIP:

- An agricultural producer (food, feed, or fiber)
- Eligible land includes cropland, nurseries, rangeland, forestland, and other farmland.

WHAT CAN EQIP DO FOR YOU:

Producers can receive financial assistance for structural, vegetative, and management practices such as:

- Micro-irrigation System Improvements
- Tail Water Recovery Systems
- Mulching
- Water and Sediment Basin
- Underground Outlet
- Irrigation Water Management
- And Much More!

EQIP PROCESS:

- Sign Up for FY 2022 – Upcoming deadline is Dec. 10, 2021
- Resource Inventory / Planning
- Screening & Program Ranking Worksheets
- Conservation Plan Development
- Project Implementation – After Contract is Signed
- Project Reimbursement – After Project Completion
- Practice Maintenance – Practice Life Span
- Contract Expiration - 1 Year After Last Practice is Completed

WHAT YOU SHOULD KNOW ABOUT NRCS:

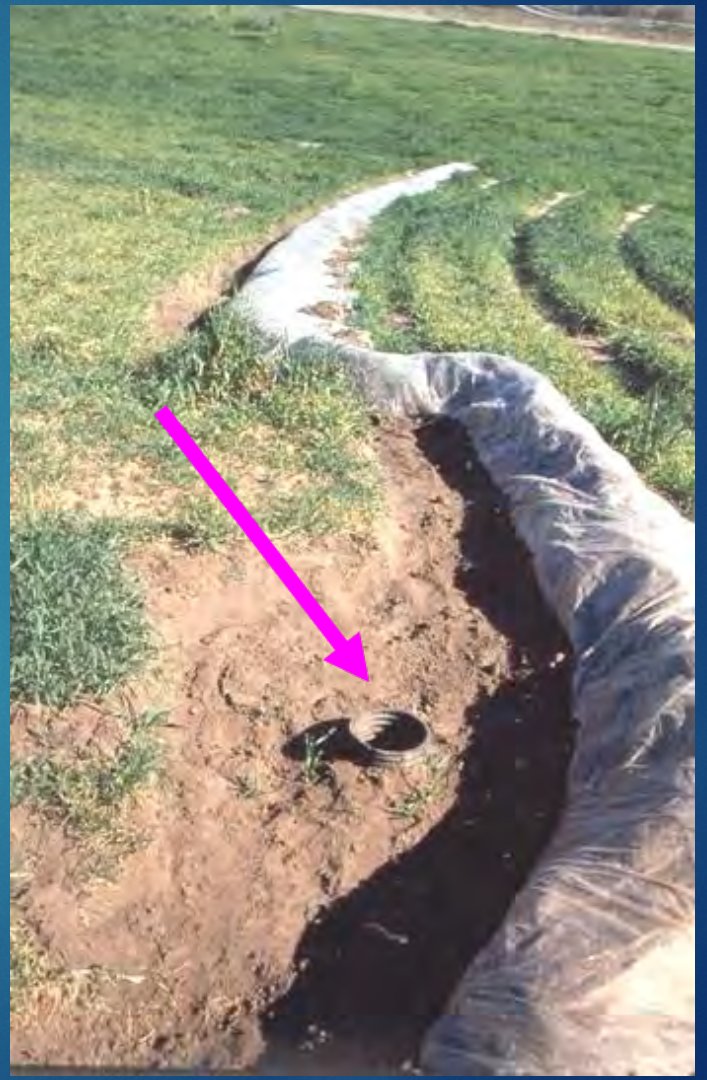
- NRCS is a **non regulatory** agency
- We offer **technical** and **financial** assistance to agricultural producers
- We **do not** offer grants. We only offer financial assistance through contracts for established conservation practices.
- Each of our practices has three (3) components: **1. Standards 2. Specifications and 3. Practice Requirements**
- Each practice has its own specific payment rate. These rates are calculated by the **acre, volume, or length** that will be implemented
- Funding is **not guaranteed** if you apply. Applications are selected based upon the environmental ranking score.
- **Do not purchase parts or begin installation before officially funded.**
- You can apply as many times as you like.
- You must start **one conservation** practice within a **year** of signing your contract.
- Funds received through EQIP are considered **taxable income** and participants will receive a IRS **1099.**

CONSERVATION PRACTICE

- Irrigation Ditch Lining (428)
- Irrigation Water Management (449)
- Irrigation System, Microirrigation (441)
- Sediment Basin (350)
- Tree/Shrub Establishment (612)
- Underground Outlet (620)
- Subsurface Drain (606)
- Structure for Water Control (587)
- Channel Bed Stabilization (584)
- Streambank and Shoreline Protection (580)
- Stream Crossing (578)
- Heavy Use Area Protection (561)
- Access Road (560)
- Roof Runoff Structure (558)
- Irrigation Canal or Lateral (320)
- Grade Stabilization Structure (410)
- AND MANY MORE!

Management Practice to Divert Water to Settling Areas

Underground Outlet (620)



Management Practices to Collect Sediment

Sediment Basin **(350)** or Water & Sediment Control Basin **(638)**

- Can safely handle incoming water sediment and then release it in a controlled manner
- Avoid sediment running off your property

Management Practice to Divert Water to Stable Outlet

Lined Waterway **(468)**

- To manage concentrated flows of high capacity in your field

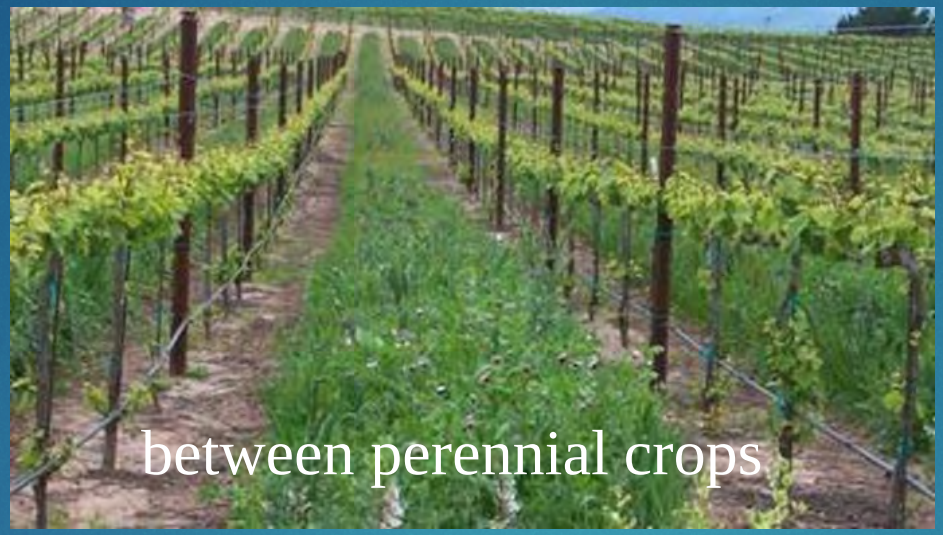
Management Practices to Filter Sediment

Filter Strip (393)

- 10 to 15 ft of filter strip is enough to scrub/clean most agricultural runoff of sediment depending on flow
- Place above or below a field
- Use this practice adjacent to a waterway or ditch

Management Practice to Reduce Runoff from Bare Soils

Cover Crop (320)



Management Practice to Eliminate Irrigation Runoff

Irrigation Water Management (449)

Drip Irrigation

Irrigation System Evaluation

Management Practice to Reduce Irrigation Runoff

Grouped Planting

Mulch to Protect Surface Under Containers

Management Practices to Prevent Water from Flowing Over Roadbeds

Structure for Water Control (582)

Rock Energy Dissipaters

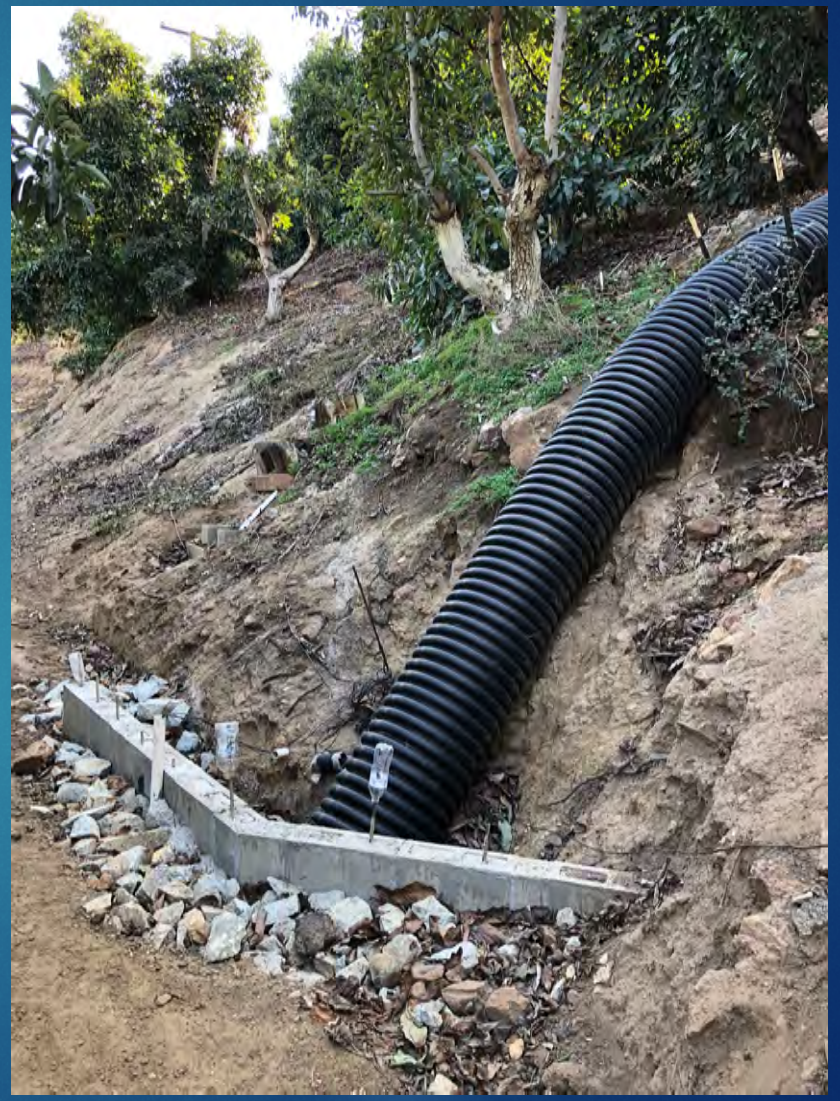
Drop culverts

Management Practice to Maintain Ditches

Grassed Waterway (412)

Management Practices to Provide for Adequate Drainage

Structure for Water Control (587)



Management Practice to Divert Water to Stable Outlet

Lined Waterway or Outlet (468)

QUESTIONS?

For more information:

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Office: 760-705-9872

NRCS

Natural Resources Conservation Service

Gerardo (Gerry) Spinelli, PhD

UC CE Floriculture & Nursery Research & Education

University of California Cooperative Extension (UCCE)

Floriculture & Nursery Research & Education (ucanr.edu)

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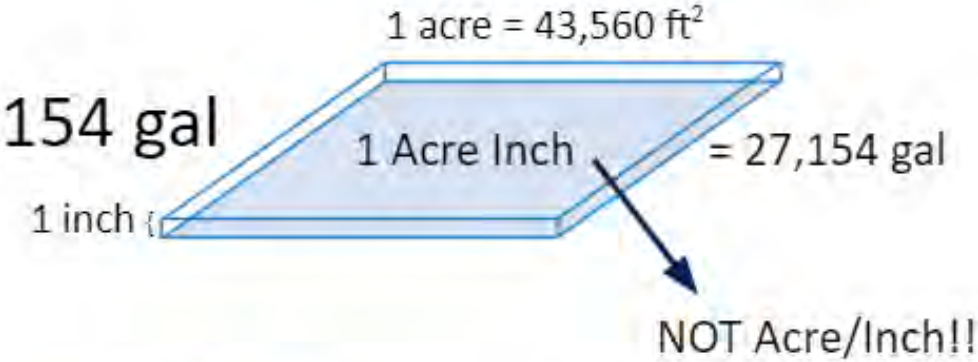
Irrigation runoff management in agriculture

Agricultural BMPs & Resources Webinar, 11/16/21

Gerry Spinelli, UC Cooperative Extension Advisor for Nurseries, Floriculture and Controlled Environment Agriculture

Water Volume and Depth

- 1 Acre-Inch is a volume of water equal to 27,154 gal
- Why rain expressed in inch?



- Volume / area = depth

As a rule of thumb, evapotranspiration is about one inch of water per week

- 1 AcIn = 27,154 gal
- 1 AcFt = 325,851 gal
- 1 ft^2In = 0.62 gal
- 100 ft^2In = 62 gal

Questions?

Pollutants can be:

- Attached to Sediment

1. Phosphorous
2. Insoluble Pesticides (Pyrethroids)

Pesticides typically have a half-life so just keeping them in place helps minimizing impact on wildlife

- Dissolved in Water

1. Nitrate or NO_3^-
2. Water soluble pesticides (Neonicotinoids)

Pollutants can pollute

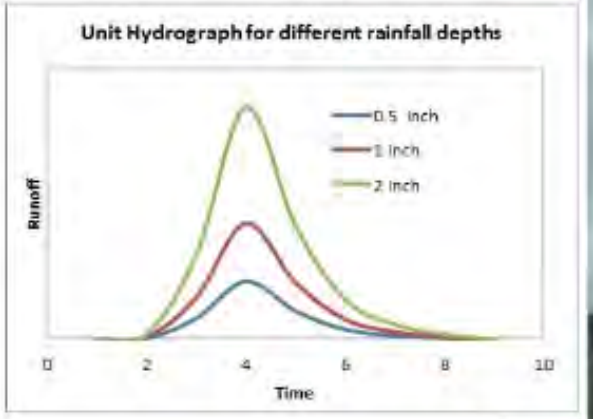
- Surface waters

Runoff - fast process

- Groundwater

Infiltration - slow process

Runoff can be caused by:



- Stormwater

Very High flows in a short time, difficult to manage.

Prevention and preparation.

Stormwater can pick up sediment, substrate, fertilizer, oils, fuels, etc.

Typically the first inch of rains runoff carries most pollutants

- Irrigation runoff

Low constant flows.

Can capture, treat, reuse water.

Sedimentation ponds, injection of chlorine, ozone, etc.

How to manage runoff

1. Avoid causing it:
   - Improving irrigation (distribution uniformity, scheduling, leaks, drip conversions…)
   - Vegetate non-cultivated areas to improve infiltration
   - Collect runoff from impervious surfaces (roofs, concrete pads). Roof Runoff Structure
   - Ground cover or cover crop to infiltrate, use water, collect sediment and nutrients
2. Avoid that runoff creates erosion, picks up sediment and pollutants:
   - Lined channels
   - Underground outlets (also roof to drain)
   - Grassed waterway to avoid erosion (also removes sediment and nutrients)
   - Row arrangement to avoid maximum slope, terracing
   - Provide ground cover with mulch, gravel, weed mat
   - Prevent gopher and squirrel damage
   - Mix and store fertilizers, substrate, pesticides, fuels, oils etc. away from waterways
   - Use secondary containment and prepare spill kits to clean spills
3. Catch it in a pond, basin, tank:
   - Sedimentation basin (slows water speed by increasing section)
   - Polyacrylamide (PAM) to settle out sediment
4. Re-use it
   - Treat with UV lights, ozone, chlorine, hydrogen peroxide, slow sand filters
   - Blend it with fresh water and irrigate
   - Irrigate landscape or dust control
   - Denitrification with woodchip bioreactors
   - Granular Activated Carbon and Biochar filters for soluble pesticides

Common issues with irrigation management: Mixing different sprinkler heads

Common issues with irrigation management: Pressure too high or too low

How much pressure?

Drip system

A. 8 to 12 psi
B. 20 to 30 psi
C. 50 to 60 psi
D. Above 60 psi

Micro-Sprinkler system

A. 8 to 12 psi
B. 20 to 30 psi
C. 50 to 60 psi
D. Above 60 psi

Impact Sprinkler system

A. 8 to 12 psi
B. 20 to 30 psi
C. 50 to 60 psi
D. Above 60 psi

Reference Evapotranspiration ETo

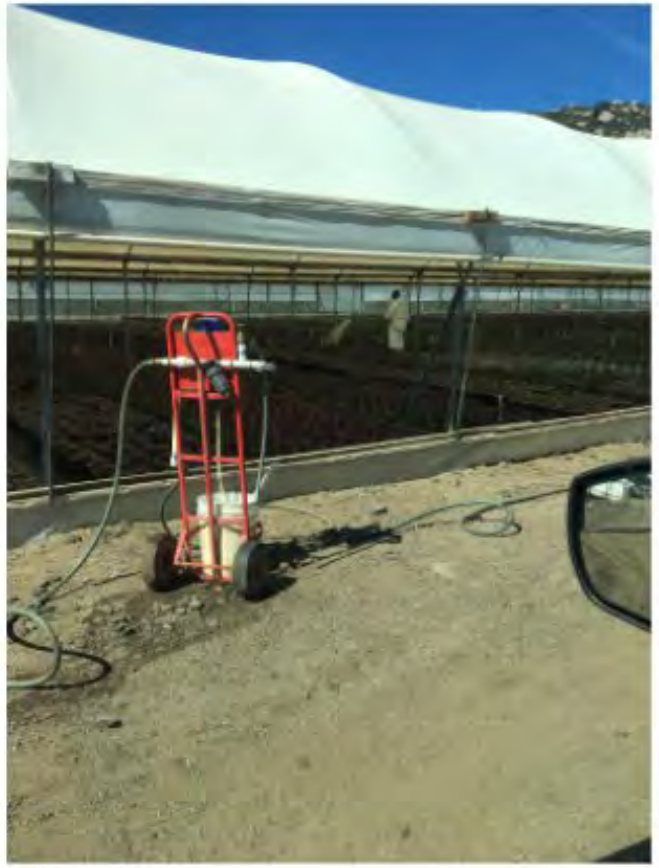
Measured applied water

How much water should I apply?

Reference ET from the CIMIS station can give you a clue

https://cimis.water.ca.gov/

Nitrogen management



Fertilizer injectors: what's the last time you checked the dilution factor?

Measure salinity and nitrate in the water

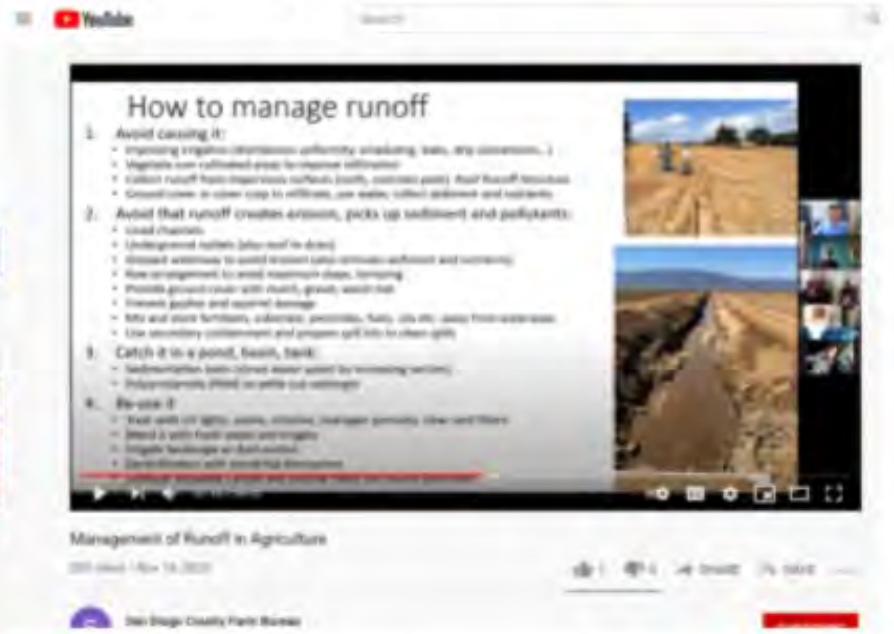
Careful with the units!!!

Nitrate or nitrate nitrogen?

NO_3^- or NO_3^--N

Management practices for water quality

https://ucanr.edu/sites/floriculturenursery/Water_Quality/



Thank you!

gspinelli@ucdavis.edu

~~Office 858 822 7679~~

Cell 530 304 3738

Please email me if you'd like me to come to a field visit!!!

Please take a minute

to fill this survey:

https://rb.gy/5v4cra

Kim Greene

Agriculture, Weights and Measures

County of San Diego Department of Agriculture, Weights & Measures
Agricultural Water Quality Program (AWQ)

AWQ Program website:
www.sandiegocounty.gov/content/sdc/awm/ag_water.html

Water that is released to the streets, gutters, and storm drains in San Diego County is NOT TREATED before it reaches our local creeks, rivers, and ocean.

*This is a recorded webinar.

Overview of AWQ Program

The AWQ regulatory program is required by the Regional Stormwater Permit (www.waterboards.ca.gov/sandiego/water_issues/programs/stormwater/docs/2015-1118_AmendedOrder_R9-2013-0001_COMPLETE.pdf).

Inspections are conducted to verify that sites use BMPs to prevent pollution to stormwater and that sites prohibit discharges of non-stormwater (e.g., irrigation runoff).

Inspections may include walking the agriculture property to observe use and storage of agriculture materials like pesticides, fertilizers, green waste, sediment stockpiles, trash, and other potential sources of pollution such as areas erosion and sediment discharge.

Inspectors work with operations if it is determined that additional BMPs are needed, and document progress and compliance with follow up inspections.

Inspectors provide education and outreach (e.g., technical and financial resources).

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Annual Stormwater BMP Training

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Annual Stormwater BMP Training

Watershed Protection Ordinance (WPO) SEC. 67.808(a)(1)
www.sandiegocounty.gov/content/dam/sdc/dpw/WATERSHED_PROTECTION_PROGRAM/watershedpdf/WPO.pdf

Review potential pollution generating activities and associated BMPs

BMP categories:

1. Preventive maintenance (e.g., routinely check irrigation lines)
2. Good housekeeping (e.g., locate trash containers away from stormwater flows)
3. Proper waste disposal (e.g., prevent irrigation runoff)
4. Non-stormwater disposal alternatives (e.g., manage and re-use excess irrigation water)
5. Equipment/vehicle maintenance and repair (e.g., drain fluids from retired vehicles)
6. Spill response, containment, and recovery (e.g., have a spill kit)
7. Recycling, re-use, and volume reduction in materials, water consumption and wastes (e.g., use agricultural materials and inputs such as pesticides and nutrients wisely to minimize environmental exposure)
8. BMP maintenance (e.g., routinely walk your property to check that BMPs are working well and make repairs as needed)

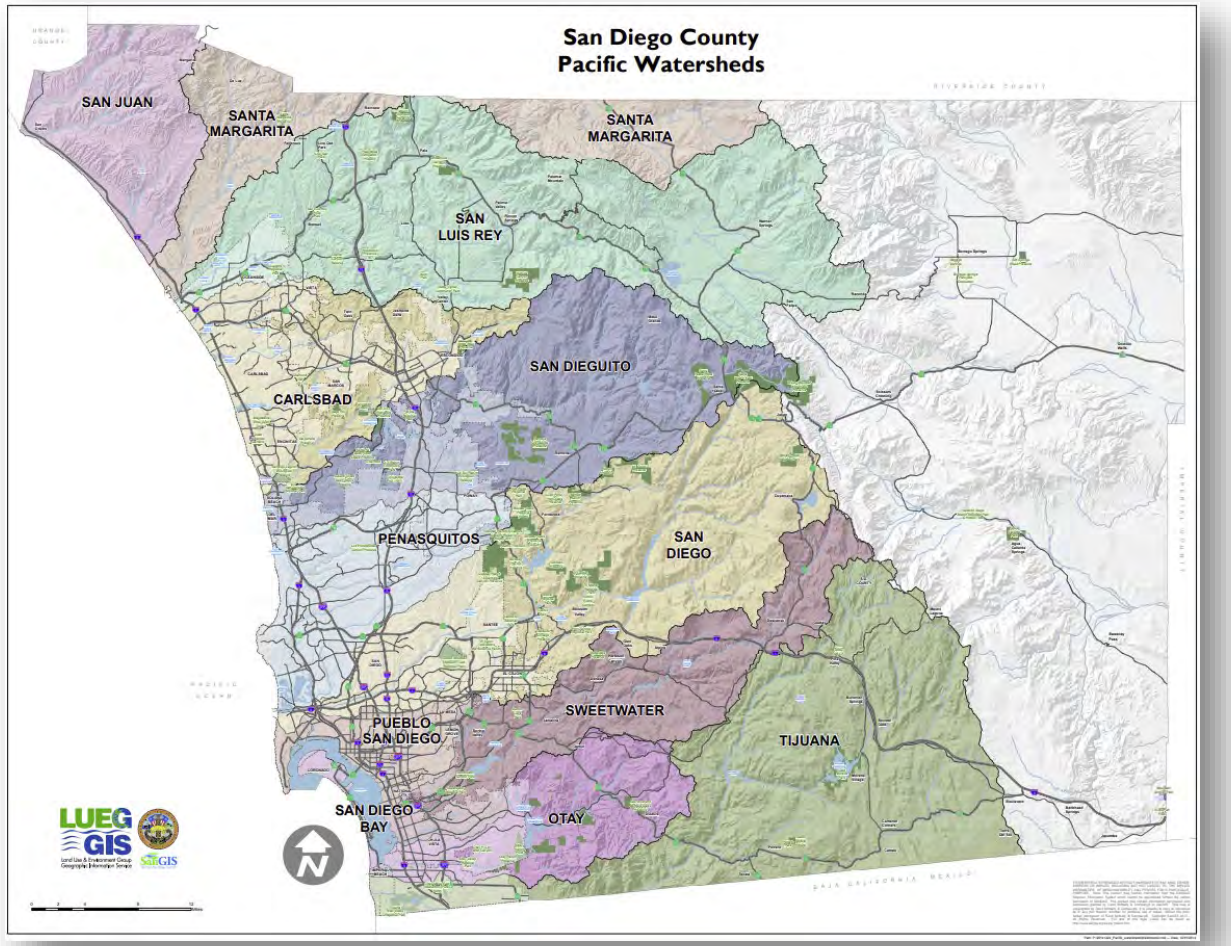
Download Stormwater Training Material at
www.sandiegocounty.gov/content/sdc/awm/ag_water.html

Project Clean Water.org

Jurisdictional Stormwater Program Contacts: projectcleanwater.org/contact-us/

Interactive map and specific watershed information: projectcleanwater.org/watersheds/

Agricultural Resources: projectcleanwater.org/copermittees/agricultural-resources/



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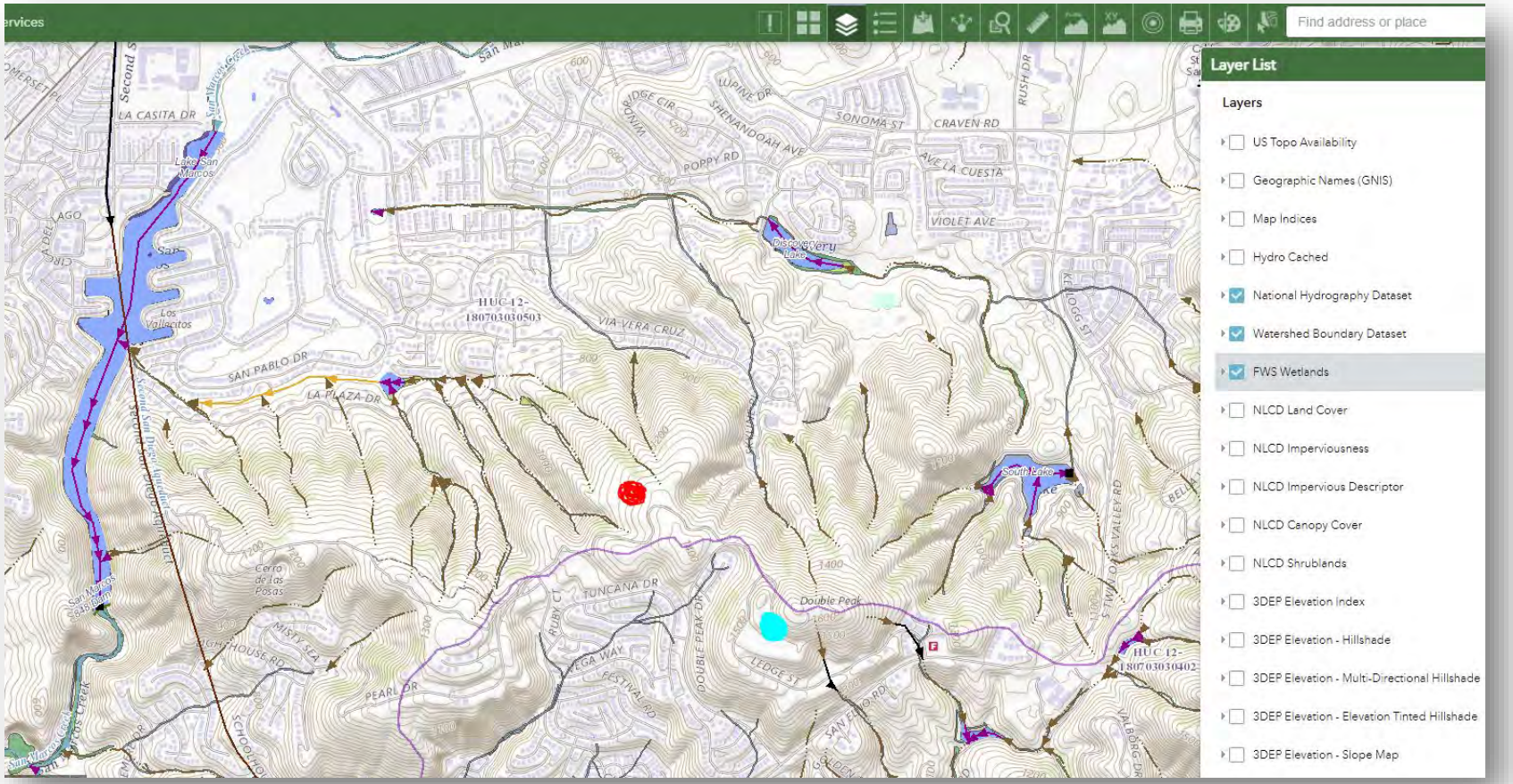
Other Resources

USGS National Map: apps.nationalmap.gov/viewer/



UCCE Climate Resilient Agriculture Resources: https://ucanr.edu/sites/Climate_Resilient_Agriculture/Resources/Funding/

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Other Permits

Planning and Development Services Code Compliance – e.g., grading, construction and brush/vegetation clearing permits (858-694-2705): www.sandiegocounty.gov/content/sdc/pds/ce5.html

Public Works Watercourse Protection – e.g., grading or structures in a watercourse (858-694-3165): www.sandiegocounty.gov/content/sdc/dpw/land/watercourseenforcement.html

Public Works Flood Control – e.g., construction in floodways and/or floodplains (858-495-5318): www.sandiegocounty.gov/content/sdc/dpw/flood.html

NRCS Conservation Practices disclaimer: " **Plan, design, and construct this practice to comply with all Federal, State, and local regulations**."

(e.g., Grade Stabilization Structure, Code 410)
www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/technical/cp/ncps/?cid=nrcs143_026849

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Joel Kramer

Resource Conservation District of Greater San Diego (RCD San Diego)

Resource Conservation District (rcdsandiego.org)

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Improving Water Quality with Soil Conservation

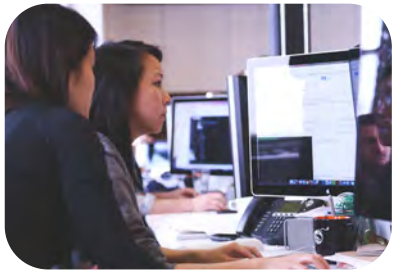
Nov 16, 2021

Joel Kramer
Regional Agricultural Specialist

RESOURCE CONSERVATION DISTRICT
Greater San Diego County

Resource Conservation District Carbon Farming Program

PLANNING



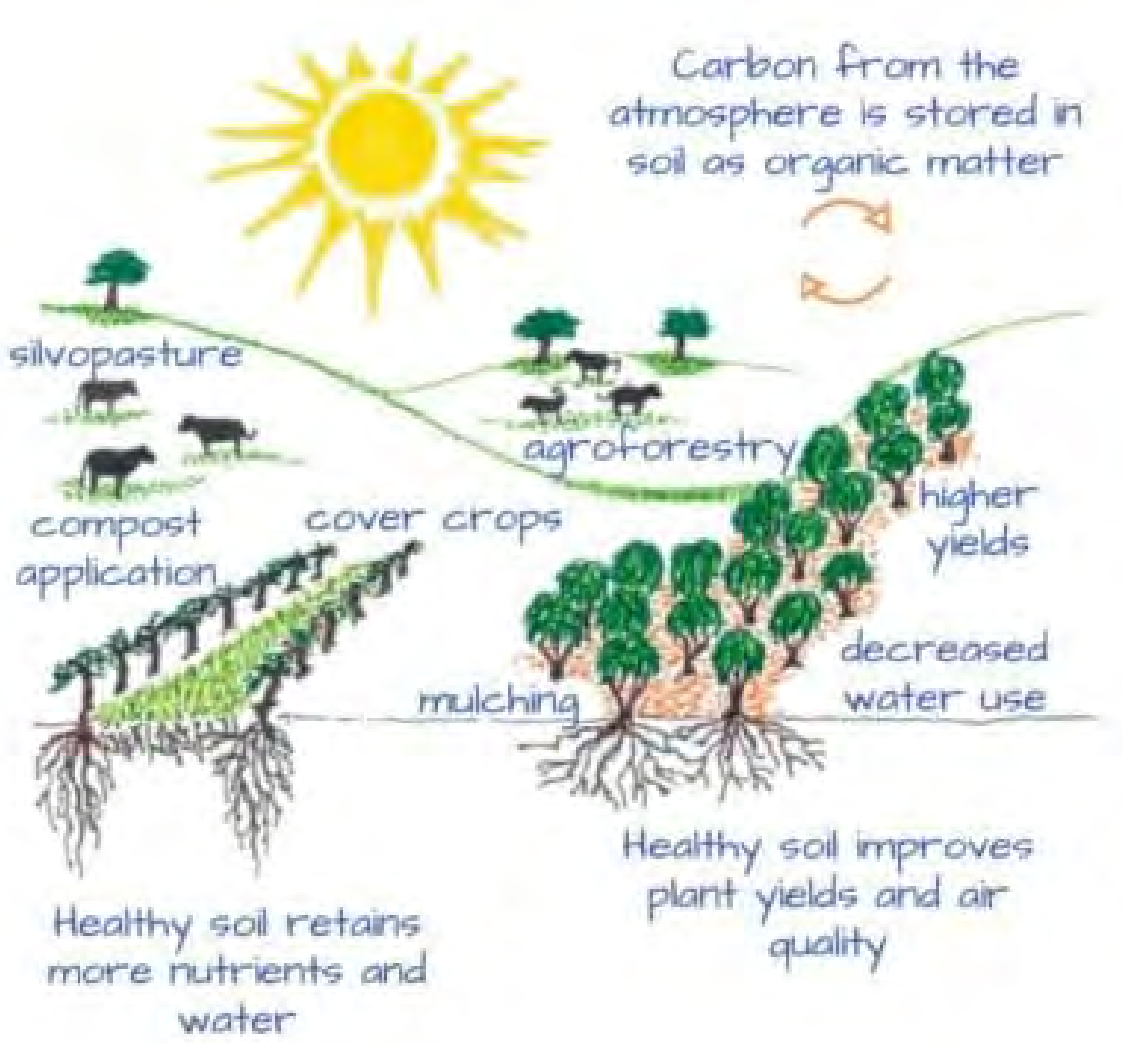
TECHNICAL ASSISTANCE

IMPLEMENTATION

MONITORING & ANALYSES

Regenerative Practices

- Goals include
  - Soil health
  - Water retention
  - Sequester carbon
  - Resilience to climate change



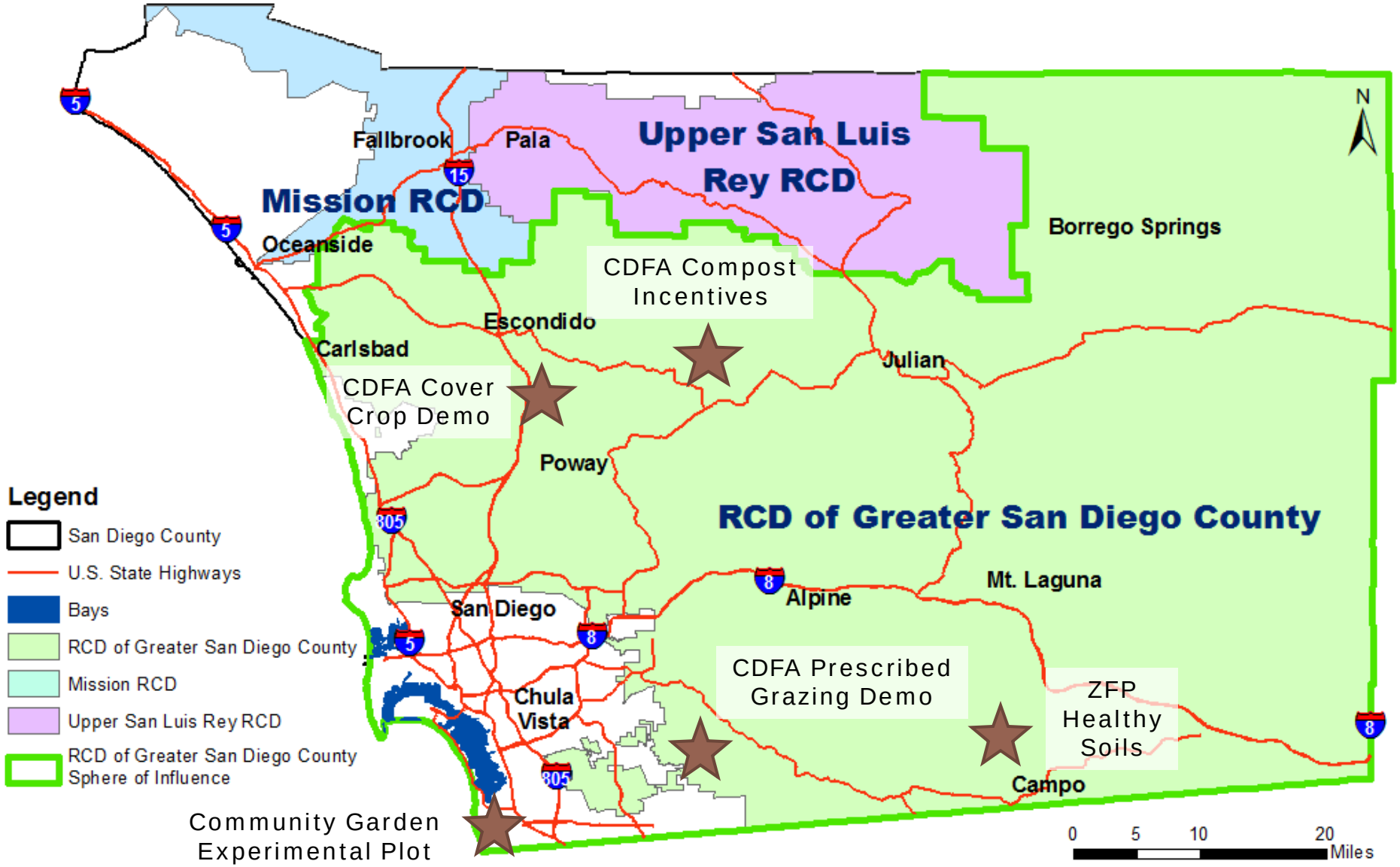
Mulch Application

- Abundant local sources, including pruned material
- Effects such as:
  - Reduce evaporation
  - Protect against heat stress
  - Improve water retention
  - Build organic matter

Planting Riparian Buffer

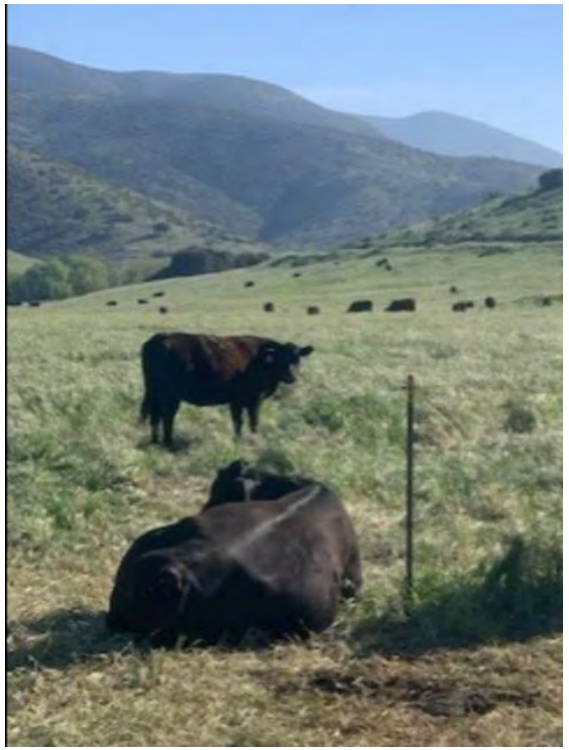
- Successful CDFA grant applicant along Ramona Grasslands
- Address issues such as:
  - Erosion
  - Groundwater recharge
  - Pollination
  - Air temperature
  - Nutrient management

Current RCD Carbon Farming Projects



Prescribed Grazing at Rancho Jamul

- 1000 acres of fallow historic rangeland
- CA Dept. of Fish & Wildlife leased to Rancher John Austel (4J Horse & Livestock)
- Grazing Plan published
- CDFA Healthy Soils Demo thru 2022
- Testing for soil carbon and moisture
- Baseline is 1.1-3.6% organic matter
- Bi-annual workshops and outreach
- Largest demonstration project in So. CA



New Practices for a New Orchard

- Funded by CA Dept of Food and Ag as Demo site through 2023
- Planting cover crops on 3 acres for nitrogen fixation, pollination and erosion control
- Control sites for cover crops and compost
- Monitoring soil organic carbon, soil moisture, crop biomass, and costs

Funder: CA Dept of Food and Ag

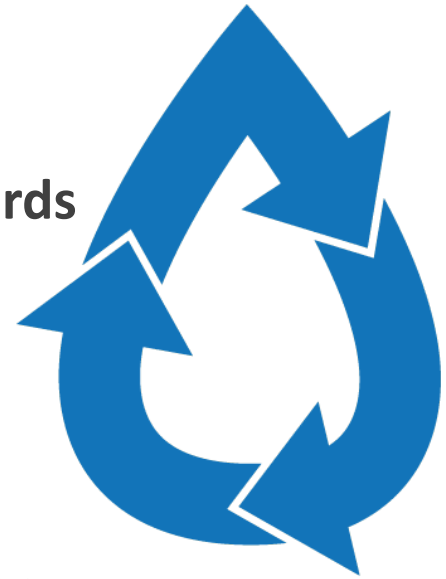
- Source: Cap-and-Trade proceeds
  - “CA Climate Investments”
- Dept: Office of Environmental Farming & Innovation
- Unprecedented: Funds this year exceed all past years
- Major programs: HSP and SWEEP
- Caution: Application periods vary
- https://www.cdfa.ca.gov/oefi/

Healthy Soils Incentives Program: Now Open!

- Flat rate per practice by area/distance
- $67.5 Million Available
- Max $100,000
- Projects build soil health while sequestering carbon
  - Compost, mulch, hedgerows, prescribed grazing, etc.
- **Required for Prescribed Grazing: Completed Grazing Management Plan**

State Water Efficiency and Enhancement Program: Now Open!

- Budget for materials and contract labor
- $43 Million Available
- Max $200,000
- **Required: Pump, pump test, 1 year of energy records**
- Not competitive but the clock is ticking
- Funds water and energy efficiency upgrades
  - Pressure, Pump Upgrade, Drip Irrig, Scheduling
- Excluded: No new wells, No expansion, No staff time
- Documents
  - GHG Budget, Water Efficiency Calcs, Site Plan



Environmental Quality Incentives Program: Rolling Application

- Funder: US Dept of Ag – Natural Resources Conservation Service
- Benefits include air quality, water conservation, soil health, wildlife habitat, etc.
- Subsidized cost for practice implementation
- Competitive application process
- Consistent annual review period
- Advance available for underserved producers

Zero Foodprint: Now Open!

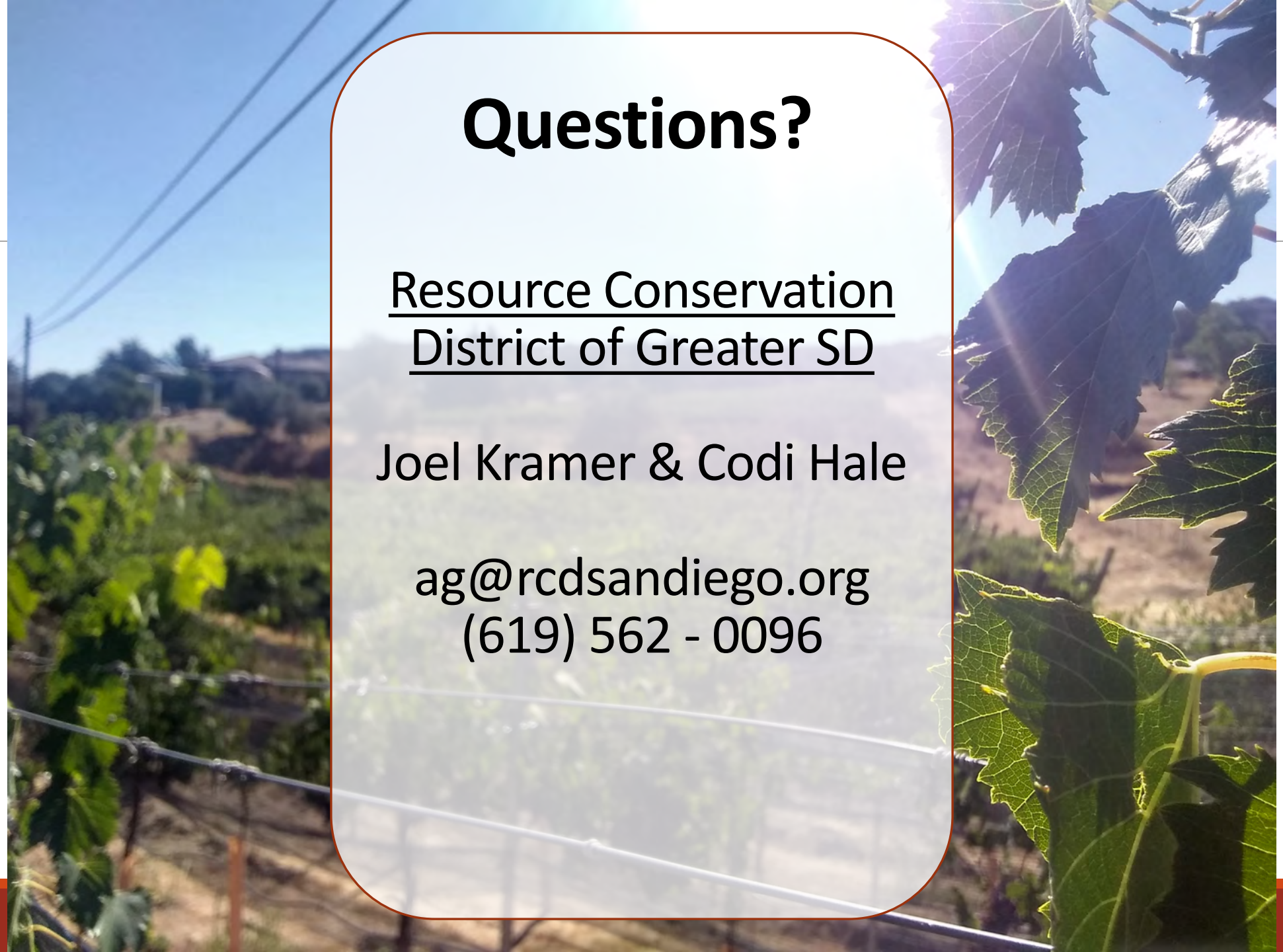
- Private funder based on restaurant sales
- Up to $25,000 to build soil health
- Streamlined application process
- Minimal reporting required
- Competitive funding pool based on carbon sequestered
- San Diego recipient includes orchard in Campo

How to Learn More

- Subscribe to our newsletter!
  - rcdsandiego.org/carbonfarming
- Sustainable Agricultural Land Conservation Program
  - Agricultural Mapping
  - Producer Outreach
  - Policy Analysis

We Are Here to Help You

- Soil Sampling for Organic Carbon Content
- Irrigation Evaluation
- Conservation Grant Application Support
- Guidance on Conservation Practices
- Habitat Plant Selection
- Free Chipping for Defensible Space



Questions?

Resource Conservation District of Greater SD

Joel Kramer & Codi Hale

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(619) 562 - 0096

Q&A

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Thank You

County of San Diego Department of Agriculture, Weights and Measures (AWM)
Agricultural Water Quality (AWQ) Program
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