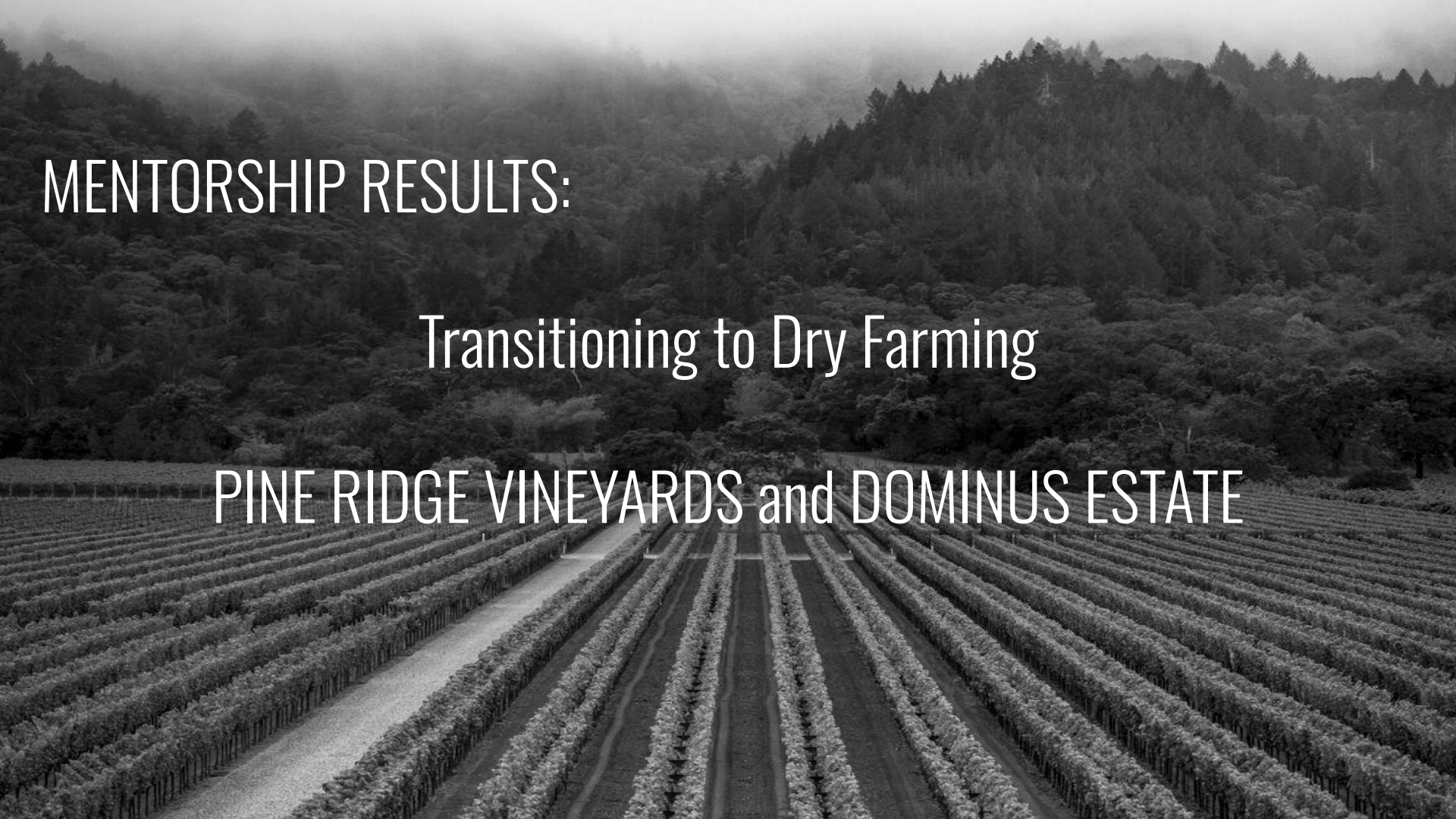

WATER EFFICIENCY
& SAVINGS
RISE
INNOVATION
SUSTAINABILITY
EMPOWERMENT
REGENERATION

# RISE Mentorship Results:
## Transitioning to Dry Farming

| | |
|---|---|
| Tod Mostero | Dominus Estate |
| Gustavo Aviña | Pine Ridge Vineyards |
| Josh Widaman | Pine Ridge Vineyards |



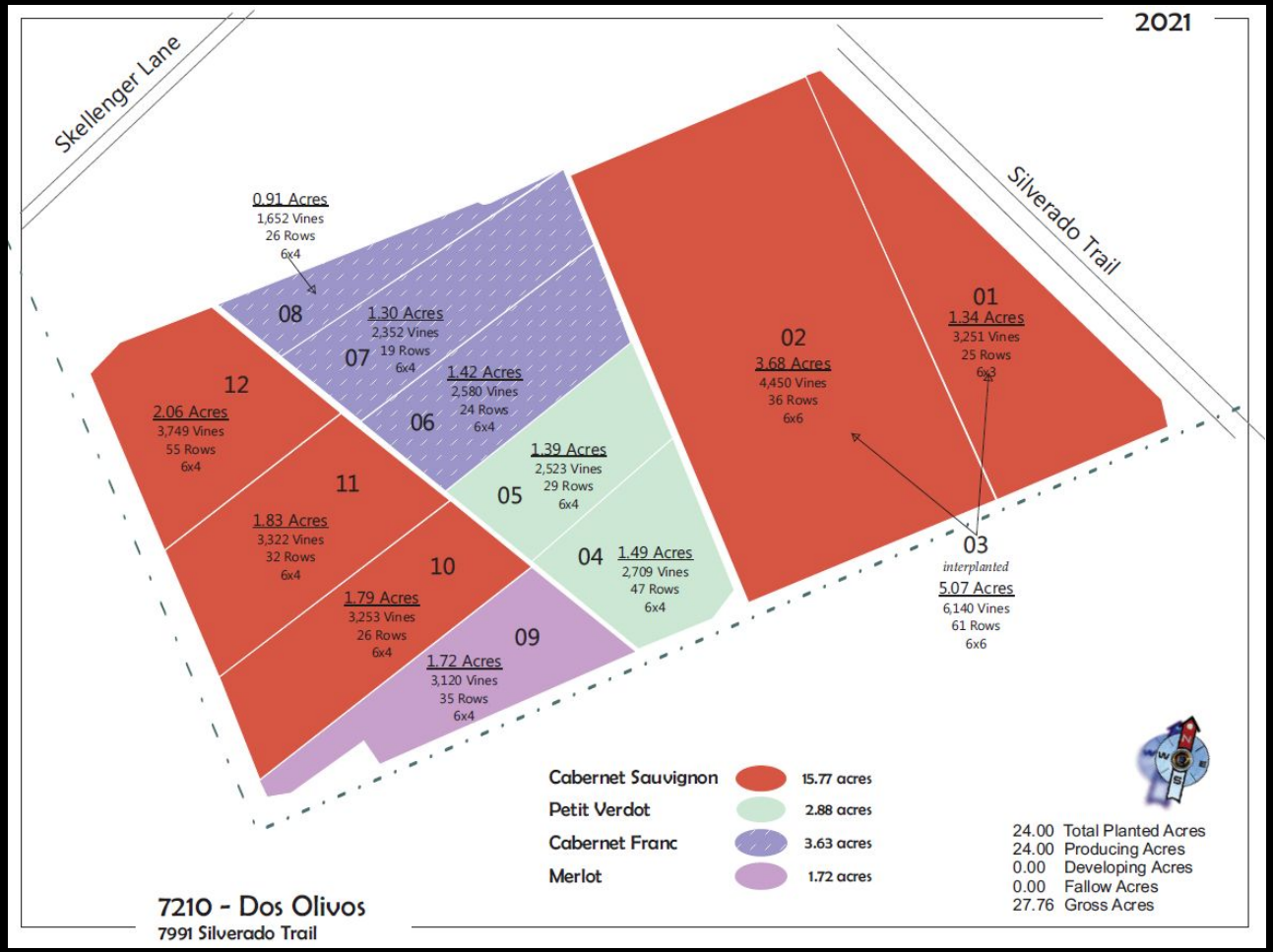
# MENTORSHIP RESULTS:

## Transitioning to Dry Farming

## PINE RIDGE VINEYARDS and DOMINUS ESTATE

# BEFORE MENTORSHIP

- Dos Olivos Vineyard
- Gustavo Aviña and Josh Widaman
- Tod Mostero


2021
Skellenger Lane
Silverado Trail
0.91 Acres
1,652 Vines
26 Rows
6x4
08
1.30 Acres
2,352 Vines
19 Rows
6x4
07
1.42 Acres
2,580 Vines
24 Rows
6x4
06
12
2.06 Acres
3,749 Vines
55 Rows
6x4
11
1.83 Acres
3,322 Vines
32 Rows
6x4
10
1.79 Acres
3,253 Vines
26 Rows
6x4
09
1.72 Acres
3,120 Vines
35 Rows
6x4
1.39 Acres
2,523 Vines
29 Rows
6x4
05
04
1.49 Acres
2,709 Vines
47 Rows
6x4
02
3.68 Acres
4,450 Vines
36 Rows
6x6
01
1.34 Acres
3,251 Vines
25 Rows
6x3
03
interplanted
5.07 Acres
6,140 Vines
61 Rows
6x6
Cabernet Sauvignon 15.77 acres
Petit Verdot 2.88 acres
Cabernet Franc 3.63 acres
Merlot 1.72 acres
24.00 Total Planted Acres
24.00 Producing Acres
0.00 Developing Acres
0.00 Fallow Acres
27.76 Gross Acres
7210 - Dos Olivos
7991 Silverado Trail


PINE RIDGE
VINEYARDS

# THE PROCESS OF MENTORSHIP

- YEAR ONE
- YEAR TWO
- YEAR THREE


Silverado
125
116
104
168

# DRY FARMED ROOTSTOCKS

- 101-14
- 3309
- 110R
- Rupestris – St. George
- Riparia
- 1103P
- 1616C
- Others?

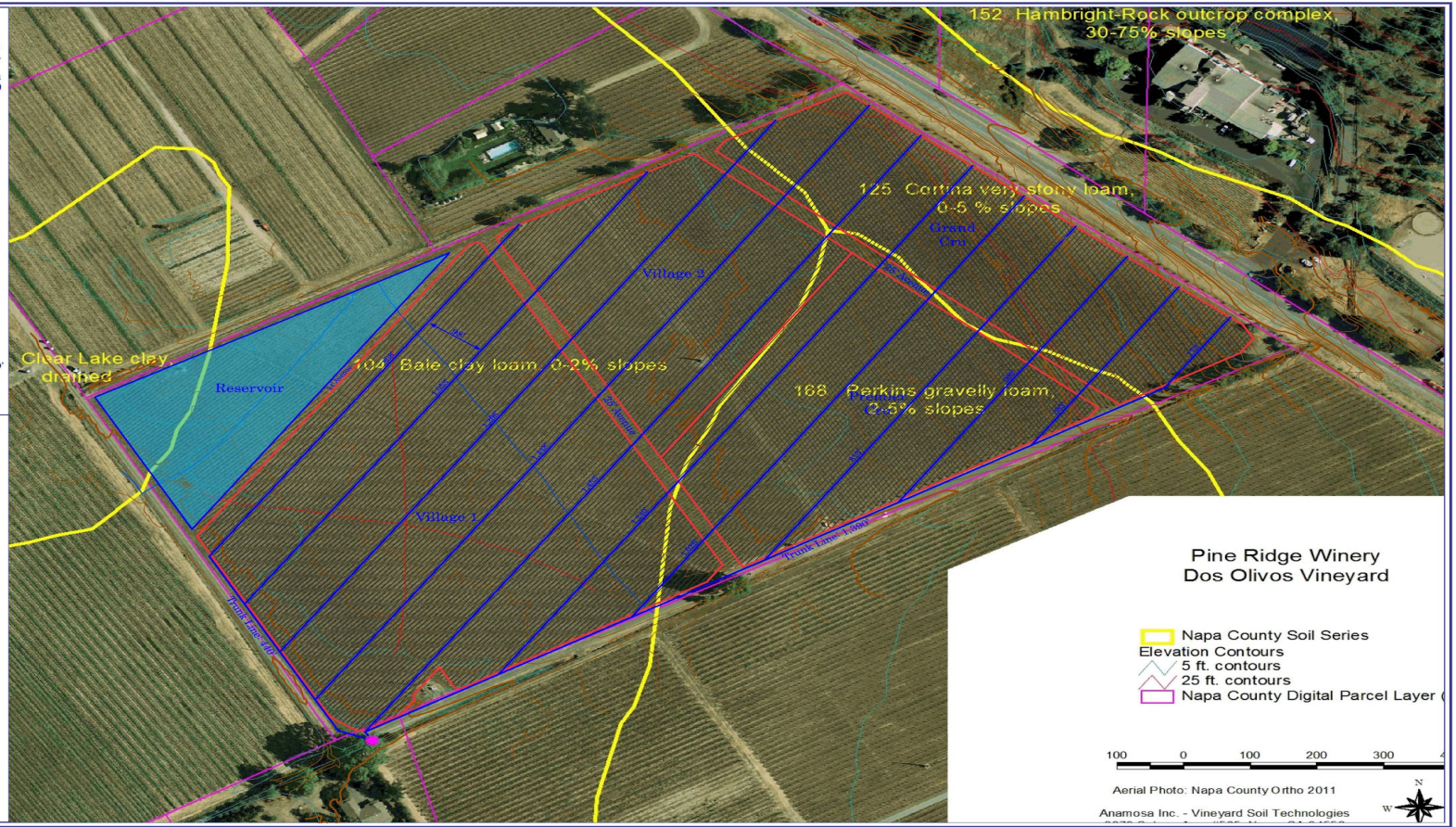
# PINE RIDGE VINEYARDS

## Oakville Vineyard

### Subsurface Drainage Map

Village 1: 9.24 Acres
Village 2: 3.77 Acres
Premier Cru: 4.61 Acres
Grand Cru: 4.78 Acres
Reservoir: 2.09 Acres
Row Spacing: 7'
Row Direction: 35°
Lateral Pipe Total Length: 10,294'
Trunk Line Pipe Total Length: 1,830'

Silverado Trail, CA
January 2023




Legend

- Subsurface Drain Pipe
- Vine Row
- Block Boundary
- Contour Line Major (5')
- Contour Line Minor (1')
- Sump

SCALE 1" = 70'

70 0 70 140

VINEYARD LAYOUT SERVICES
Geyserville, CA

- TRIM SUPERFICIAL ROOTS

- 1-3 DEEP IRRIGATIONS (10 GAL/VINE)

- GRAFT
  (only after

13

4/22/2025

14

4/22/2025

15

4/22/2025

# PINE RIDGE VINEYARDS

## Dos Olivos Vineyard

### Vineyard Development Map

Silverado Trail, CA

October 2024


**Legend**

- Grand Cru
- Premier Cru
- Village 1
- Village 2
- Vine Row
- Block Boundary
- Contour Line Major (5')
- Contour Line Minor (1')

SCALE 1" = 70'

70 0 70 140

- HOW DEEP ARE THE ROOTS?

- WHAT'S THE GOAL?

18

4/22/2025

20

4/22/2025

21

4/22/2025

22

4/22/2025

# AFTER MENTORSHIP

- FUTURE YEARS

# OPPORTUNITIES IN OTHER LOCATIONS

- RUTHERFORD RIDGE
- BUHMAN
- LOCKED HORNS
- STAGS CROWN

# PINE RIDGE VINEYARDS

## Rutherford Ridge Vineyard

### Vineyard Development Map

Total Acres: 31.37

Whitehall Ln, CA
April 2024


Legend

- Block Boundary
- Vine Row
- Contour Line Major
- Contour Line Minor

SCALE 1" = 80'

80 0 80 160

# PINE RIDGE VINEYARDS

## Buhman Vineyard

### Vineyard Development Map

Total Area: 37.86 Ac

Buhman Ave, CA
April 2024

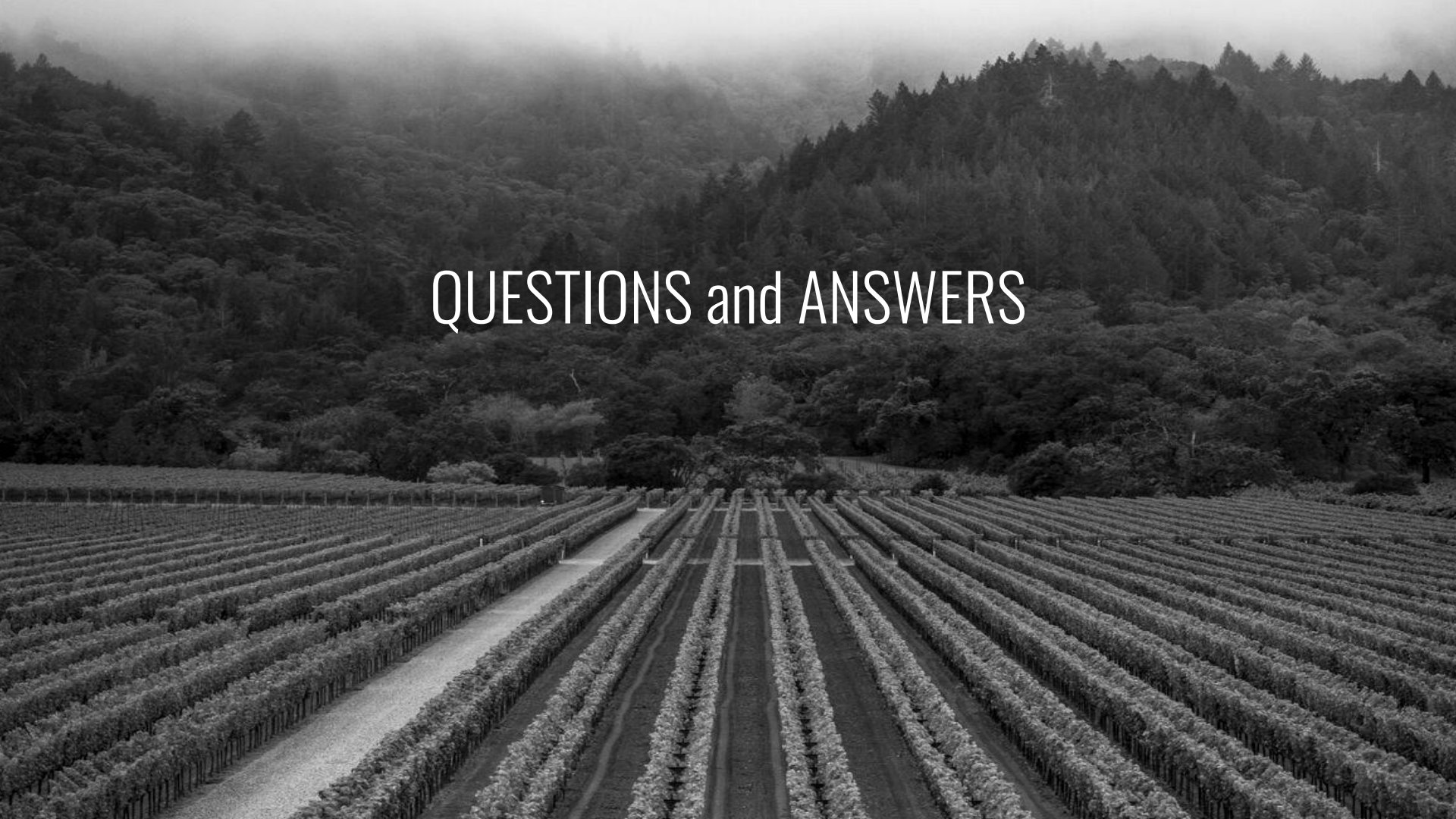
**Legend**

- Block Boundary
- Vine Row
- Contour Line Major
- Contour Line Minor

SCALE 1" = 100'
100 0 100 200


104


110
105
155
Silverado
may not be valid at this scale.

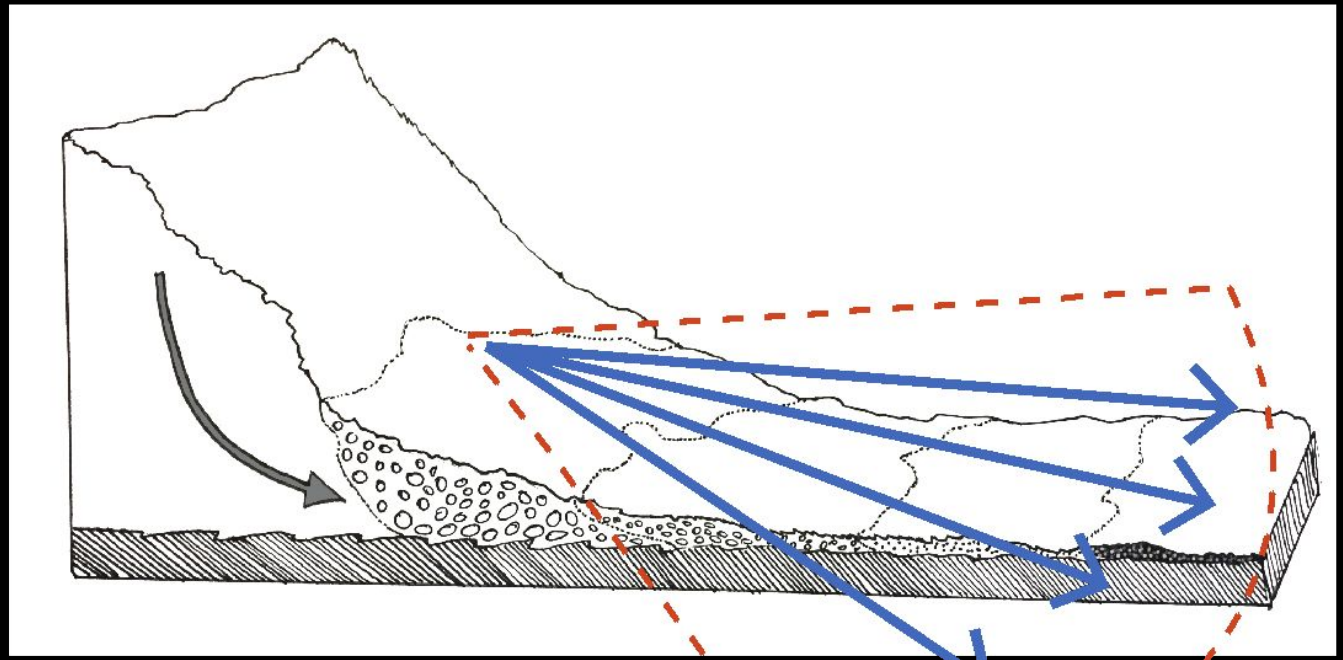

QUESTIONS and ANSWERS

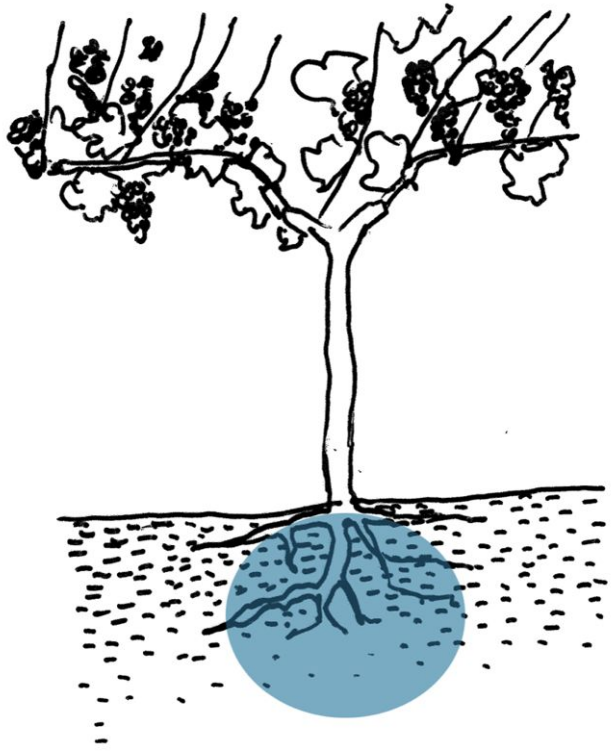
# APPENDIX

ALLUVIAL FANS :

- DEEP ROCKY SOILS AT THE FOOT OF THE MOUNTAINS
- SHALLOWER SILT AND CLAY SOILS at the APRON of the FAN
- UNDERNEATH the FAN LIES a HARD PAN OF IMPERVIOUS CLAY

WATER PERCOLATES through the MOUNTAINS = SPRINGS FLOW UNDERGROUND in a FAN FORMATION

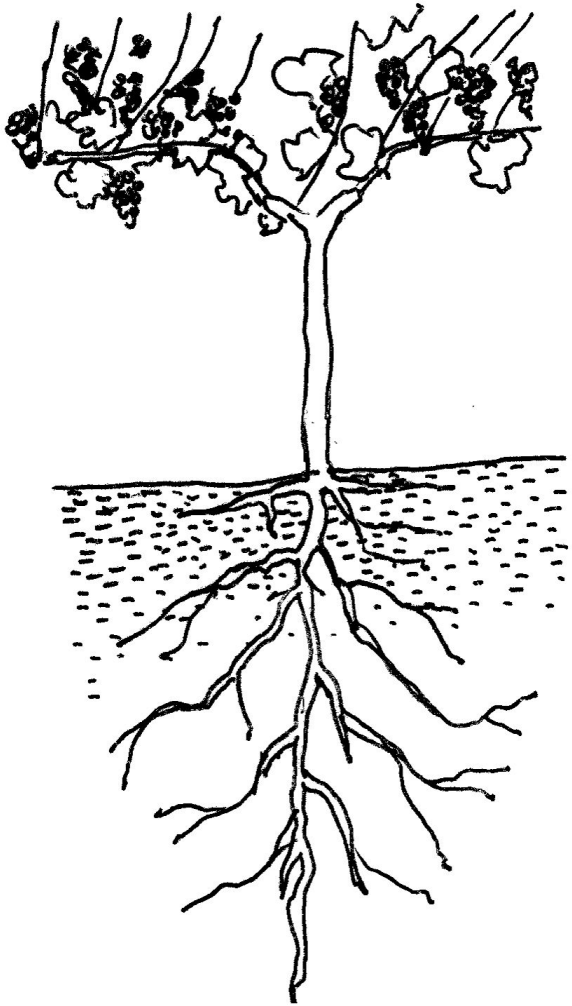


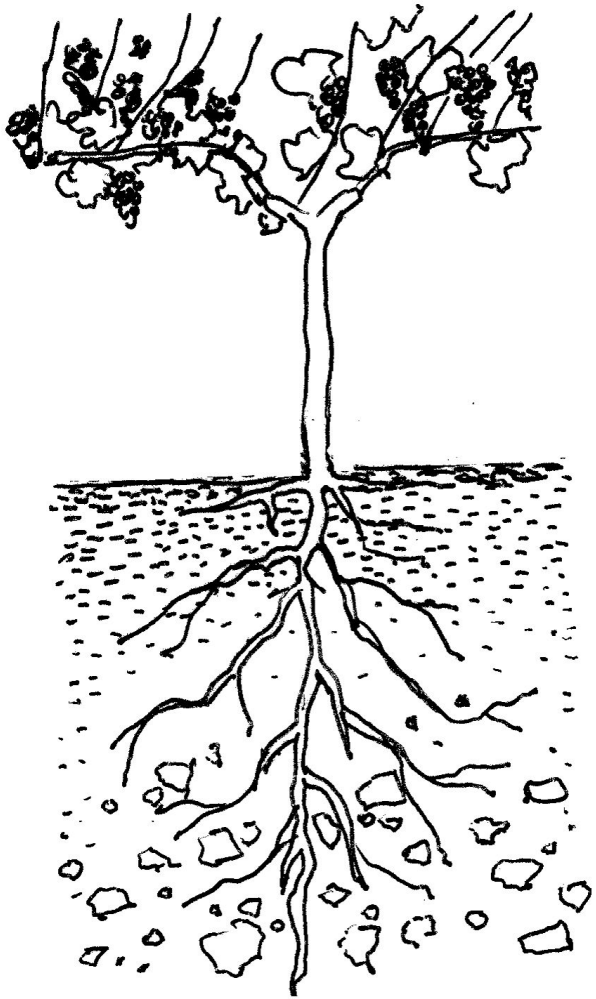


SUPERFICIAL ROOTS DEVELOP in FREQUEN
IRRIGATED VINEYARDS

IRRIGATED VINES HAVE ROOT SYSTEMS THAT STAY IN THE TOP 18+ INCHES OF SOIL.

DRY-FARMED VINES DIVE DEEP INTO THE GROUND in SEARCH OF WATER



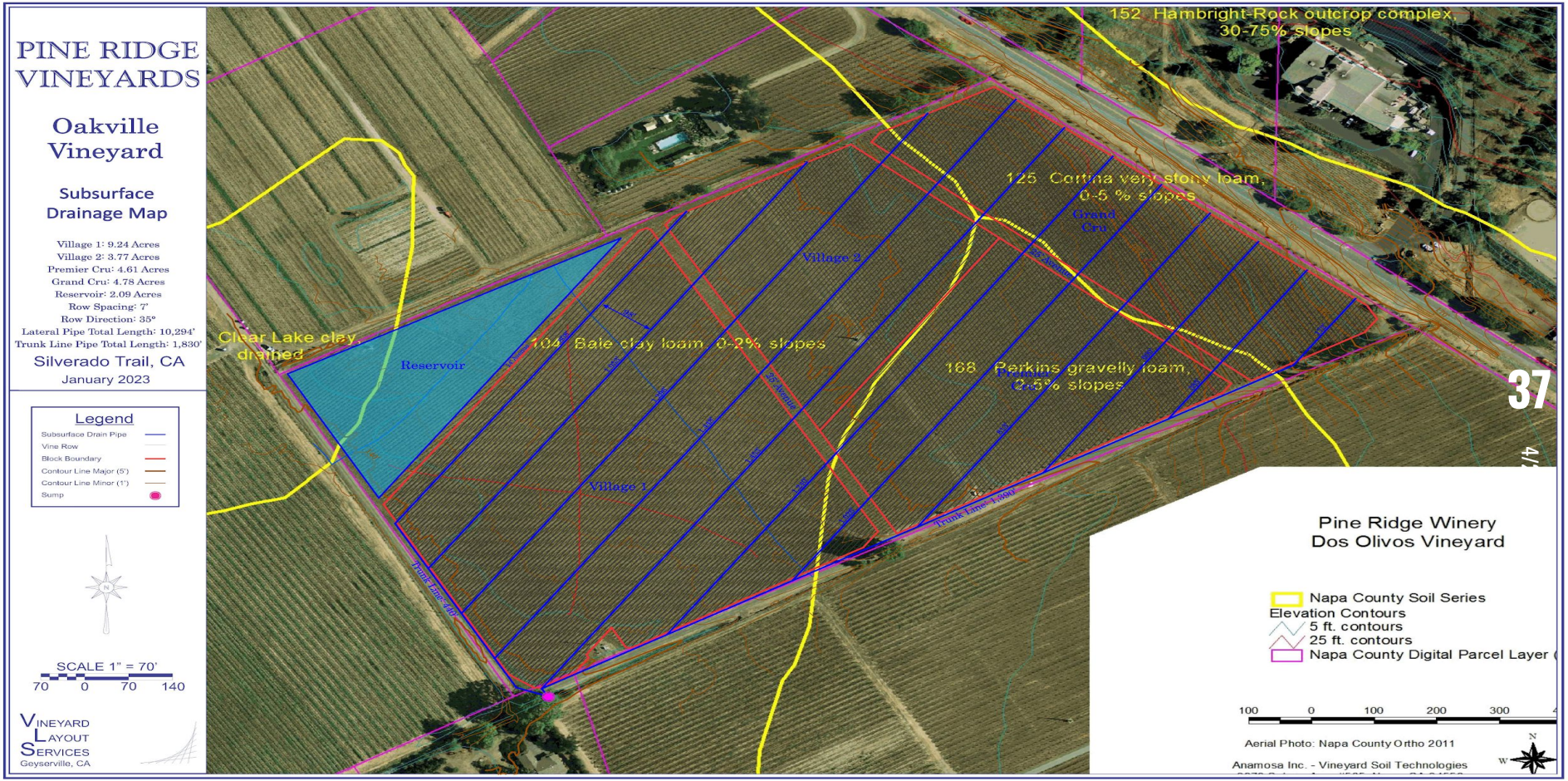


DRY-FARMED VINES EXPLORE DEEP HORIZONS TO ACCESS WATER & MINERALS.

# YEARS 1-3

- TRIM SUPERFICIAL ROOTS

- 1-3 DEEP IRRIGATIONS (10 GAL/VINE)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Silverado Trail, CA
January 2023
Legend
Subsurface Drain Pipe
Vine Row
Block Boundary
Contour Line Major (5')
Contour Line Minor (1')
Sump
SCALE 1" = 70'
70 0 70 140
VINEYARD LAYOUT SERVICES
Geyserville, CA
152 Hambright-Rock outcrop complex, 30-75% slopes
125 Cortina very stony loam, 0-5 % slopes
Grand Cru
Village 2
Clear Lake clay, drained
Reservoir
104 Bale clay loam, 0-2% slopes
168 Perkins gravelly loam, 2-5% slopes
Village 1
Trunk Line 1800'
37
Pine Ridge Winery
Dos Olivos Vineyard
Napa County Soil Series
Elevation Contours
5 ft. contours
25 ft. contours
Napa County Digital Parcel Layer
100 0 100 200 300
Aerial Photo: Napa County Ortho 2011
Anamosa Inc. - Vineyard Soil Technologies

38

4/22/2025

39

4/22/2025

40

4/22/2025


The world is a living being—one nature, one soul.
Everything feeds into that single experience,
moves with a single motion.
Everything helps produce everything else.
Spun and woven together.
Marcus Aurelius


THANK YOU
WISDOM
TRUTH
ETERNAL
ANGEL
I LOVE YOU
PEACE
YOU FOOL
YOU MAKE ME SICK
EVIL
POLLUTED WATER
BEFORE PRAYER
POLLUTED WATER
AFTER PRAYER

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RISE
INNOVATION · SUSTAINABILITY · EMPOWERMENT · REGENERATION

CLIMATE & WINE SYMPOSIUM

# EXCLUSIVE EVENT SPONSORS

napa valley vintners

MCE

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LALLEMAND PLANT CARE

# SAMPLE OF RISE RESULTS

- ★ Creation of Watershed Restoration Collective
  -and- Zero Waste Collective
- ★ No-till pilot by Dominus
- ★ Transition by Pine Ridge to dry farming
- ★ Materra | Cunat's active transition to organic
- ★ Spottswoode's EV charger rebates
- ★ Quintessa lightening bottle weight
- ★ Blue Morph UV tank sanitation at Opus One
- ★ Tres Sabores's use of low-emissions kiln to create biochar
- ★ Six matching implementation grants for over $35,000
- ★ Journalist Jim Gordan's commitment to more climate coverage


It’s easy to be a critic,
but being a doer
requires effort, risk
& CHANGE.
Wayne Dyer

# RISE LEADERSHIP AWARD
## Water Efficiency & Savings

# Pine Ridge Vineyards


MARQUEE KEYNOTE
California's Water Story -
Past, Present, and Future
Marx Arax - The Dreamt Land

# Asking the Critical Questions Forum:

# Is Water the Solution to Heat Stress?

**Expert Speakers:**

| | |
|---|---|
| **Jay Famiglietti** | **Arizona State University** |
| **Rob Whyte** | **Renteria Vineyard Management** |
| **Dr. Beth Forrestel** | **UC Davis** |
| **Philippe Coderey** | **Traditional & Biodynamic Vineyard Consulting** |

# Is Water the Solution to Heat Stress?

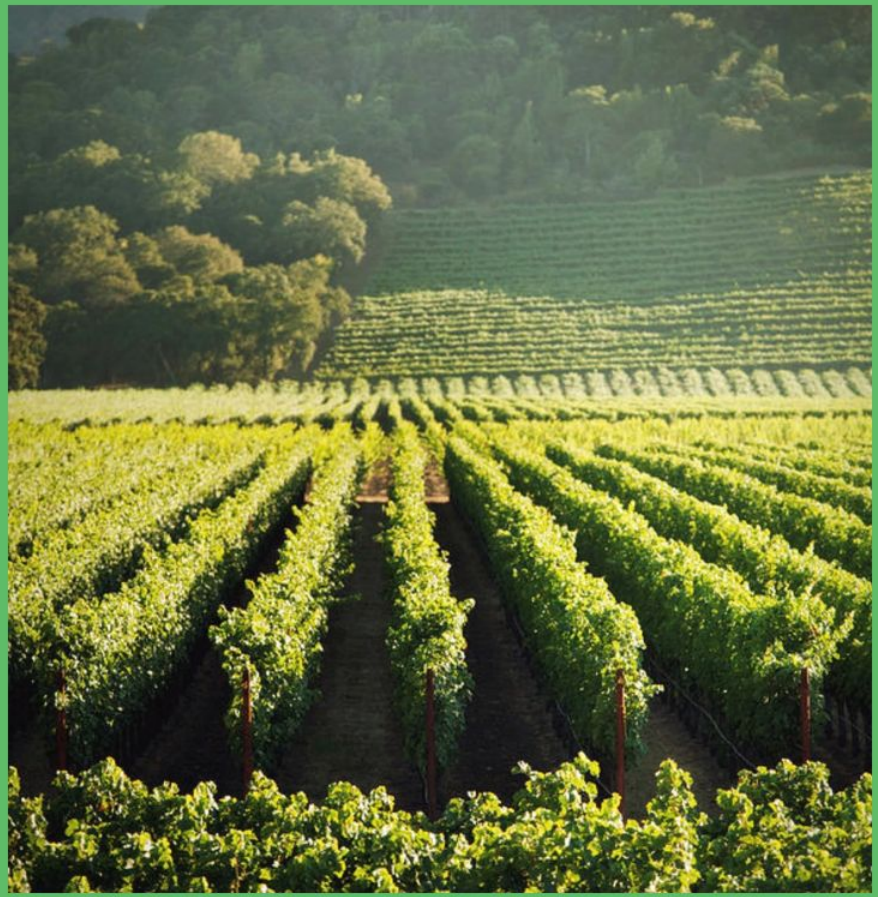
## Changing Water Availability: The View From Above

Jay Famiglietti
Global Futures Professor
Arizona State University

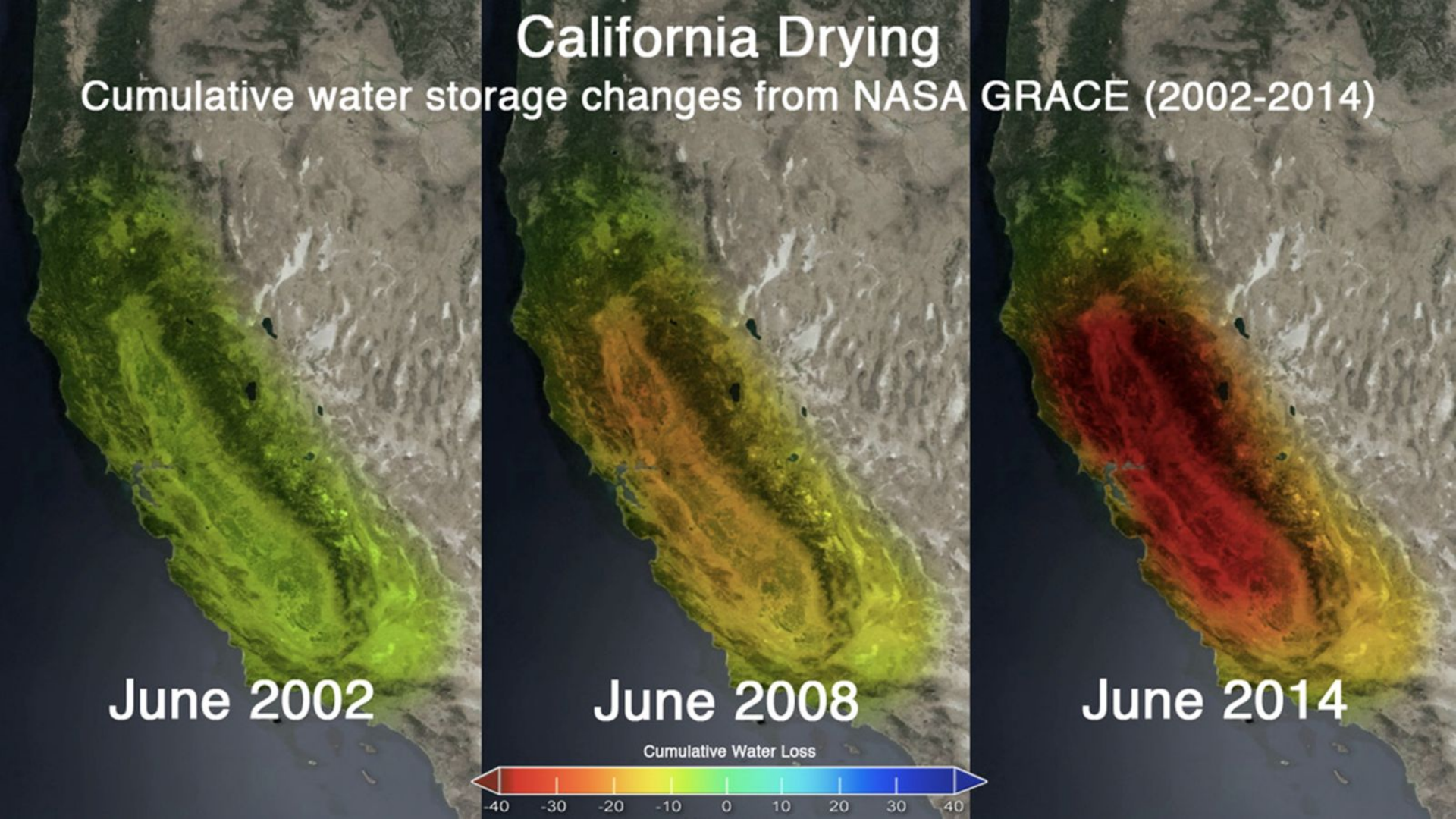
WISE WATER INNOVATIONS FOR A SUSTAINABLE EARTH

OUTLINE

Zooming in: California, the Central Valley, and Napa 04

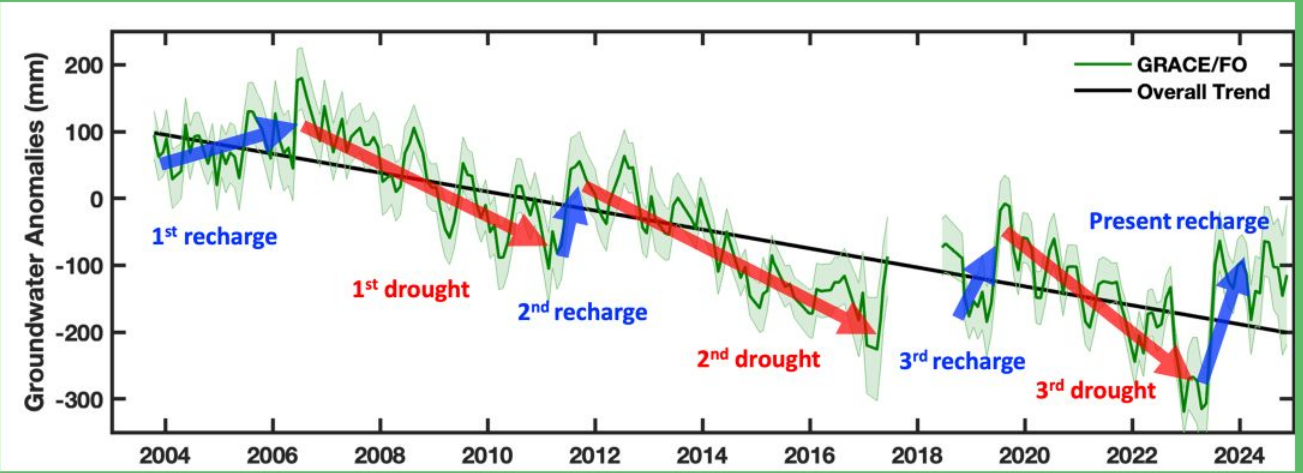


WISE


California Drying
Cumulative water storage changes from NASA GRACE (2002-2014)
June 2002
June 2008
June 2014
Cumulative Water Loss
-40
-30
-20
-10
0
10
20
30
40

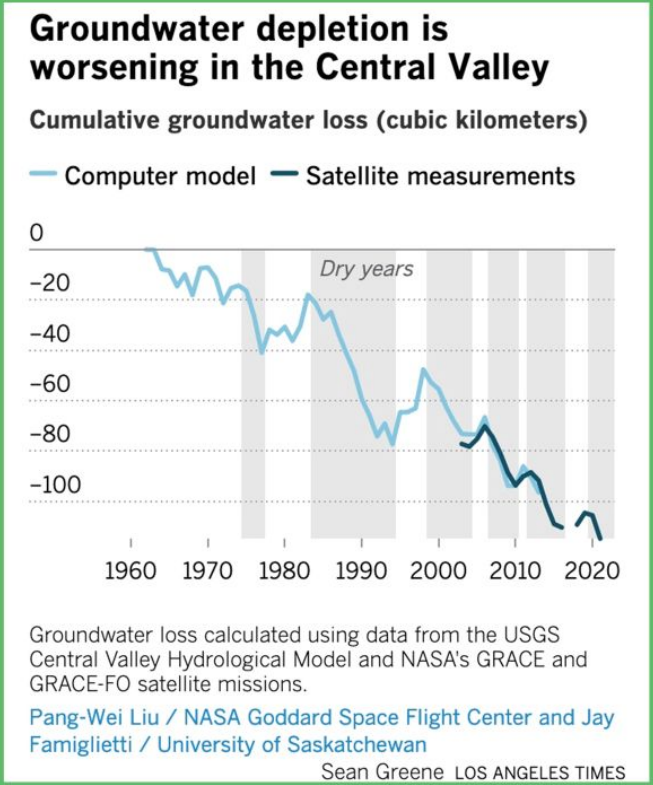
# Groundwater depletion in California's Central Valley

Estimated from NASA GRACE/FO and observations (2002-2024)

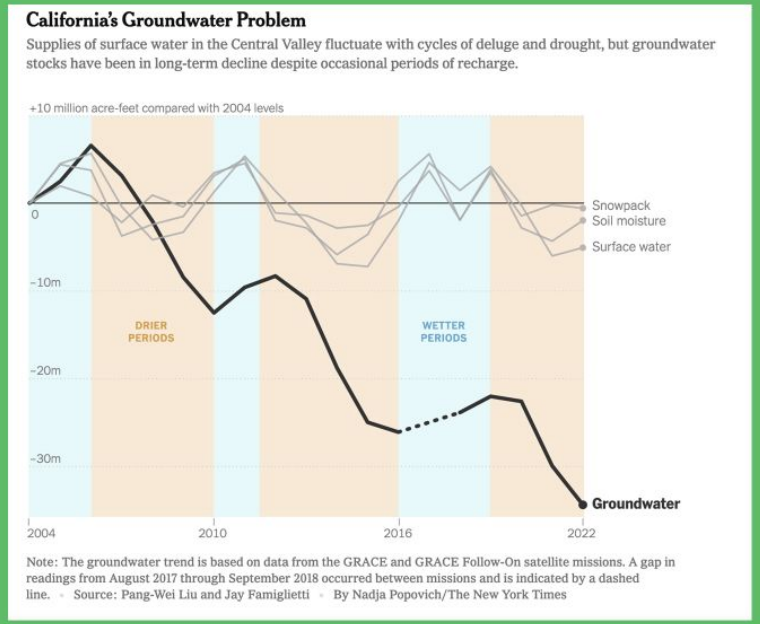



Updated from Liu et al., 2022 by Peng-Wei Liu, NASA GSFC

WISE

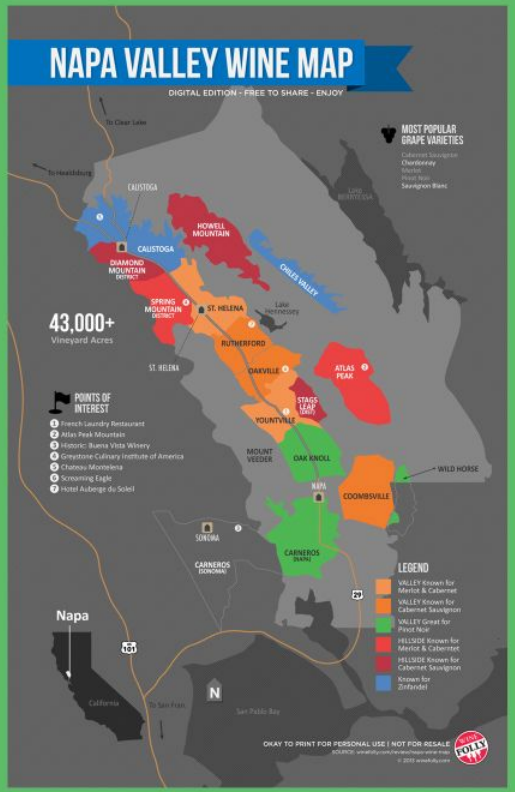



01 Long-term view of groundwater depletion in the Central Valley

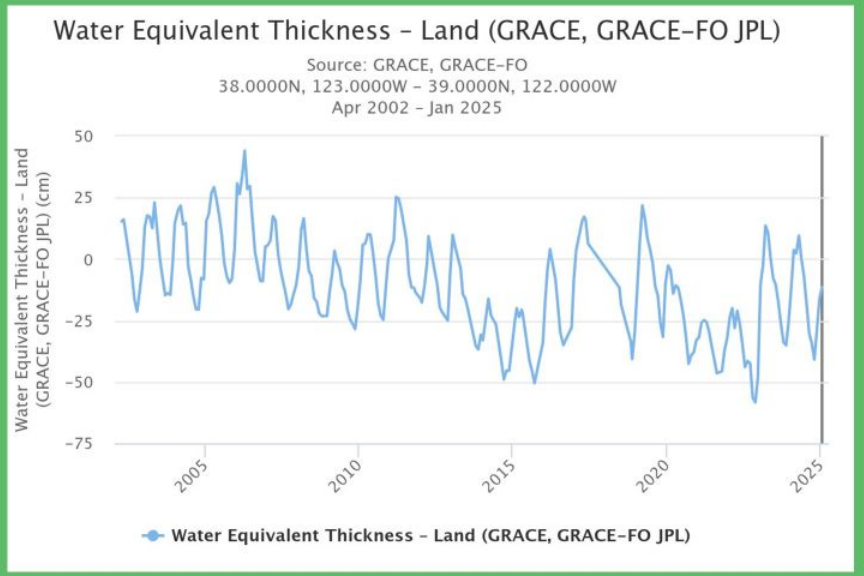



02 Most water losses coming from groundwater

WISE




01 Napa Valley Wine Map, Wine Folly




02 Changes in total water storage for the region surrounding Napa Valley, 2002-2025

WISE

# California has been losing water for decades, and most of it is groundwater

It is not clear how effective California's Sustainable Groundwater Management Plan will be.

Nor is it clear that other regions in the US or around the world are any better off.

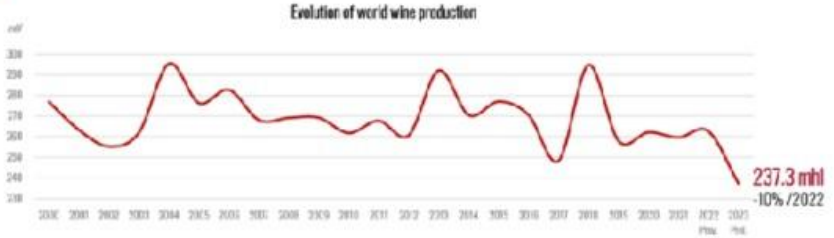
WISE

WISE WATER INNOVATIONS FOR A SUSTAINABLE EARTH

wisegroup.org

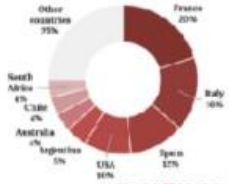
# Heat Waves, Wine & Water Demand

**Wine Production**

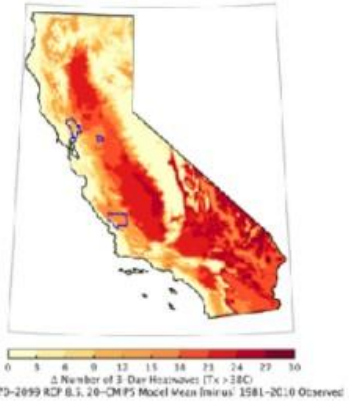


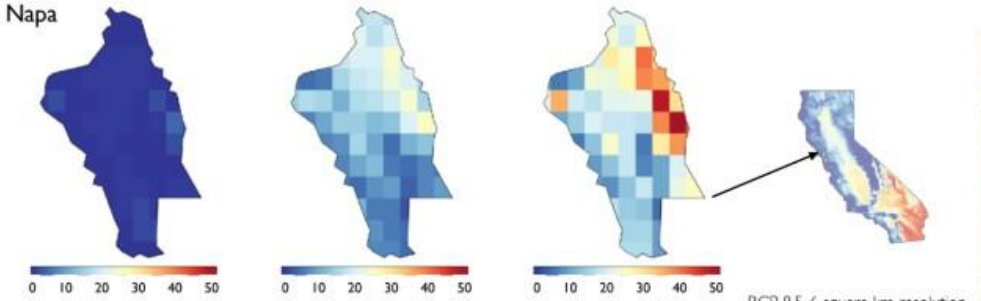

Extreme climatic conditions and widespread fungal diseases severely impacted many vineyards worldwide, culminating in a **historically low global wine production of 237 million hectolitres**. This marked a **10% drop from 2022** and represented the **lowest output since 1961**.

Very low production volumes were recorded in both the **EU (145 mhl, -11%/2022)** and the **Southern Hemisphere (47 mhl, -15%/2022)**



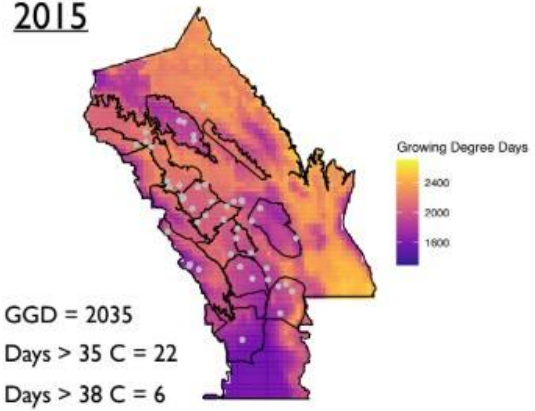

OIV 100

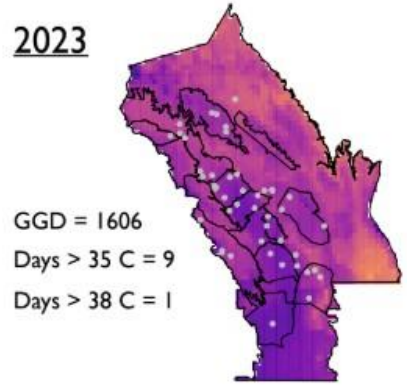


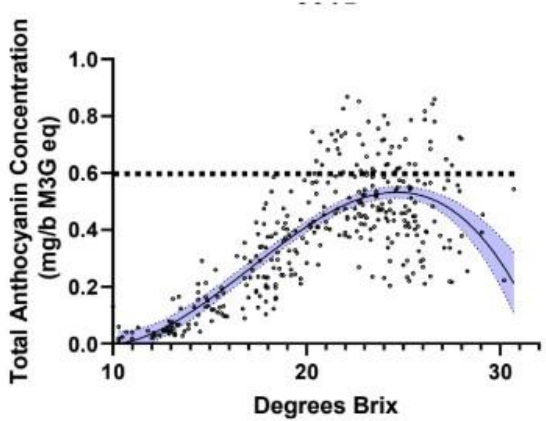



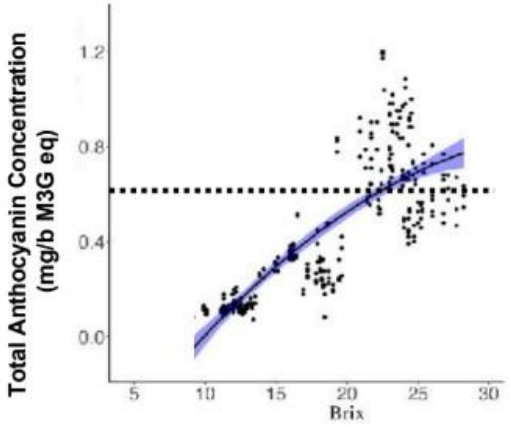

RCP 8.5, 6 square-km resolution

# Living in an Era of Extremes



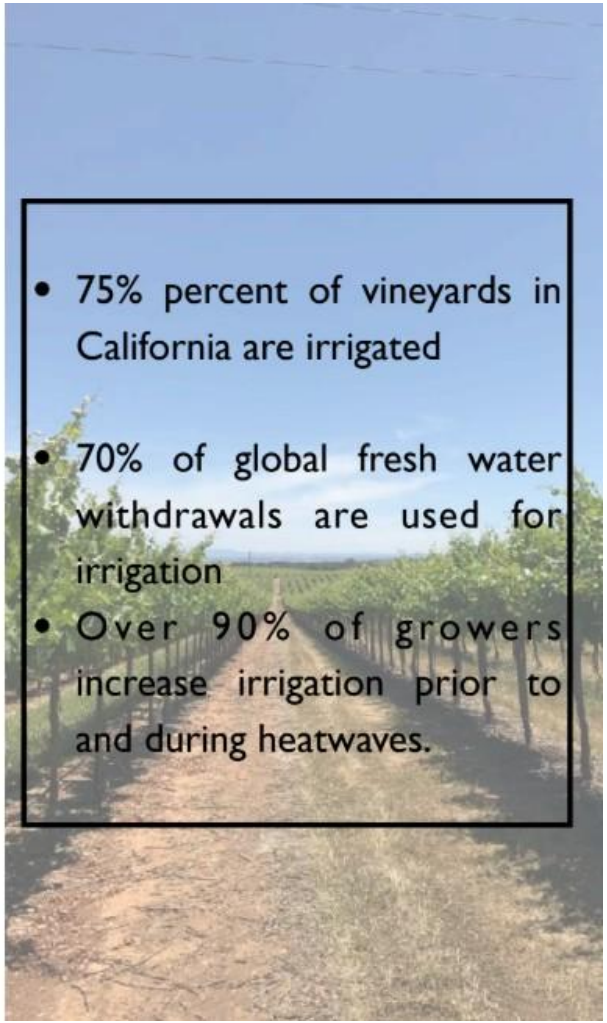



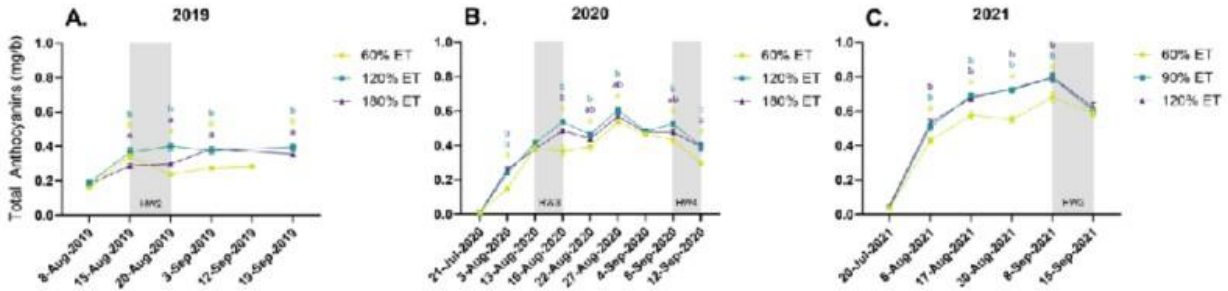
# Heatwave Mitigation Techniques

- **Irrigation Management**
- Misters & sprinklers
- Shade cloth
- Shifting row orientation, vine height & training (providing shade)
- Vineyard floor management — cover crop choice & management, maintaining cover throughout season, short & longterm impacts
- Considering phenology & timing of harvest
- Cultivar choice



# Quality Impacts: Anthocyanins

Without supplemental irrigation, there is a consistent loss of anthocyanins; signatures of late season degradation with heatwaves regardless of watering regime.




**How can we increase sustainability (reduce inputs), while maximizing quality & yield?**

Campbell et al. 2025; Galeano et al. in review


OUR COMMUNITY
DARES GREATLY
That is what our industry,
at the peak of the agricultural
pyramid, is called to do.


If not here,
WHERE?
If not now,
WHEN?