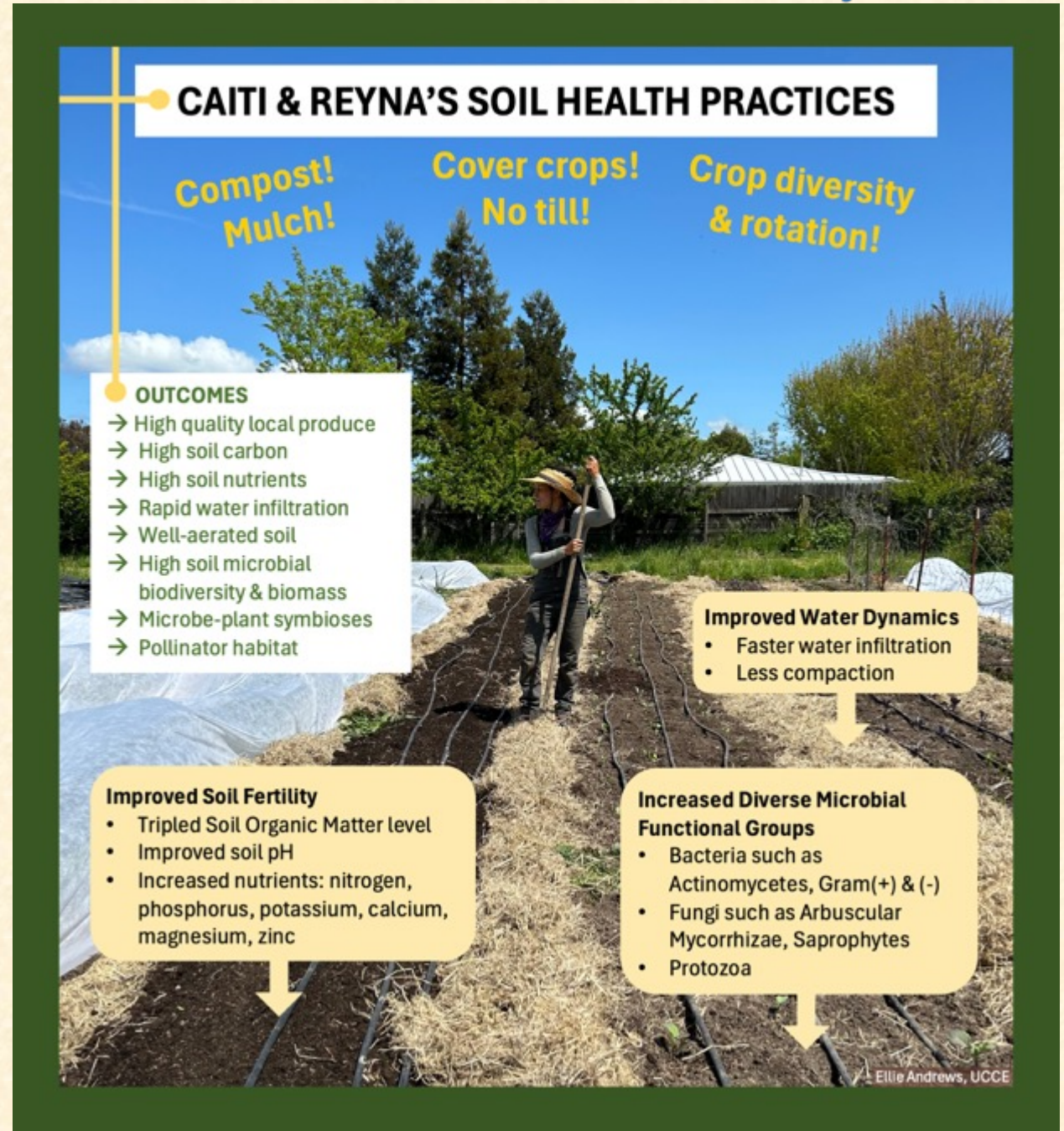


# Local Case Study



# Soil Sampling Map

- Dots indicate location of soil samples
- Soil samples from each block were combined in a bucket, mixed, and poured into a plastic Ziplock bag
- 4 areas of interest → 4 bags total

## Example Soil Sampling Map

Thank you, Reyna Yagi (Yagi Sisters Farm at the Permaculture Skills Center) for permission to share.

Blocks are indicated by colored outlines. Dots (●) indicate location of soil sample collected. Soil samples from each block were combined in a bucket, mixed, and poured into a plastic Ziplock bag for 4 bags total. All areas are loam soil according to the NRCS Soil Web Survey.

**Uncultivated Soil** (for comparison)

### Block 2

- 2<sup>nd</sup> longest block in production  
- Compost, cover crops, no till

### Block 1

- Longest block in production  
- Compost, cover crops, no till

### Block 3

- Most recent block in production



Example: Yagi Sisters Farm.  
Thank you, Reyna Yagi, for  
permission to share.

# Soil Sampling Map

- If you'd like to collect soil samples, save your final map for future reference so you can sample the same way each year
- This will allow you to track changes over time



# SOM Results

- 2 to 3x higher SOM in the no-till / cover crop / compost area than uncultivated soil

Area	SOM (%)
1st Area (purple)	8.30
2nd Area (blue)	12.40
3rd Area (yellow)	4.90
Uncultivated Soil (red)	3.90



# Soil Biological Indicators

- Microbial Diversity & Functional Community Composition via PLFA
  - Biomass is reported in nanograms of living microbial biomass per gram of soil



Block	Total Biomass	Total Bacteria	Total Fungi	Protozoa
1st Area (purple)	4584.85	2171.10	729.44	14.26
2nd Area (blue)	4488.67	2058.24	939.77	13.00
3rd Area (yellow)	4567.09	2063.33	933.12	23.79
Uncultivated Soil (red)	3091.25	1376.44	516.16	0.00

(Data from Reyna Yagi, Yagi Sisters Farm, shared with permission)

# Soil Biological Indicators

- Microbial Diversity & Functional Community Composition via PLFA



Block	Arbuscular Mycorrhizae	Actinomycetes	Saprophytes
1st Area (purple)	250.79	452.44	478.65
2nd Area (blue)	241.99	473.78	697.78
3rd Area (yellow)	270.61	501.22	662.51
Uncultivated Soil (red)	141.85	346.37	374.31

(Data from Reyna Yagi, Yagi Sisters Farm, shared with permission)

# Soil Water Dynamics

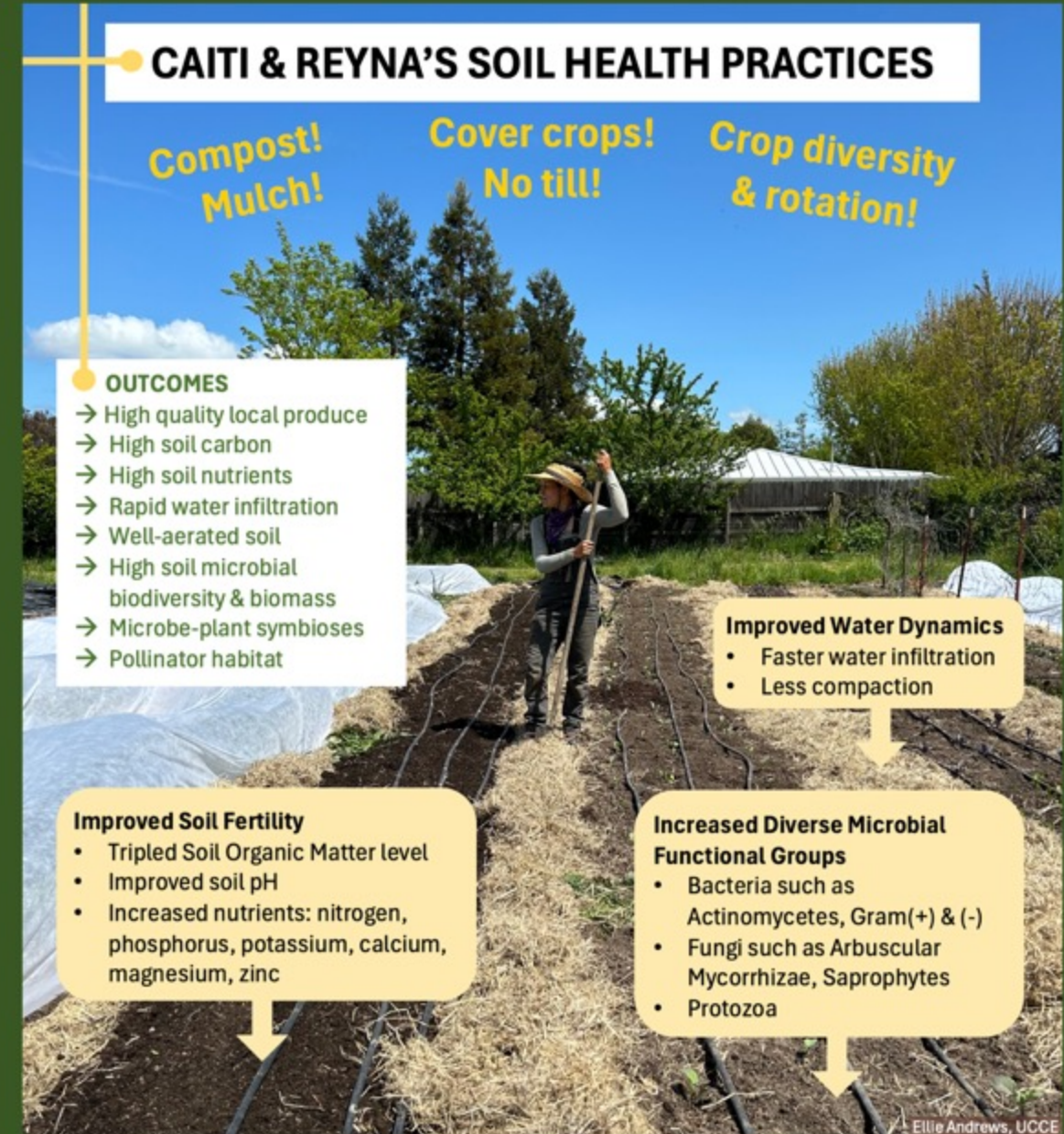
- Average Water Infiltration Rate
  - How quickly does water move into the soil?
- Average Bulk Density
  - How compacted is the soil?

Block	Bulk Density (g/cm <sup>3</sup> )	Infiltration Rate (seconds)
1st Area (purple)	0.77	16
2nd Area (blue)	0.64	19
3rd Area (yellow)	0.95	34
Uncultivated Soil (red)	0.87	72



# Soil Carbon in Context

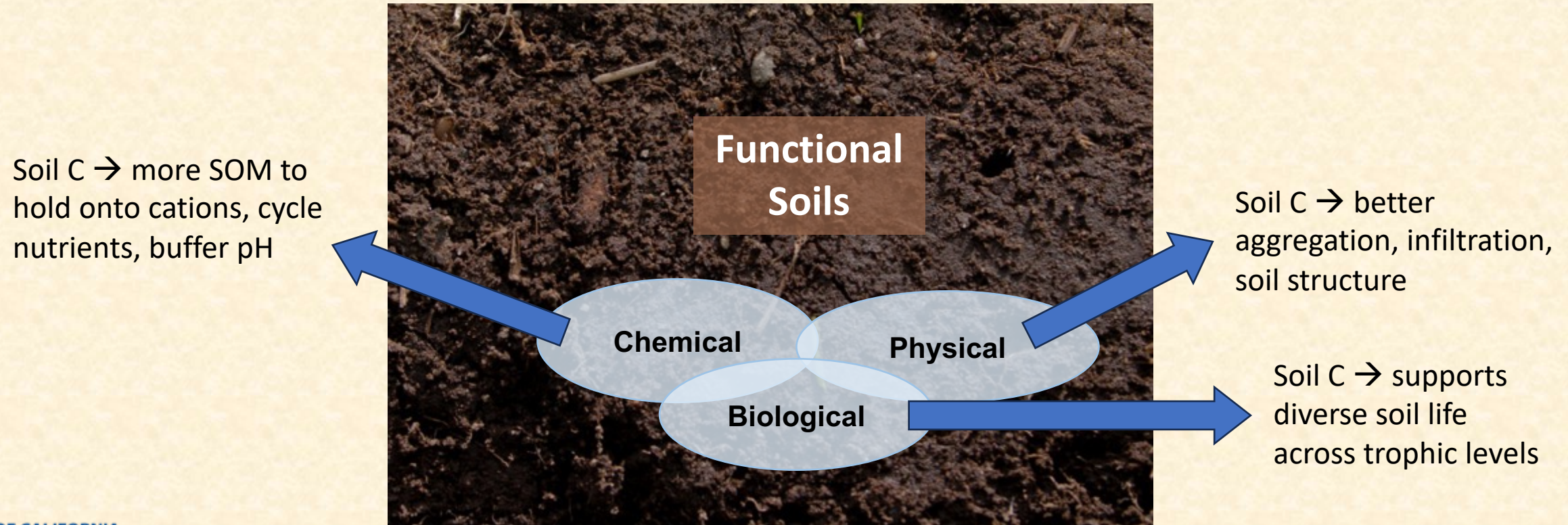
- Farmers combined soil health building practices over time
- These led to measurable outcomes
  - Increased SOM (indicates higher C)
  - Improved soil fertility
  - Improved water dynamics
  - Increased microbial functional groups
- These outcomes are all interconnected!



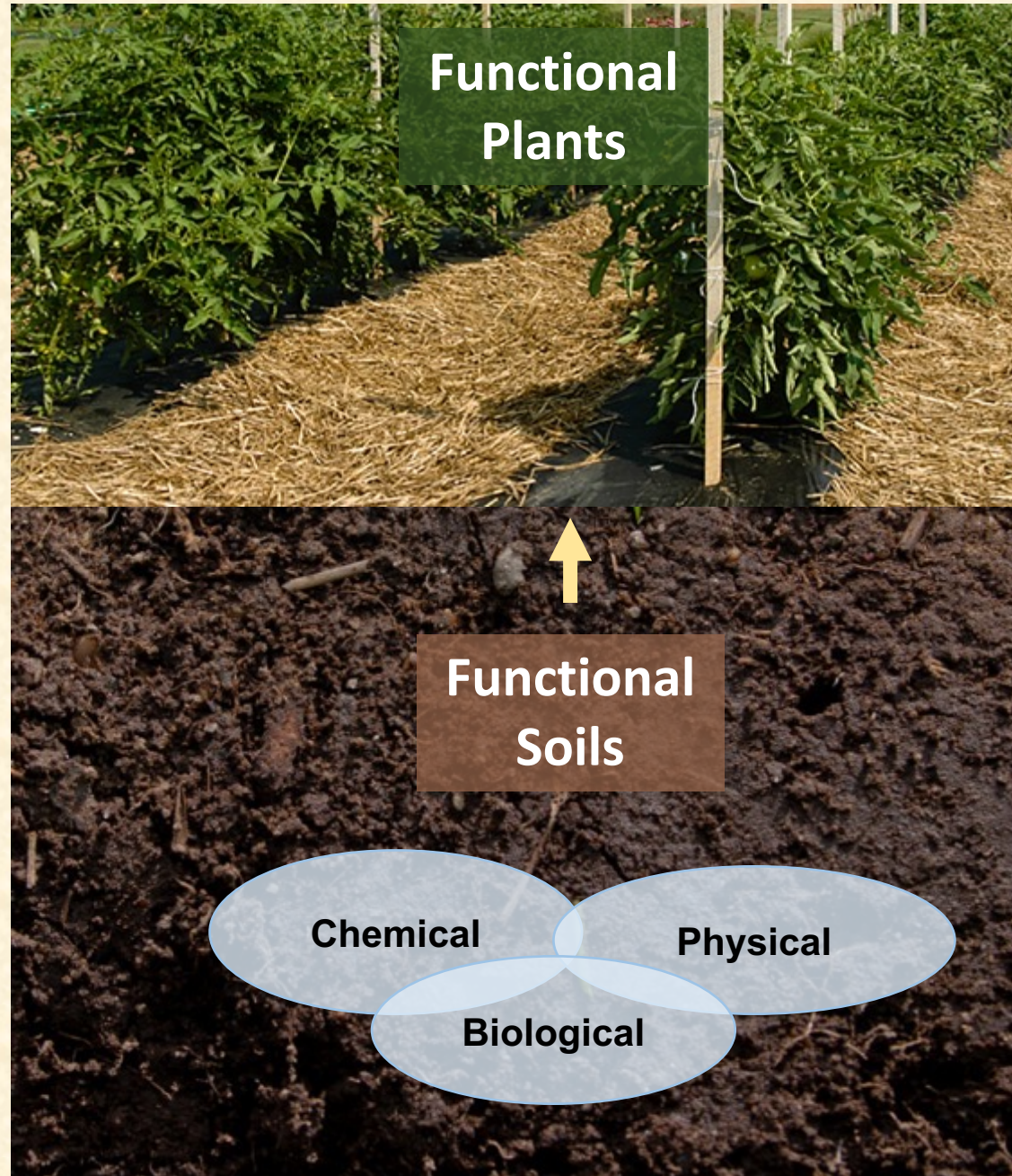


# Outcomes

- Increased soil carbon & the practices required to do so can improve all aspects of soil health



# Outcomes





# List of Labs

## Selected Plant and Soil Laboratories

Support North  
Coast Viticulture

Home

Interactive List of  
Labs and Services

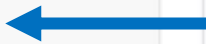
Get Added to the  
List

## Selected Plant and Soil Laboratories in Northern and Central California

Downloadable List of Selected Plant and Soil Analytical  
Laboratories

[Downloadable PDF Table](#)

Name ↑	Zip Code	Phone Number	Soil Nutrients	Plant Tissues	Fertilizers & Amendments	Manure & Compost	Plant Pathology	Nematology	Irrigation & Drinking Water	Hazardous Waste
A & L Western Agricultural Labs	95451	209-529-4080	✓	✓	✓	✓			✓	✓
AGQ Labs - USA	93030	805-981-2972	✓	✓	✓	✓			✓	
Agri-Analysis LLC	95618	800-506-9852					✓			
AL & L Crop Solutions Inc	95688	530-387-3270					✓			
ALC Consolidated	93454	805-739-5333	✓	✓	✓				✓	
Alluvial Soil Lab	95060	831-216-1367	✓	✓		✓				
Basic Lab	95928	530-894-8966	✓						✓	✓
Basic Lab	96001	530-243-7234	✓						✓	✓
California Agri Diagnostics LLC	95240	209-502-4670					✓	✓		



# SOUL FIRE FARM



## More Resources

- Great resource created by farmers for farmers:

## Guide to In-Field Soil Health Measurement Protocols

by Leah Penniman, Soul Fire Farm

Excellent explanations & photos!

# More Resources

- North Coast Soil Hub
  - Online Resource Library
  - Local Success Stories
  - Newsletters
  - Events such as the Soil Health Symposium!



**NORTH COAST SOIL HUB**

Fostering connections to build soil health and agricultural resilience across Humboldt, Lake, Marin, Mendocino, Napa & Sonoma counties.

The banner features a grid of images: a market stall with fresh produce, a young green seedling in dark soil, a vineyard with rows of grapevines, a cow in a field, autumn foliage, and hands holding soil.

# Local Partners

- Resource Conservation Districts (RCDs)
- Natural Resource Conservation Service (NRCS)
- Conservation Works



# Local Partners

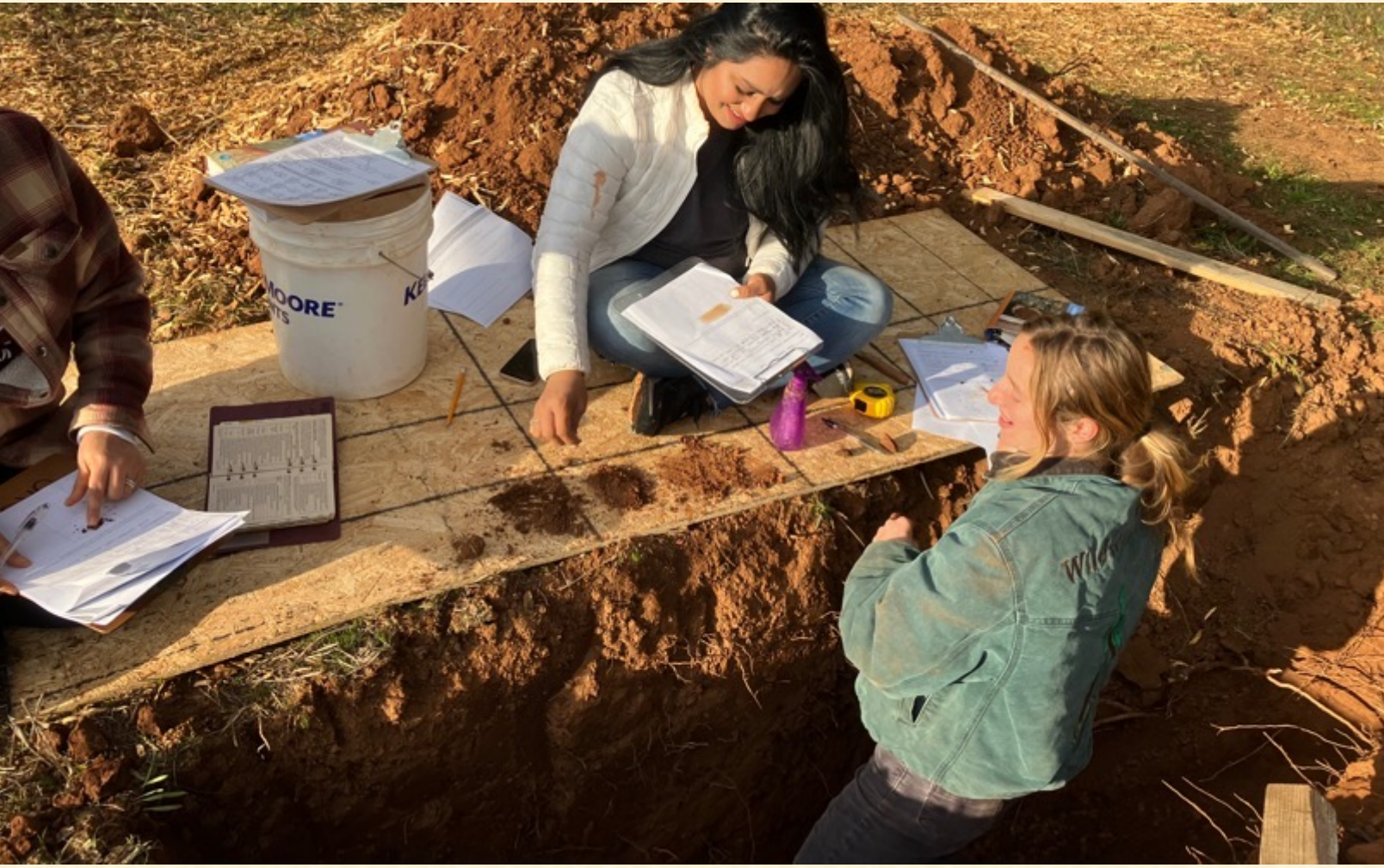
- Resource Conservation Districts (RCDs)
- Natural Resource Conservation Service (NRCS)
- Conservation Works

*Please check out their websites for grant funding opportunities related to building soil carbon and other sustainable ag topics!*



Learn more about Soil Science:

## SRJC's AGRI 60 taught by Johnny Campbell based here at Shone Farm!



- Focuses on soil physical, chemical, and biological properties in detail
- An introduction to the science, ecology, & management of soils
- Soil health, ecological land management, soil conservation
- Laboratory: soil health field measurements, lab analyses & calculations



Thank you!

