Growing Resilience: Integrating Natural and Working Lands into Climate Action Planning

Kristen Wraithwall
Sustainability Manager
Yolo County

Margot Flynn
Sac. Valley Soil Hub Coord.
Sacramento Valley RCDs

Heather Nichols
Executive Director
Yolo County RCD

Lynda Hopkins
Fifth District Supervisor
County of Sonoma

Margot Flynn

Sacrament Valley Soil Hub Coordinator

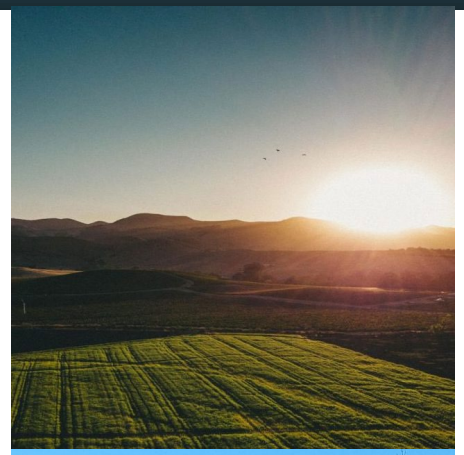
Sacramento Valley RCDs

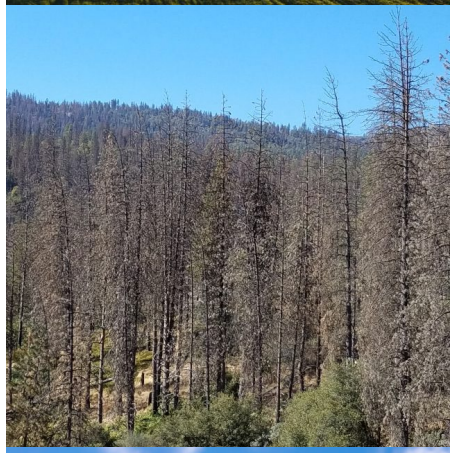
Carbon Farming and Technical Assistance

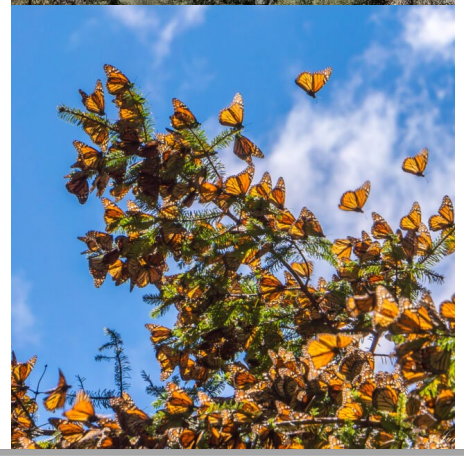
Resource Conservation Districts (RCDs)

Over 85 years of conservation experience.

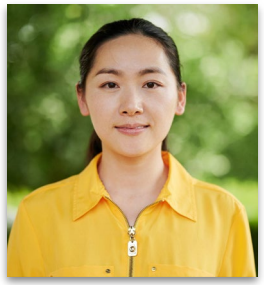
RCDs always work with their constituents on a **voluntary basis** — a key reason they are considered a trusted resource in their communities.



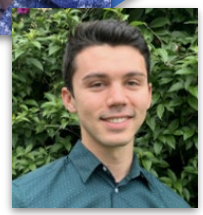




Qi Zhou
Statewide Coordinator,
CA Association
of RCDs
qi-zhou@carcd.org

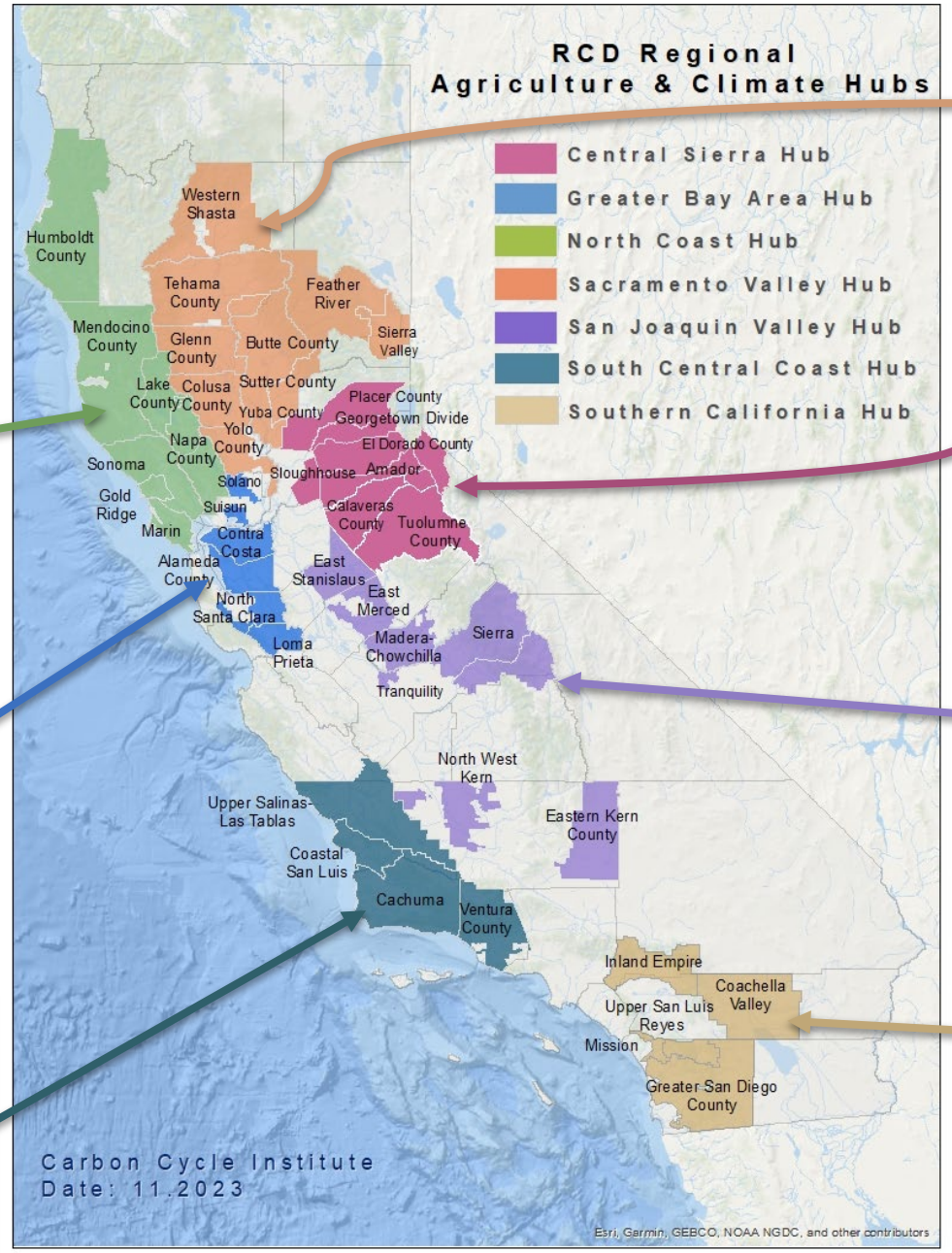


Emilie Winfield
North Coast Soil Hub
emilie@marinrcd.org



Amy King and
Andrew Lopez
Greater Bay Area
Conservation Hub
amy.king@solanorcd.org
alopez@gcrcd.org

Joshua Kouri
Central Coast Soil Hub
josh@coastalrcd.org



Margot Flynn
Sacramento Valley
Soil Hub
margot@svsoilhub.org

Anna Mariscal
Central Sierra Natural
and Working Lands Hub
anna@amadorrcd.org

Alexandria Miranda
San Joaquin Valley Natural
Resource Hub
amiranda@carboncycle.org

Rachel Petitt
Southern California
Soil and Water Hub
Rachel.Petitt
@rcdsandiego.org

RCDs provide technical assistance to serve producers

Technical Assistance Provided by **R**esource **C**onservation **D**istricts

PROJECT MANAGEMENT. RCDs manage grant funding, contractors, project logistics, and implementation monitoring and reporting.

IMPLEMENTATION FUNDING. RCDs leverage grant funding from multiple sources to scale project implementation across multiple landownerships and to meet multiple conservation objectives.

DESIGN & ENGINEERING. RCDs ensure projects are designed to meet practice standards and environmental requirements.

ENVIRONMENTAL COMPLIANCE. RCDs serve as lead agencies for CEQA and coordinate permit applications and cultural resource surveys as needed.

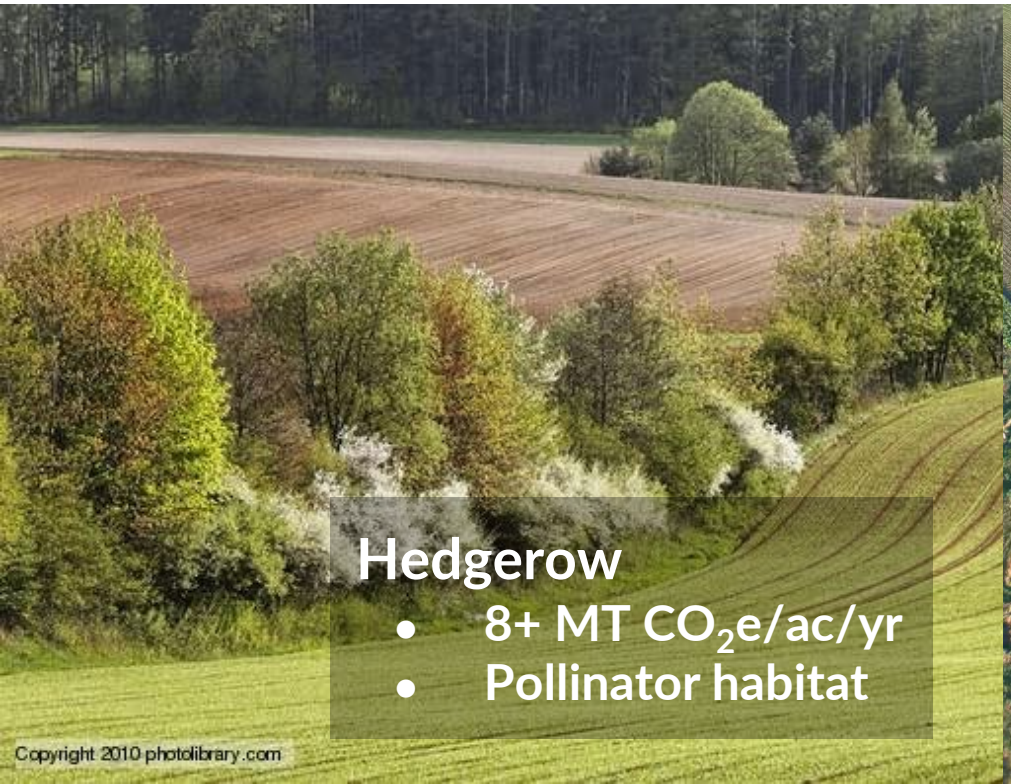
DEVELOPING CONSERVATION PLANS. RCDs work with landowners to develop conservation plans as an educational tool and to increase eligibility for state and federal funding.

BUILDING RELATIONSHIPS AND TRUST. RCDs work one-on-one with landowners to assess natural resources concerns, understand each landowner's unique needs and goals, discuss options, and prioritize actions.

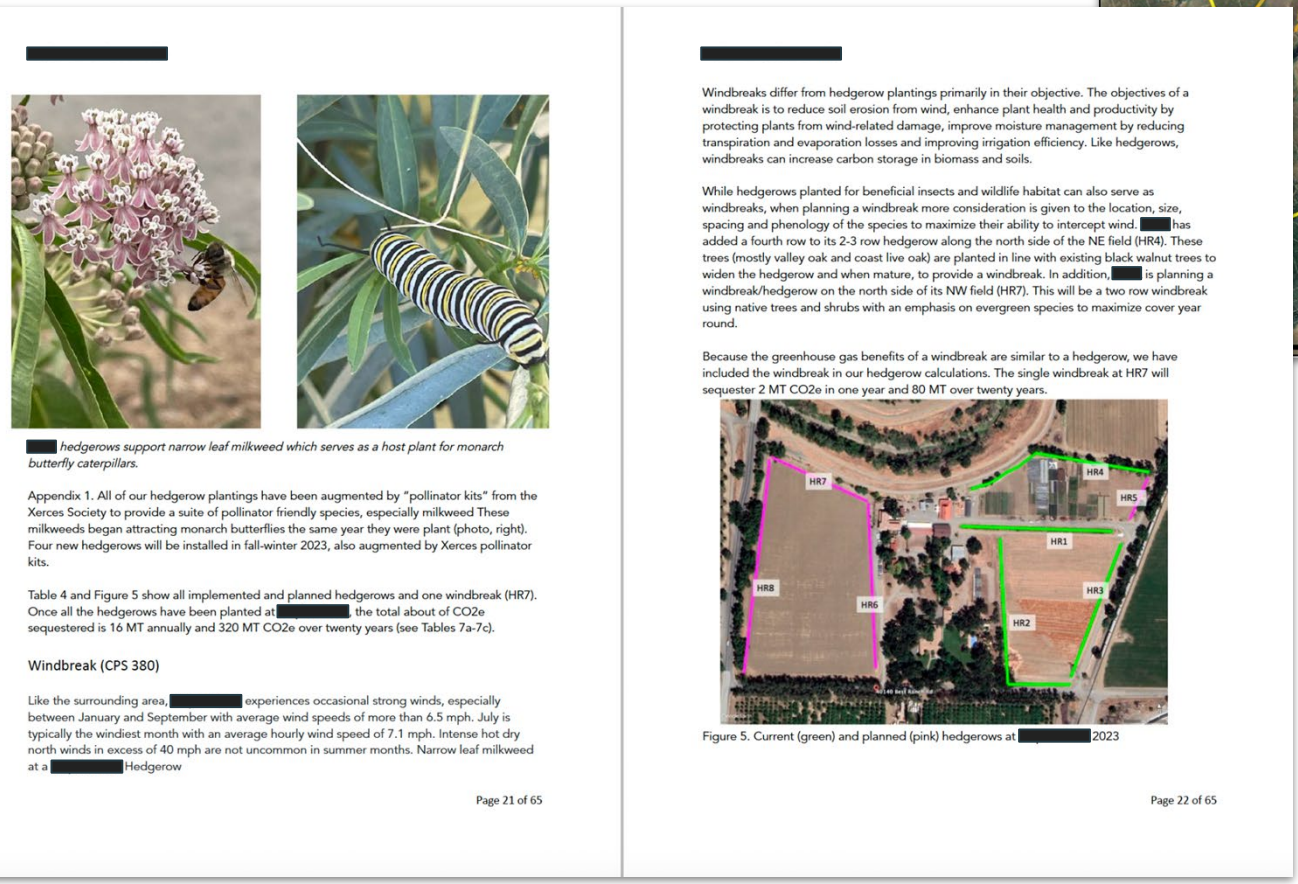
What is Carbon Farming?

Common Practices

- Cover cropping
- Hedgerows
- Integrated grazing
- Reduced or no-till
- Riparian buffers
- Composting



PC: Yolo County RCD, Carbon Cycle Institute



[redacted]

[redacted] *hedgerows support narrow leaf milkweed which serves as a host plant for monarch butterfly caterpillars.*

Appendix 1. All of our hedgerow plantings have been augmented by "pollinator kits" from the Xerces Society to provide a suite of pollinator friendly species, especially milkweed These milkweeds began attracting monarch butterflies the same year they were plant (photo, right). Four new hedgerows will be installed in fall-winter 2023, also augmented by Xerces pollinator kits.

Table 4 and Figure 5 show all implemented and planned hedgerows and one windbreak (HR7). Once all the hedgerows have been planted at [redacted] the total about of CO2e sequestered is 16 MT annually and 320 MT CO2e over twenty years (see Tables 7a-7c).

Windbreak (CPS 380)

Like the surrounding area, [redacted] experiences occasional strong winds, especially between January and September with average wind speeds of more than 6.5 mph. July is typically the windiest month with an average hourly wind speed of 7.1 mph. Intense hot dry north winds in excess of 40 mph are not uncommon in summer months. Narrow leaf milkweed at a [redacted] Hedgerow

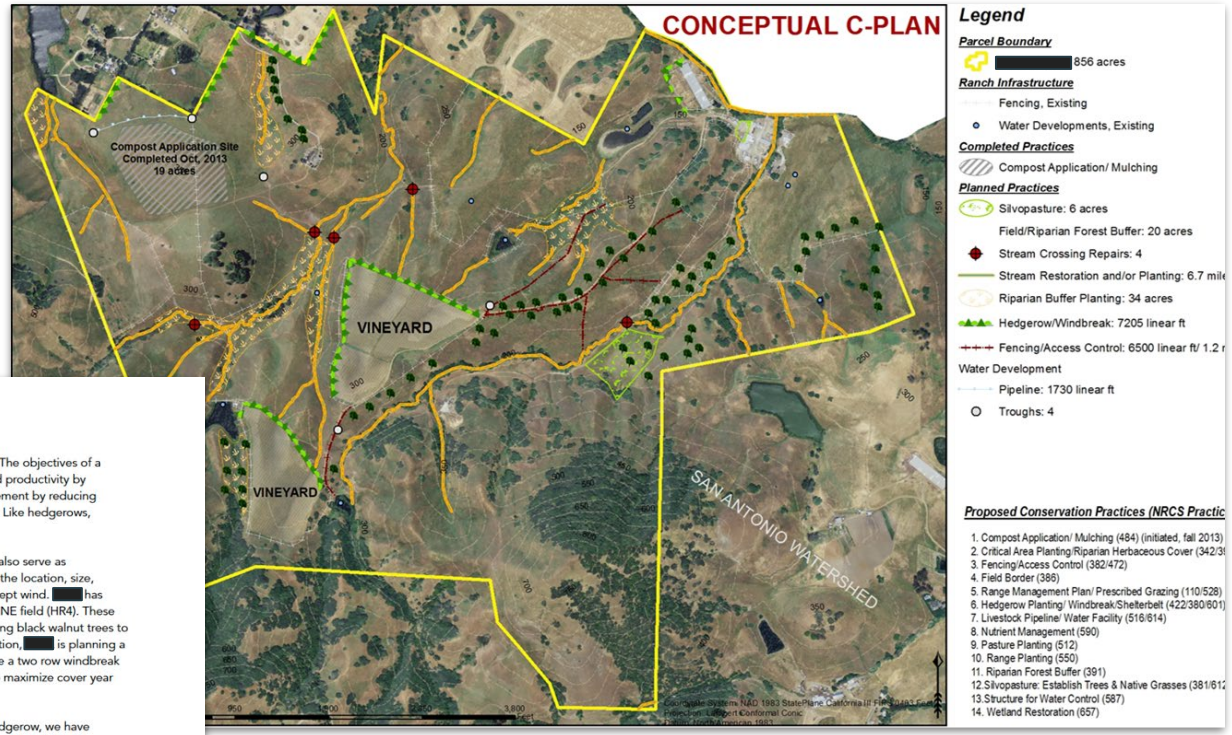
[redacted]

Windbreaks differ from hedgerow plantings primarily in their objective. The objectives of a windbreak is to reduce soil erosion from wind, enhance plant health and productivity by protecting plants from wind-related damage, improve moisture management by reducing transpiration and evaporation losses and improving irrigation efficiency. Like hedgerows, windbreaks can increase carbon storage in biomass and soils.

While hedgerows planted for beneficial insects and wildlife habitat can also serve as windbreaks, when planning a windbreak more consideration is given to the location, size, spacing and phenology of the species to maximize their ability to intercept wind. [redacted] has added a fourth row to its 2-3 row hedgerow along the north side of the NE field (HR4). These trees (mostly valley oak and coast live oak) are planted in line with existing black walnut trees to widen the hedgerow and when mature, to provide a windbreak. In addition, [redacted] is planning a windbreak/hedgerow on the north side of its NW field (HR7). This will be a two row windbreak using native trees and shrubs with an emphasis on evergreen species to maximize cover year round.

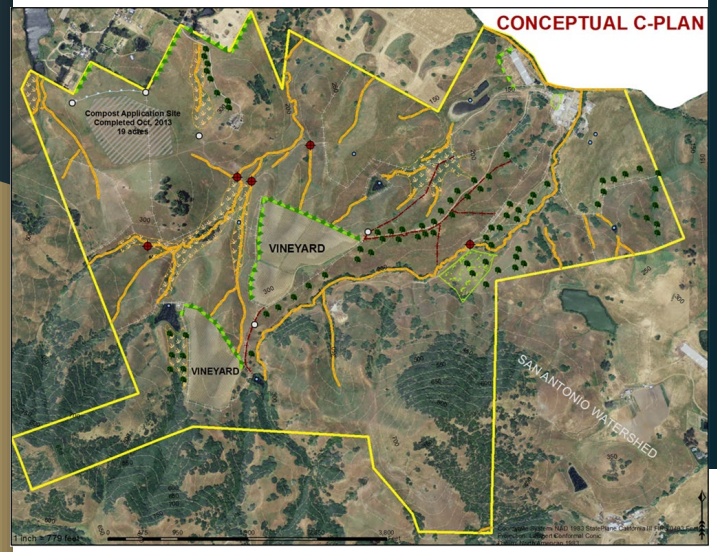
Because the greenhouse gas benefits of a windbreak are similar to a hedgerow, we have included the windbreak in our hedgerow calculations. The single windbreak at HR7 will sequester 2 MT CO2e in one year and 80 MT over twenty years.

Figure 5. Current (green) and planned (pink) hedgerows at [redacted] 2023

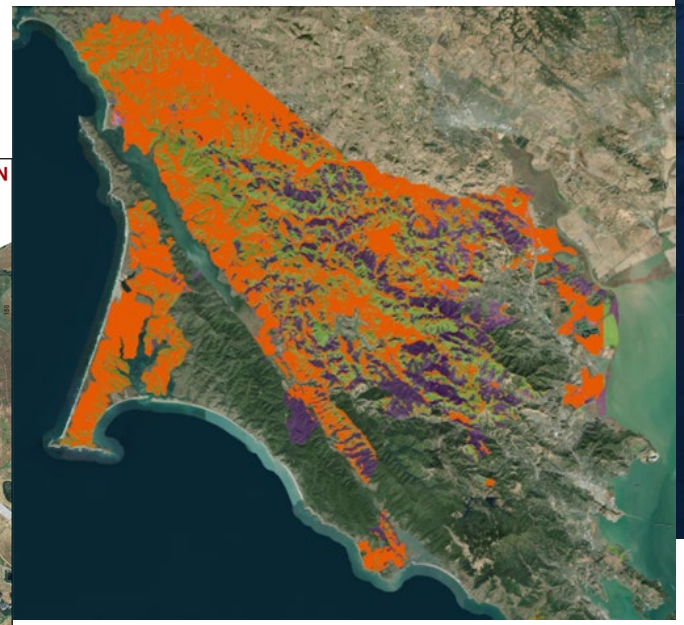


PC: Carbon Cycle Institute

Scaling climate-beneficial agriculture requires investing in local and regional agricultural conservation partnerships

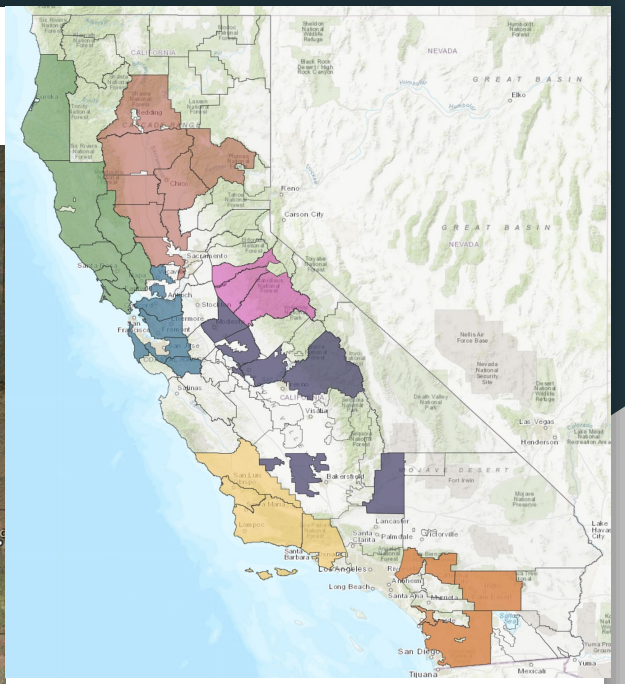


Field and farm level: carbon farm planning



Landscape and county level: climate action planning and policy

Regional level: Climate and Ag hubs



State climate and agriculture policy, state scoping plan

Opportunities for scaling carbon farming

- Seek collaboration with RCDs and producers in the climate action planning process
- Find out who can fund and support sustainable working lands in your area
- Be open to partnership to engage with farmers and ranchers as the land stewards that they are

10 Second Standing Ovation!!!

Heather Nichols

Executive Director

Yolo County Resource Conservation District

STRATEGY 8

Sequester and Store Carbon in Natural and Working Lands (NWL)

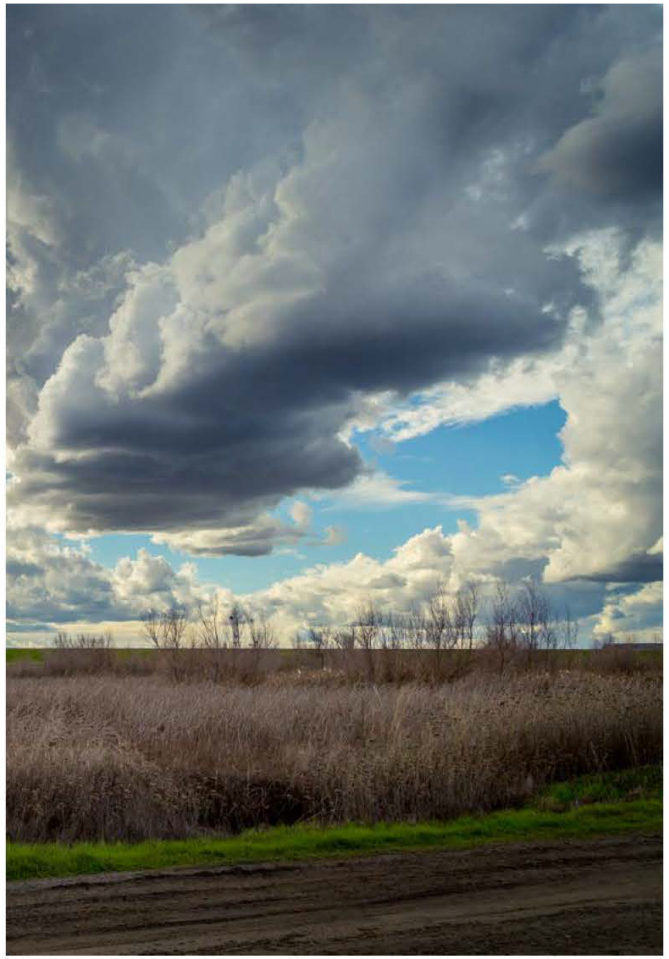
While the GHG emission reduction measures and actions discussed above will be important to the County's goal, achieving net-negative GHG emissions will not be possible without use of carbon sequestration within Yolo County's natural and working lands.

Carbon sequestration is a crucial strategy for reducing GHG emissions. Capturing and storing carbon from the atmosphere can help to offset carbon emissions and achieve a net-negative status. As a primarily agriculture-driven region, Yolo County has championed agricultural land conservation. The Yolo Carbon Farming Partnership has been a collaborative effort between the Yolo County Resource Conservation District and other local organizations and agencies to promote land conservation (Yolo RCD 2024). Actions that promote land conservation and carbon farming on agricultural lands will help the County achieve its climate goals and build climate resilience within the region.

The following measures and actions aim to promote carbon sequestration within Yolo County's natural and working lands through three core approaches: improved land stewardship, restoration, and conservation.

2030 GHG REDUCTION POTENTIAL

419,058 MT CO_2e



GETTING STARTED

Understand:

The natural resources issues and opportunities specific to your area!

Engage local experts:

- Natural Resource Managers
- RCD/NRCS/CDFA/UCANR
- Ag Commissioner
- Conservancies

Involve working lands:

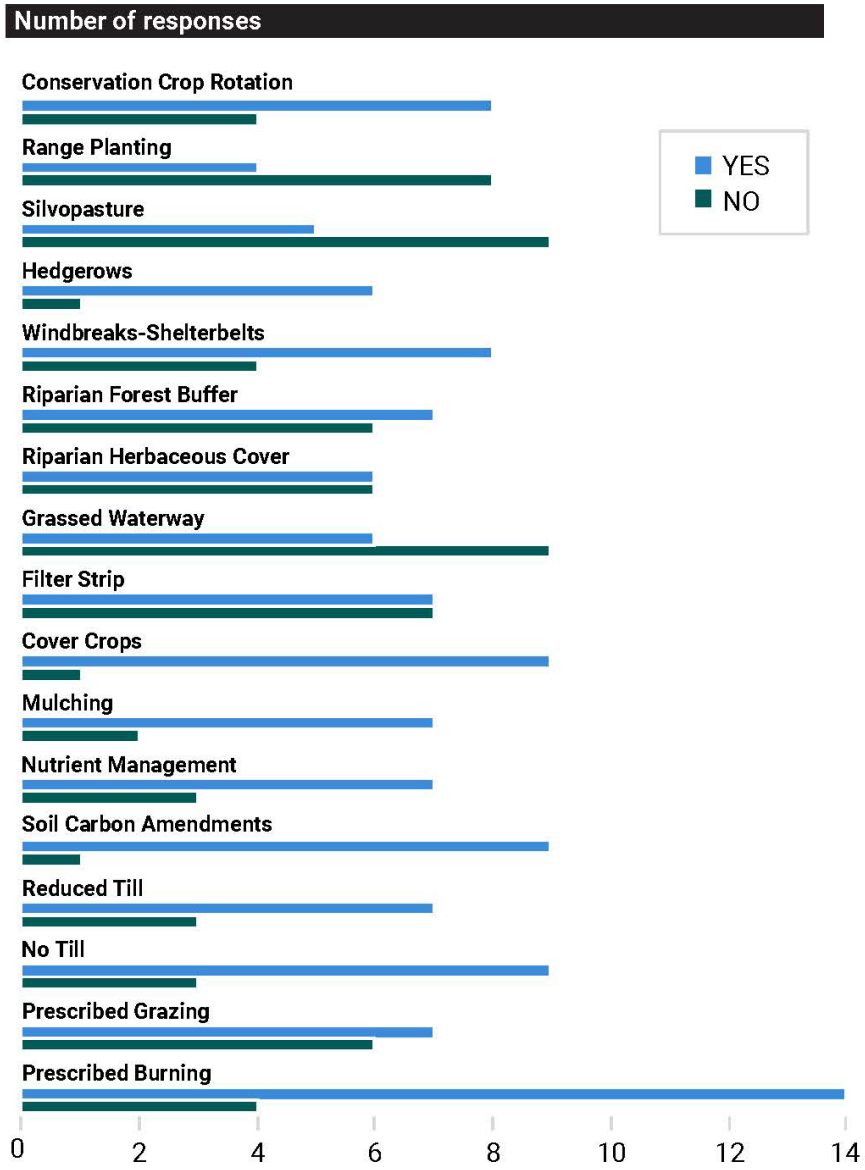
- Tribal communities
- Ag community
- Ranching community
- Foresters
- Fishing industry, etc.

DON'T INVENT A WHEEL

The USDA Natural Resources Conservation Service (NRCS) has developed standard conservation practices with estimated carbon sequestration rates. Recognized by the CA Air Resources Board. http://www.comet-planner.com/

United States Department of Agriculture
NRCS Natural Resources Conservation Service

▶ Figure 6-14.
Yolo County Community Response



ASK YOUR FARMERS

What practices do they…

1. Already do? Why?
2. Want to do more of, but don't? Why?
3. Never want to do? Why?

TOP CONCERNS

- Water security
- Labor shortages
- CA regulations in a global market
- Unpredictable weather

Relevant Community Outreach

Community outreach results are reflective of voluntary County participants, and accordingly, may or may not represent the views of the community as a whole.

The Yolo County NWL community response related to efforts to sequester and store carbon in NWLs is highlighted in Figure 6-13 and Figure 6-14. As shown, practices that promote carbon sequestration are currently being implemented by producers across Yolo County, and the NWL community is optimistic about the feasibility of implementing additional practices to support the County's goals. Additional detail on the results of the NWL survey is included in Appendix C, Natural and Working Lands.

▶ Figure 6-13.
Yolo County Community Response Related to Currently Implemented

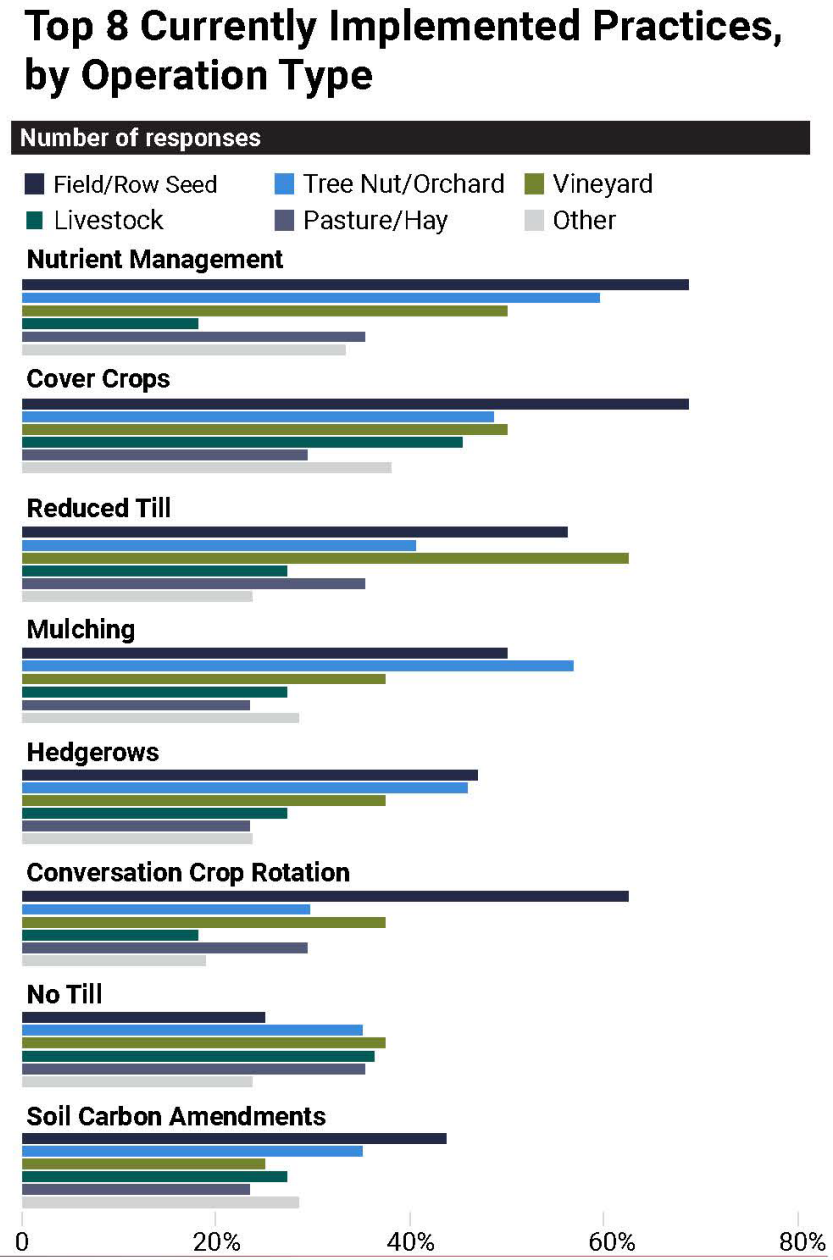


Table 6-8. Yolo County Sequestration Potential Scenarios with Implementation of Strategy 8 Measures and Actions

Measure/Action	Available Acreage	Average Sequestration Rate (MT CO_2e/ acre/ year)	Annual Sequestration Potential (MT CO_2e/year)				
			Maximum Potential (100% Practice Adoption)	5% Practice Adoption	20% Practice Adoption	50% Practice Adoption	70% Practice Adoption
NWL 1: Encourage Climate-Smart Practices in Working Lands							
NWL 1e. Hedgerow Planting	20,000	13.89	277,844	13,892	55,569	138,922	194,491
NWL 1e. Windbreaks/ Shelterbreaks	20,000	13.89	277,844	13,892	55,569	138,922	194,491
NWL 1e. Riparian Forest Buffer	6,000	4.52	27,102	1,355	5,420	13,551	18,971
NWL 1c. Soil Carbon Amendments: Compost Application	288,628	4.47	1,291,465	64,573	258,293	645,733	904,026
NWL 1c. Multiple Conservation Practices[c]	192,998	0.62	118,726	5,936	23,745	59,363	83,108
NWL 1d. Range Planting	80,694	0.34	27,377	1,369	5,475	13,689	19,164
NWL 1c. Cover Crops[a,c]	178,291	0.29	51,007	2,550	10,201	25,504	35,705
NWL 1c. Nutrient Management[c]	288,628	0.27	78,216	3,911	15,643	39,108	54,752
NWL 1e. Riparian Herbaceous Cover	6,000	0.27	1,620	81	324	810	1,134
NWL 1c. Conservation Crop Rotation[a]	140,783	0.26	37,162	1,858	7,432	18,581	26,013
NWL 1c. Mulching	98,728	0.21	20,305	1,015	4,061	10,153	14,214
NWL 1c. Residue and Tillage Management: No Till[b,c]	252,011	0.17	42,994	2,150	8,599	21,497	30,096
NWL 1c. Stripcropping	70,391	0.15	10,829	541	2,166	5,415	7,581
NWL 1c. Residue and Tillage Management: Reduced Till[b,c]	163,812	0.10	15,583	779	3,117	7,792	10,908

OUR RECOMMENDATION

Develop a short list of practices that work for the soil/crop types in a given region or county.

This can help demystify the process for growers, and help prioritize limited resources to tried-and-tested, mutually-beneficial practices.

KEYS TO ADOPTION - Work with your RCD or others who can provide:

1. Free technical assistance
2. Free services (ex. soil testing)
3. "Agnostic" streamlined access to funding

FARM AND RANCH PROGRAMS 101 WORKSHOP

Join us for the Farm and Ranch Programs 101 Workshop! The Yolo County Resource Conservation District brings together local, state, and federal agencies to share technical assistance and funding opportunities to support your farm or ranch.

Agencies and programs include:

- NRCS - EQIP & Equipment/Tractor Replacement
- Yolo-Solano Air Quality Management District - Carl Moyer Program
- Yolo County RCD - Mobile Irrigation Lab (MIL)
- Farm Services Agency Loans & Farm Bill Programs
- University of California Cooperative Extension
- CDFA - SWEEP, HSP, and CUSP
- Yolo Subbasin Groundwater Agency - SGMA Technical Assistance

AGENDA:

9:00-9:30 AM: Coffee and Breakfast
9:30-10:30 AM: 7-minute presentations
10:30-11:30 AM: Q & A and One-on-Ones

YOLO COUNTY RCD
Yolo County Resource Conservation District
NRCS Natural Resources Conservation Service
FSA FARM SERVICE AGENCY
UC CE University of California Cooperative Extension
cdfa CALIFORNIA DEPARTMENT OF FOOD & AGRICULTURE
YOLO-SOLANO AIR QUALITY MANAGEMENT DISTRICT

QUESTIONS?

Reach out to
Conor Higgins, MIL Manager
Yolo County RCD
higgins@yolorcd.org
(530) 661-1688 x 4

LOCATION

Veterans Memorial Center
203 E 14th Street, Davis, CA

www.yolorcd.org

MEASURE NWL 1:

Encourage Climate-Smart Practices in Working Lands

Includes actions that could be implemented within Yolo County agricultural lands by those within the agricultural community to promote carbon sequestration and storage.

ACTIONS

NWL 1b **Farmer Outreach and Education.**

Use existing networks and partnerships and build new ones with a diversity of regional academic institutions, centers, environmental organizations, and non-conventional agricultural sustainability and conservation groups to expand knowledge of sustainable practices and develop and expand farmworker outreach and education programs.

○ ● ○ PHASE II — MITIGATION | ADAPTATION | CROSSCUTTING

NWL 1c **Support Climate-Smart Practices that support carbon sequestration on working lands and provide co-benefits such as enhanced soil health, improved soil moisture retention, and/or reduced fertilizer costs. Examples of such practices include the following USDA NRCS conservation practices:**

- Conservation Crop Rotation (NRCS CPS 328)
- Cover Crops (NRCS CPS 340)
- Filter Strips (NRCS CPS 393)
- Grassed Waterways (NRCS CPS 412)
- Mulching (NRCS CPS 484)
- Nutrient Management (NRCS CPS 590)
- Residue and Tillage Management, No Till (NRCS CPS 329)
- Residue and Tillage Management, Reduced Till (NRCS CPS 345)
- Soil Carbon Amendments: Compost Application (NRCS CPS 336)
- Soil Carbon Amendments: Whole Orchard Recycling (NRCS CPS 808)
- Stripcropping (NRCS CPS 585)

● ○ ○ PHASE I — MITIGATION | ADAPTATION | CROSSCUTTING

MEASURE NWL 1 HIGHLIGHTS

CO-BENEFITS:

GHG REDUCTION POTENTIAL (MT CO_2e)

2030: 412,461

2045: 1,031,154

COST: $+/-

* Additional co-benefits specific to NWL 1 are discussed in Appendix C

NEXT STEPS

- Climate Action Commission moving into implementation phase
- Commission awarded small grants for projects
- Prioritize service to Socially Disadvantaged Farmers and Ranchers
- Initiate more partnerships and seek additional funds to increase adoption.

OAK WOODLAND RESTORATION

10 Second Standing Ovation!!!

Lynda Hopkins

Fifth District Supervisor

County of Sonoma

Sonoma County: Climate Resilient Working Lands

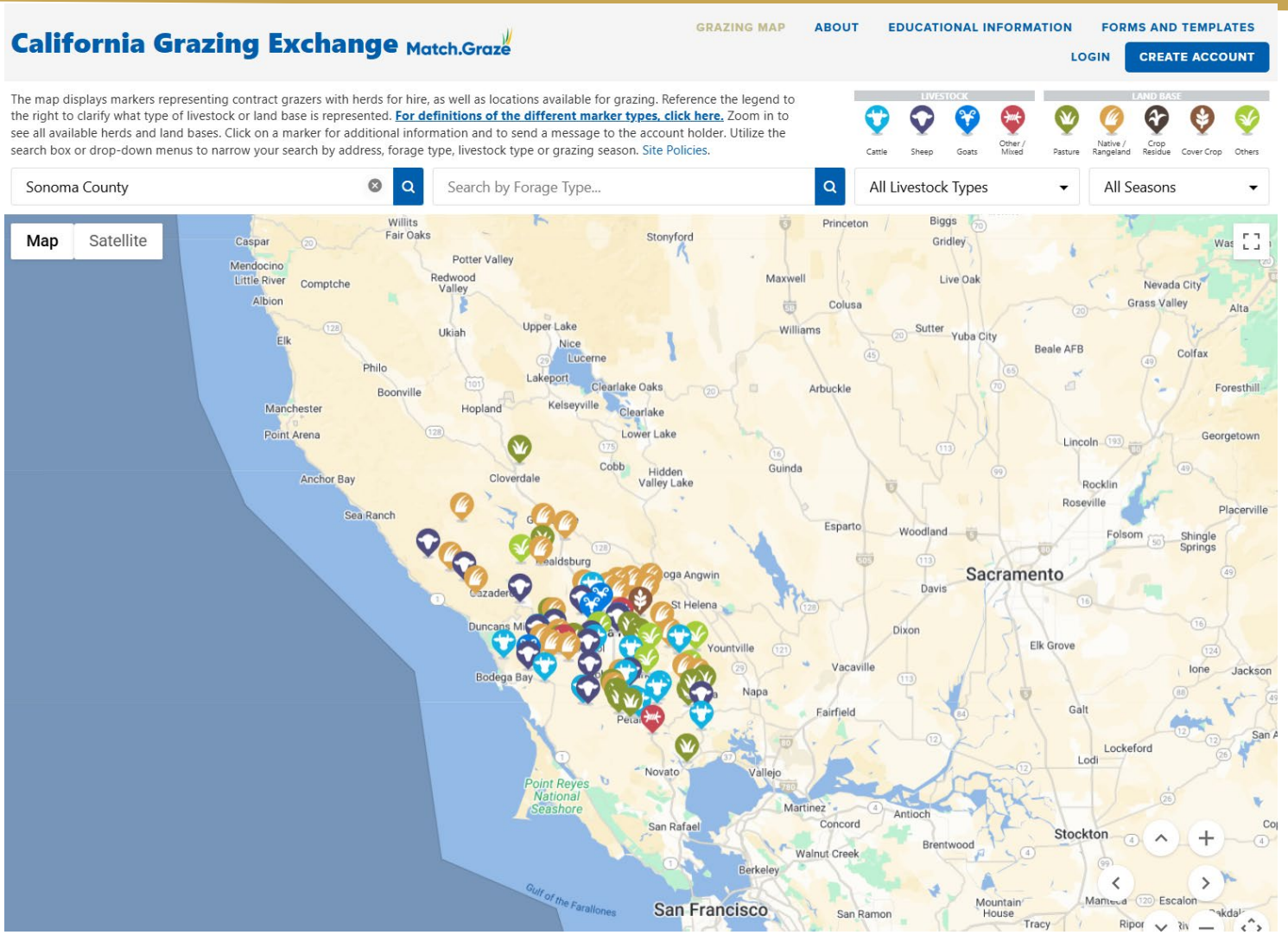
Supervisor Lynda Hopkins

UC Cooperative Extension & Climate Smart Agriculture

- Since 2018, UCCE Advisors, staff and local partner agencies coordinate farm visits to discuss management goals, resource concerns, and pair funding sources to make climate smart projects economically feasible.
- 2,550+ acres of Agricultural Land implementing climate smart agriculture management practices to build soil health and sequester carbon
  - Healthy Soils Program
    - 24 projects, $2 million
  - Alternative Manure Management Program
    - 10 projects, $6.7 million
- Project Types
  - Converting energy usage from diesel to electric
  - Using separated manure solids for cow bedding
  - Separating manure solids from manure ponds
  - Planting of perennial species to pasture and rangelands
  - Applying compost to local pastures and cropland
  - Producing quality compost using on-farm by-product materials

Livestock Grazing for Fuels Reduction

- Strategic Prescribed Grazing
  - Innovative program targeting landscape to maintain fuel breaks, control shrub encroachment, and reduce vegetation near wildland-urban interface areas.
- Match.Graze
  - 50+ users in Sonoma County, our region has a unique opportunity to support the economic development of a full-scale grazing program.
- Wildfire Fuel Mapper (WFM)
  - Allows landowners to select multiple parcels, maps or forages to help them prioritize where and how to manage vegetation to reach resource goals and reduce wildfire risks.



Grazing for Climate Resilience in Parks

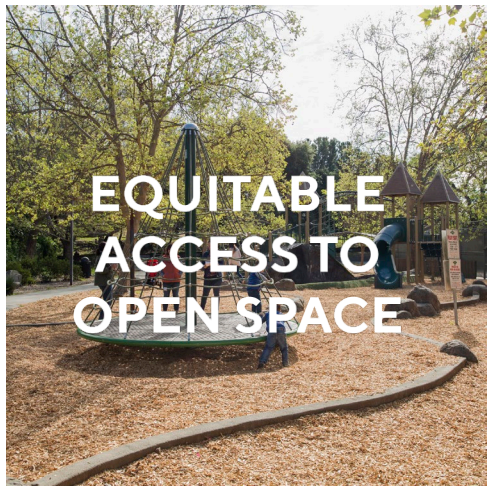
- 6,000+ acres of Regional Parks land are grazed to support:
  - Fire fuels reduction
  - Biodiversity and habitat health
  - Invasive species control
  - Prescribed fire prep
- Use cattle (on large landscapes) and targeted grazing with sheep/goats
- Local investment, regional impact
  - Support local economy, public-private partnerships

Sonoma County Ag + Open Space: Special District

AG + OPEN SPACE
SONOMA COUNTY

- Special District established in 1990
- Funded by a ¼ cent sales tax
- Protects the diverse agricultural, natural resource, and scenic open space lands of Sonoma County for future generations

A connected network of conserved lands supporting resilient human and natural communities



Return on a Community's Investment in Conservation

Conservation of multi-benefit working & natural lands

+

Landowner investment in stewardship & land management

+

Partner funding & technical assistance

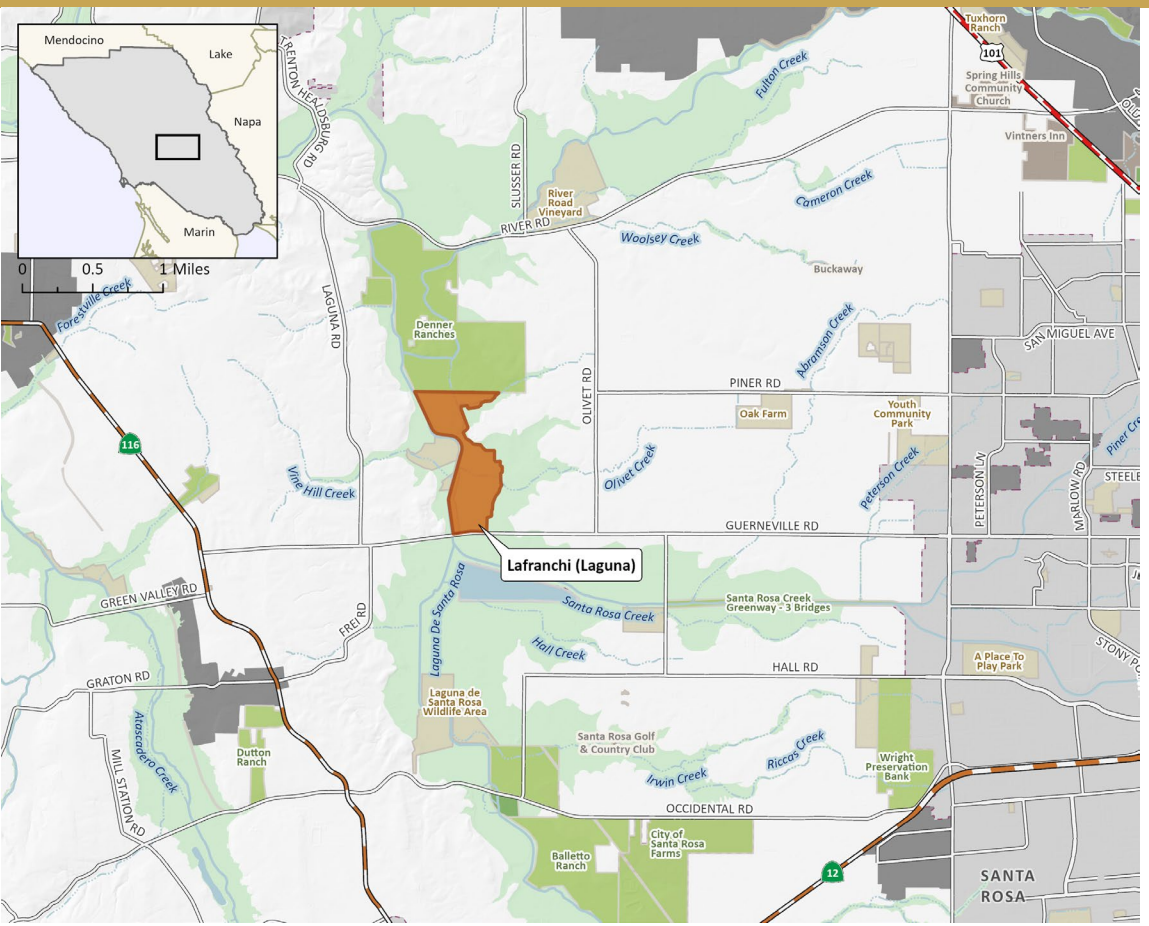
Resilient lands & resilient communities

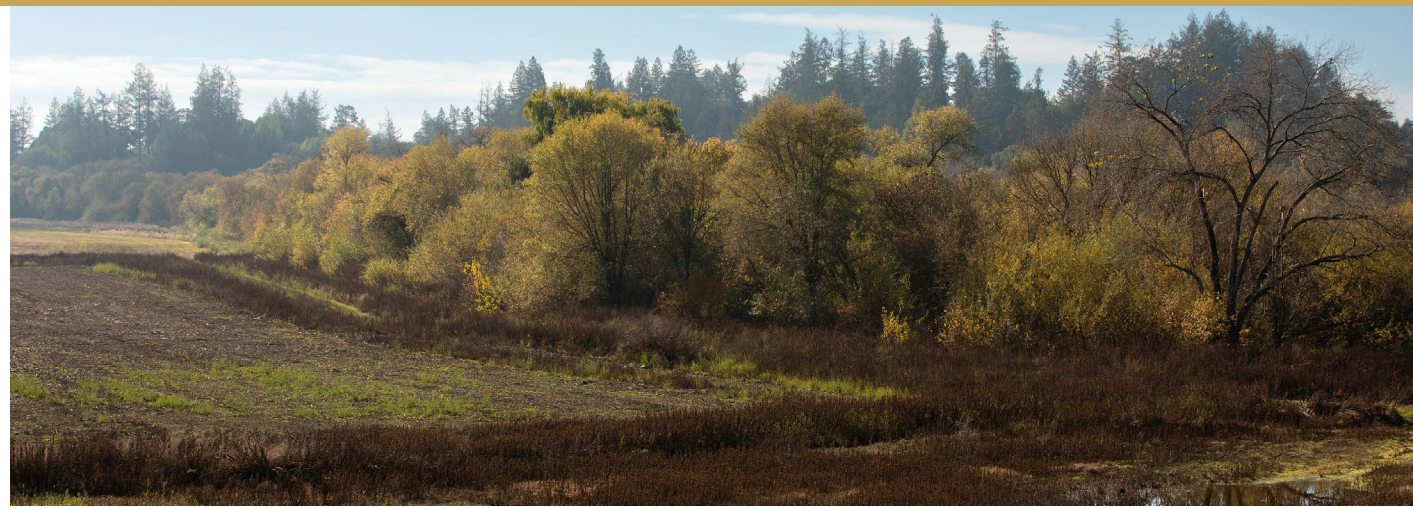
Ecosystem Benefits & Services

- Water quality
- Water supply
- Flood protection
- Wildfire risk reduction
- Wildlife habitat & native biodiversity
- Carbon sequestration
- Local food & fiber
- Pollination services
- Scenic value
- Recreational opportunities

Showcase Project:

Flood Mitigation via Conservation & Restoration of a Working Ranch





10 Second Standing Ovation!!!

Q&A

Margot Flynn
Sacramento Valley RCDs

Heather Nichols
Yolo County RCD

Lynda Hopkins
Sonoma County

Breakout Discussions

Margot Flynn

The Foundation: Carbon Farming 101

Learn about specific carbon farming practices, how to plug into TA networks, & how to scale carbon farm planning.

Heather Nichols

Getting Started: How to Form Your Coalition and Set Priorities

How to identify partners, prioritize conservation practices, & begin planning.

Lynda Hopkins

Turning Policy into Action: Taking Working Lands Solutions to the Next Level

Explore how to frame climate resilient working lands as a smart local investment, identify funding levers, & accelerate implementation.

Closing Thoughts