



SACRAMENTO - SAN JOAQUIN

DELTA CONSERVANCY

A California State Agency

2023 Delta Drought Response Pilot Program Outcomes

Board Meeting

July 24, 2024

Outline

- Program Background
- Overview of 2023 DDRPP Analysis
- Conclusions & Recommendations
- Questions

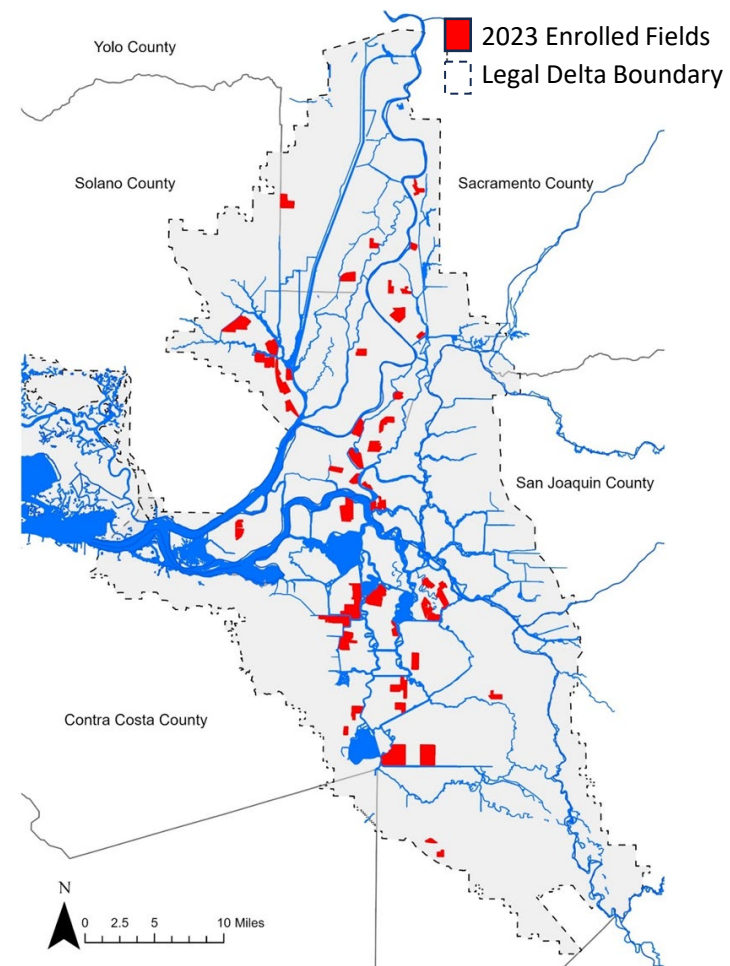
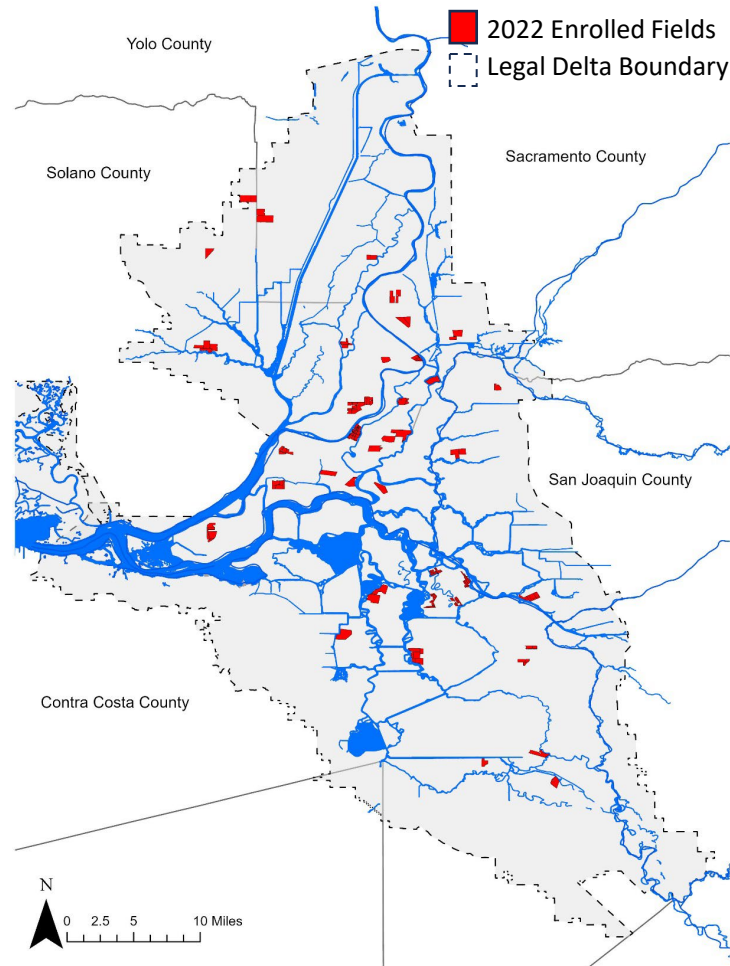


2023 DDRPP field growing safflower

Key Differences between 2022 to 2023

In 2023:

- Reverse auction and bid selection
- Increase in acreage enrolled and decrease in cost per acre enrolled
- Addition of bird benefits practices





2023 DDRPP Objectives

Evaluate if changing specific field management practices could result in water savings during water year 2023

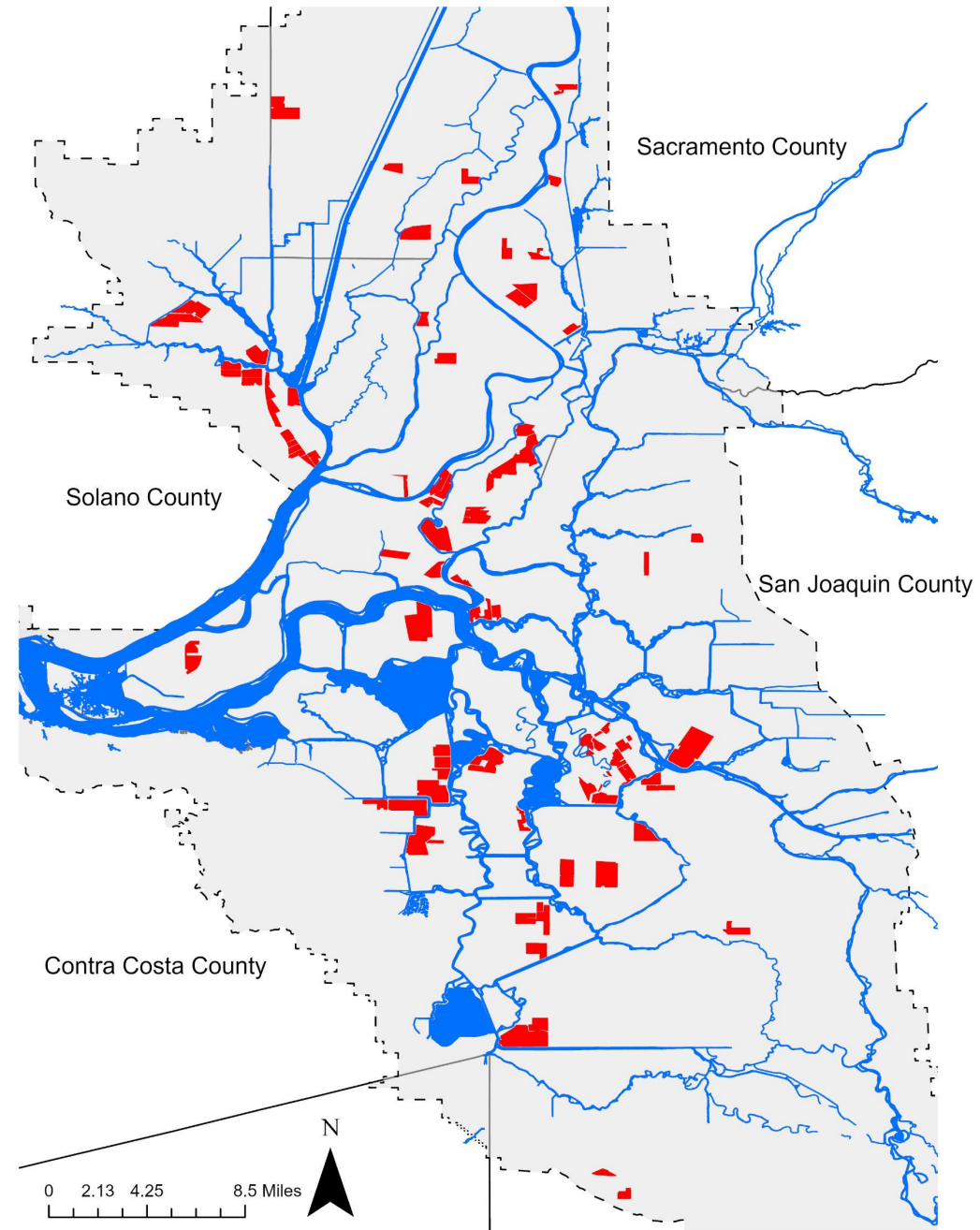
Protect Delta water quality by providing additional incremental instream flow benefits to reduce salinity effects on water quality

Mitigate potential drought impacts on fish and migratory birds

Promote soil health

2023 DDRPP Project Fields

- 18,000 acres enrolled across the Delta
- Practices implemented from early 2023 through the end of the 2023 water year (September 30, 2023)
- Analysis presented today is focused on 2023—the 2nd year of the pilot program



Data Collection and Analysis



Grower Surveys

- Grant Application
- Grant Agreement Survey
- Progress Report
- Grant Summary



Site Visits

- Follow up and verification



Water Use & Water Savings

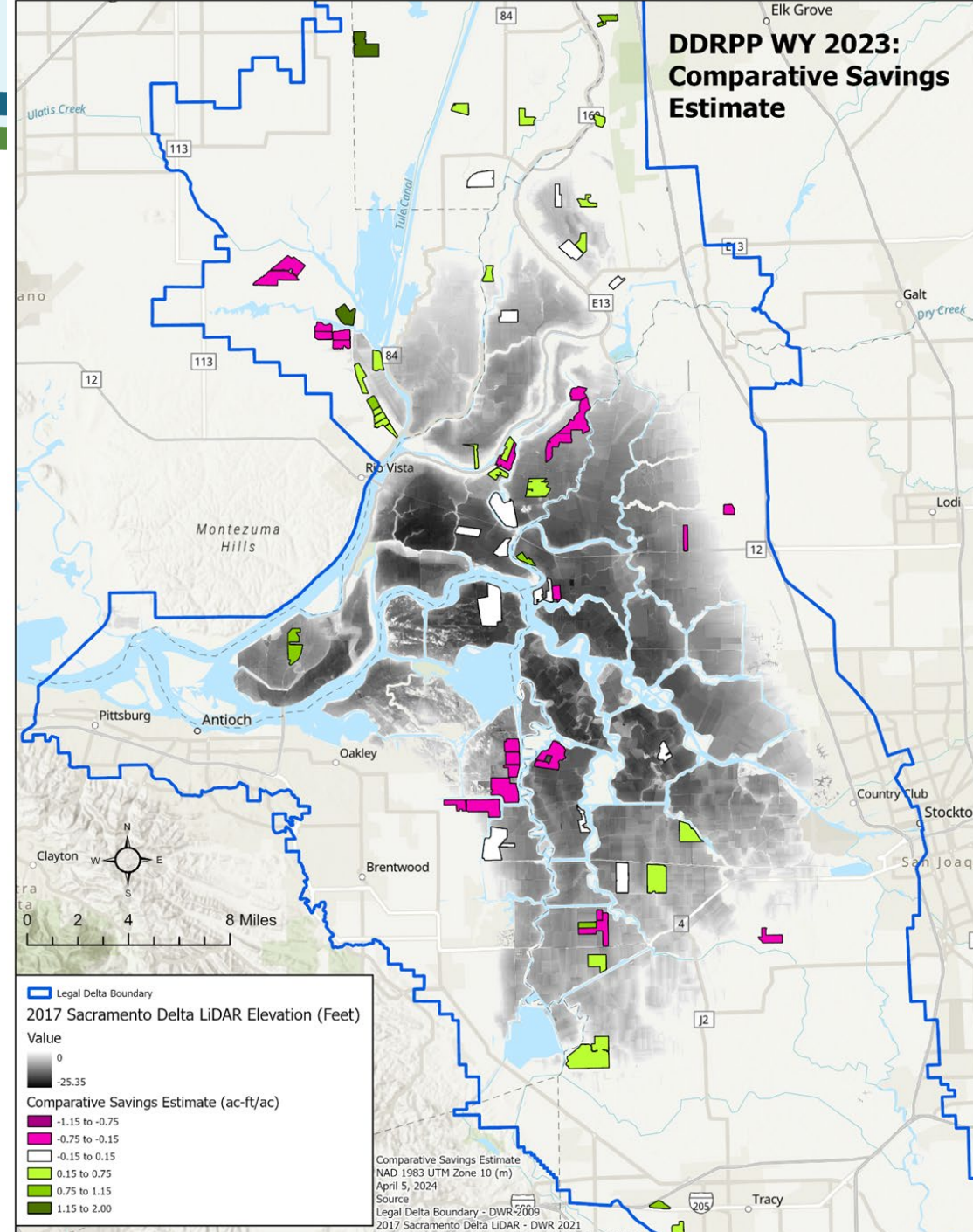
- OpenET used to measure evapotranspiration of project and comparison fields
- 3 different calculation methods for estimating use/savings



Incorporation of triticale on a DDRPP project field & alfalfa on a comparison field

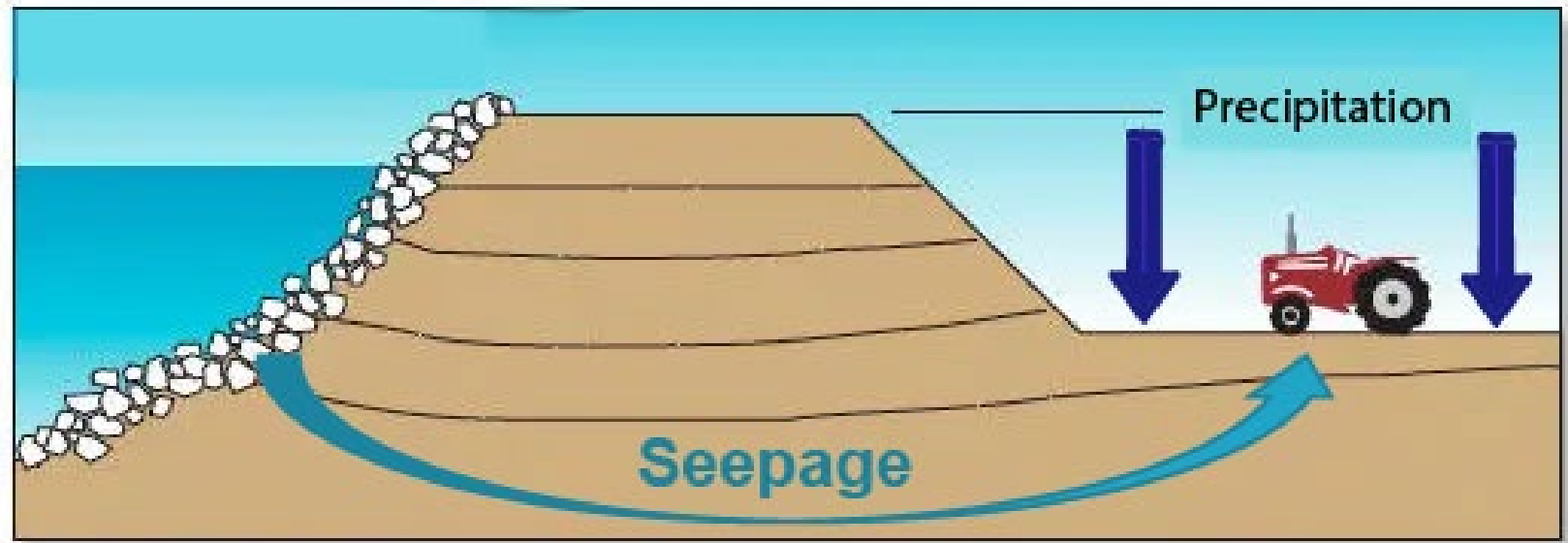
Savings Estimates Were Low

- Up to 1,890 ac-ft of estimated water savings during the 2023 Program
- 1.98 ac-ft/ac estimated at site with highest savings
- About half of the fields show some savings (27/58 fields)
- **Reducing applied irrigation may not be sufficient to produce substantial water savings within the legal Delta, especially at low elevations**



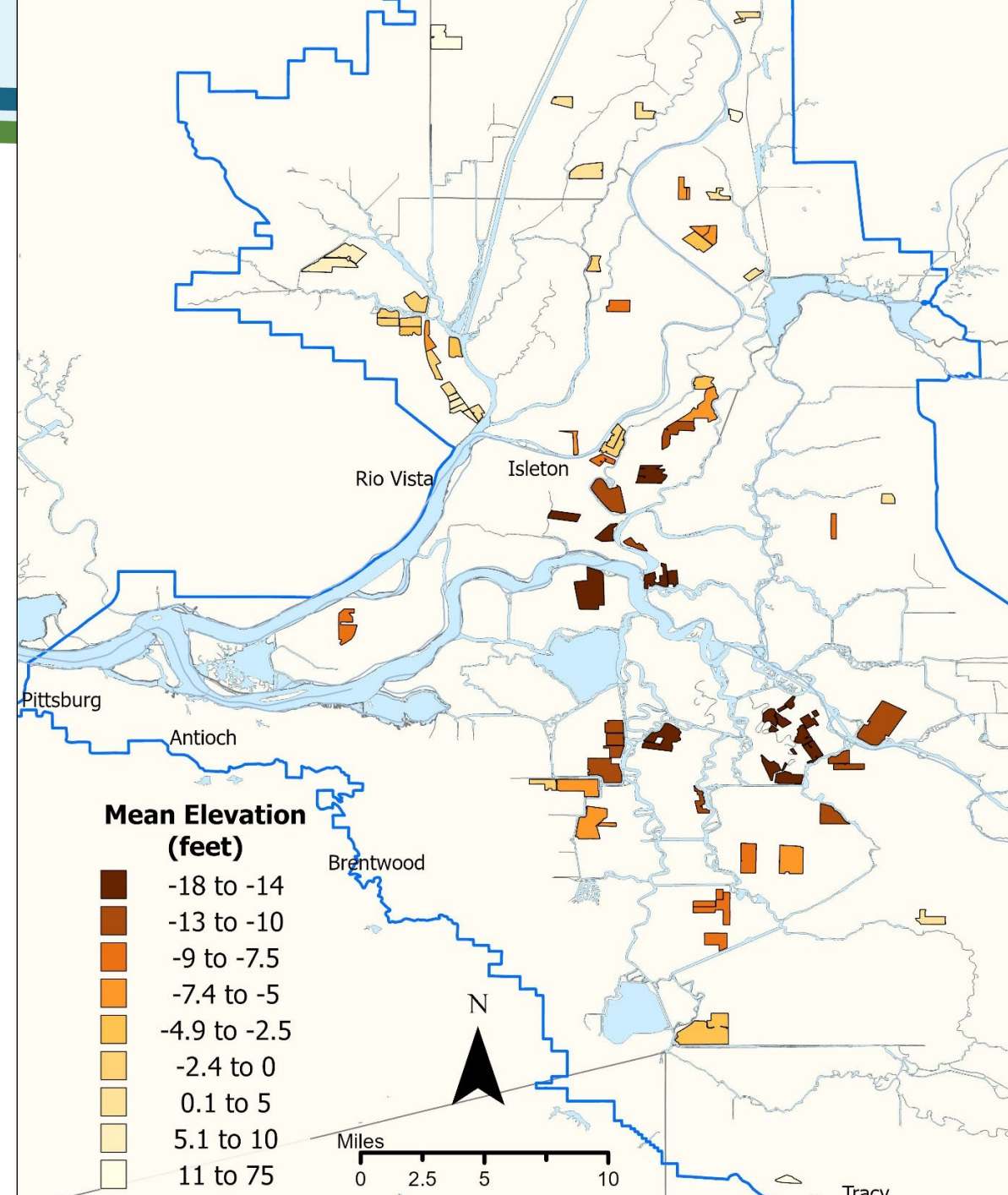
Why Might Field Elevation Matter?

- High soil moisture in the root zone allows plants to grow well and use water, ***even without applied irrigation***
- Fields at low elevation likely have more soil moisture available



Project Fields Varied by Elevation

- Elevations range from -18 ft below sea level to 75 ft above sea level
- Only 26% of projects above sea level (15 of 58 projects)

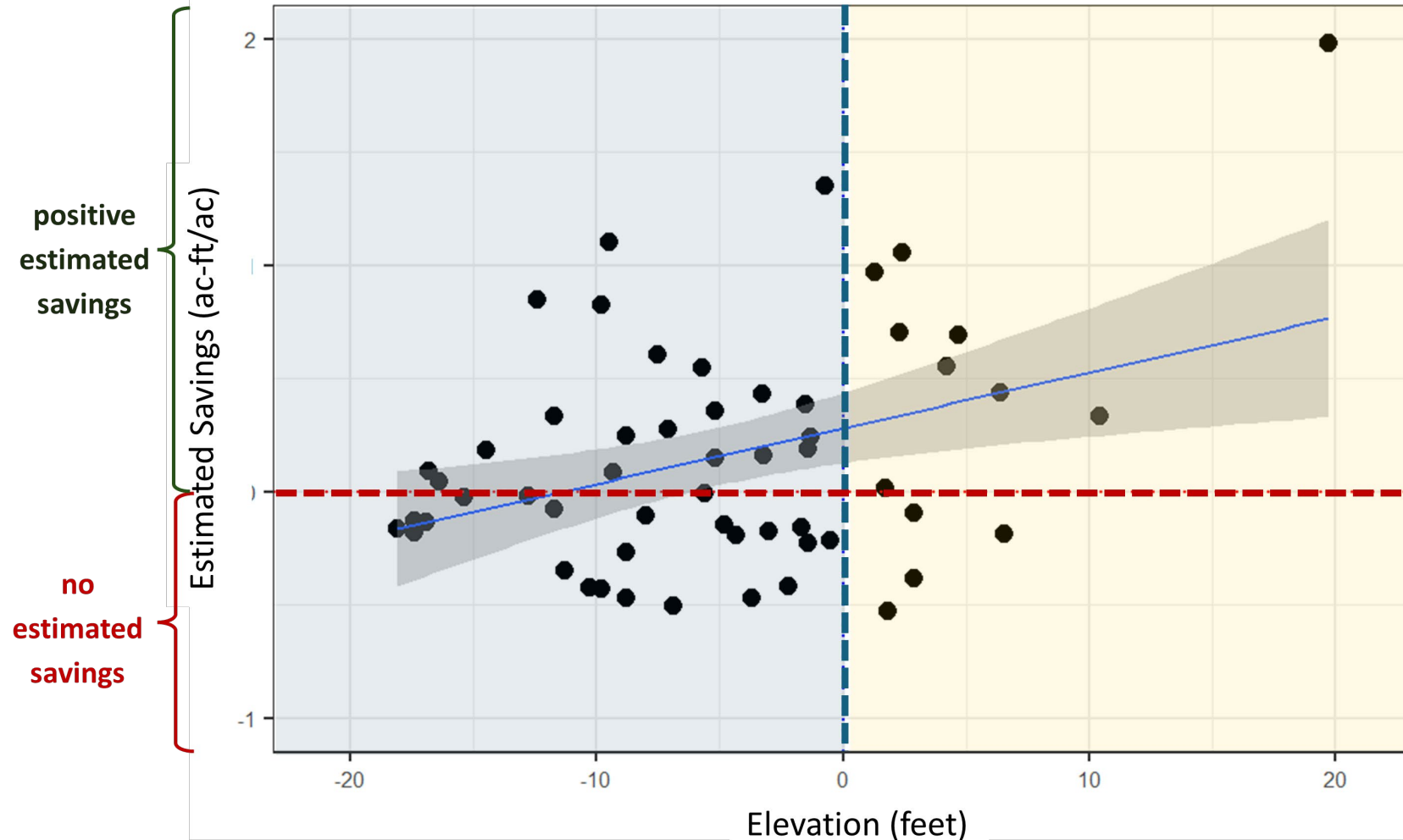




Fields at Higher Elevations More Consistently Save Water

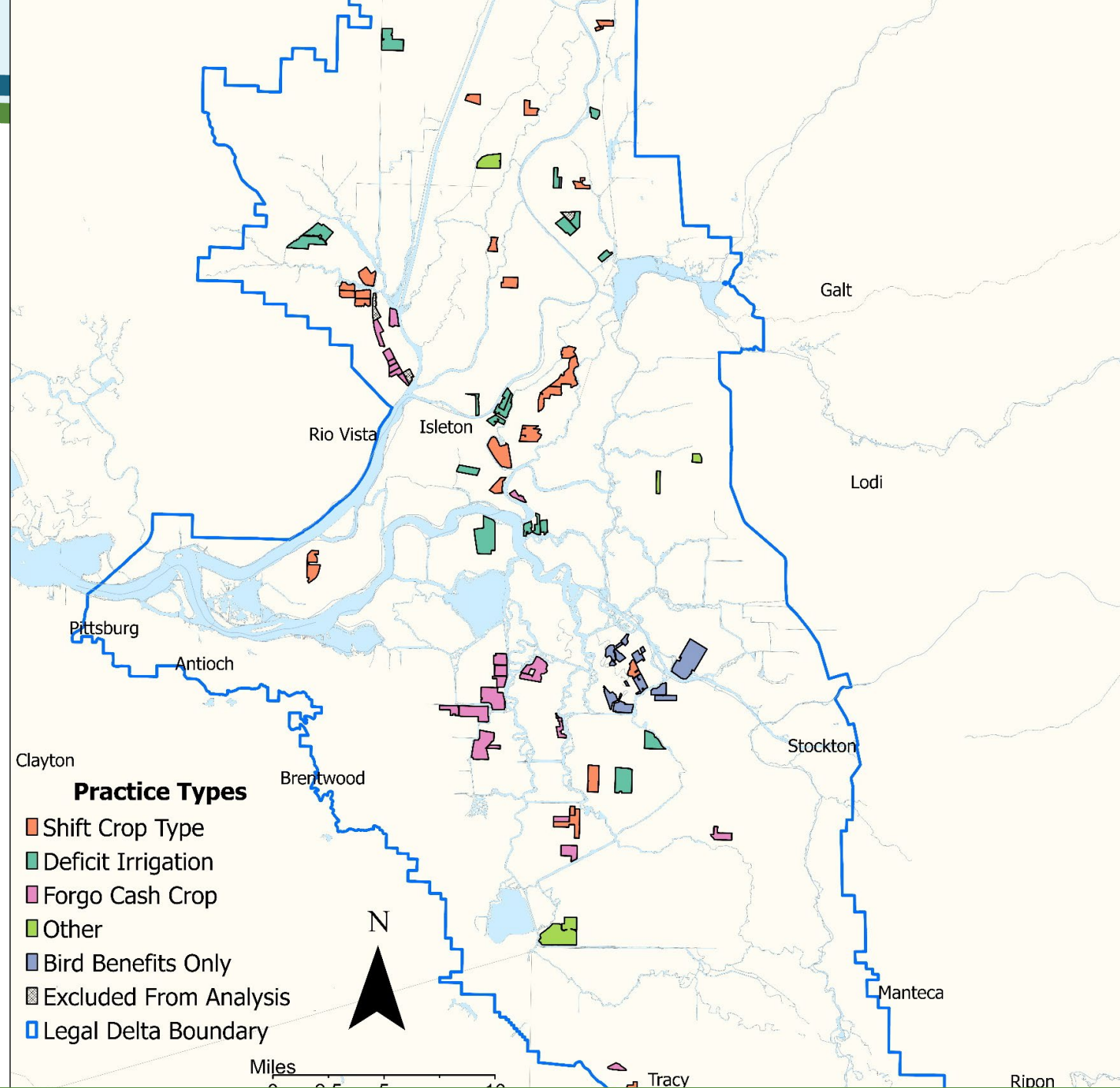
2023 Comparative Savings vs Elevation

- 26% of fields were above sea level, and accounted for 76% of total savings
- 74% of fields were below sea level, but only accounted for 24% of total savings
- **Agricultural areas at higher elevations show more potential for water savings and lower cost/acre-foot of water saved; lower elevations resulted in water savings less consistently**



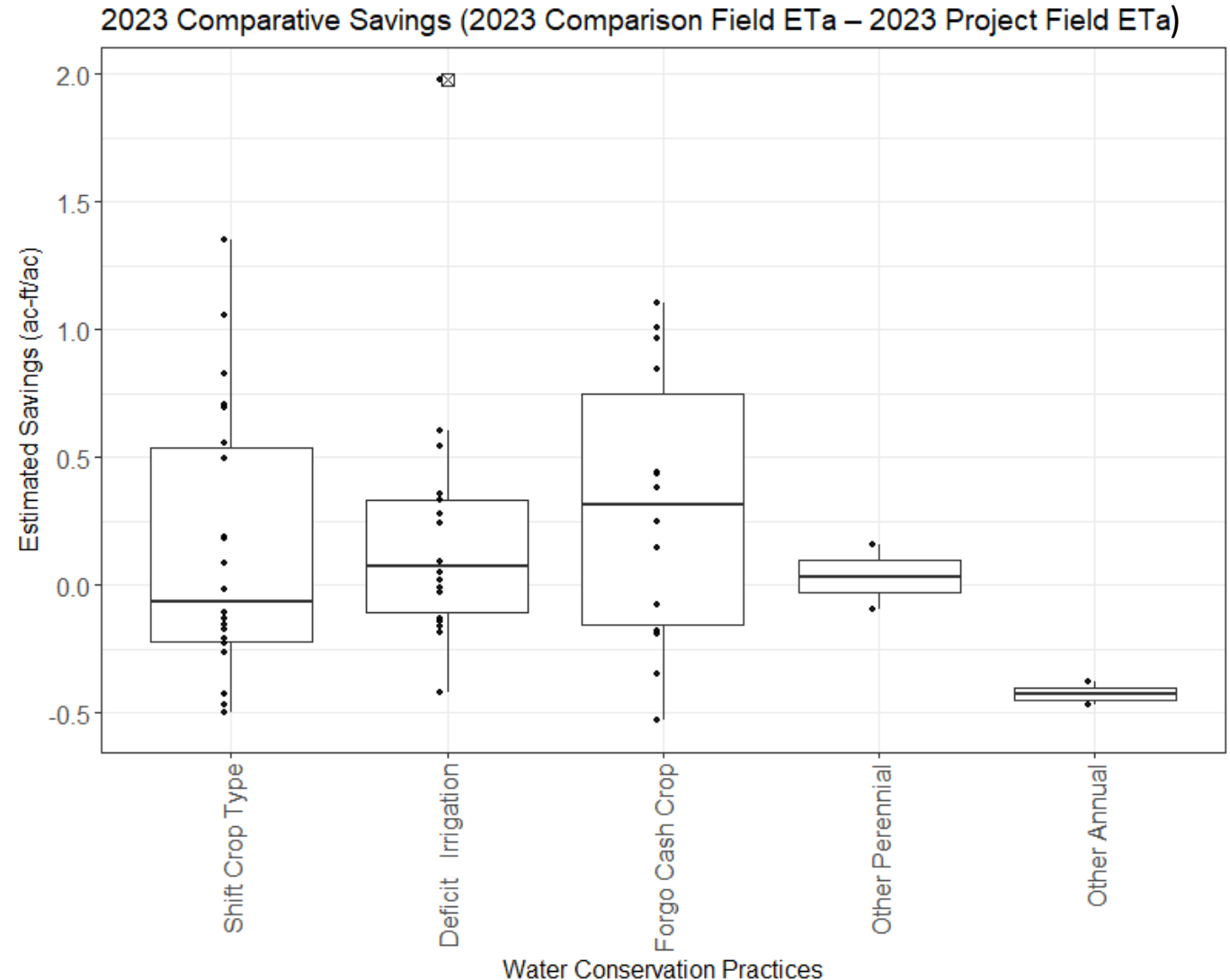
2023 Projects by Practice Type

Water Conservation Practices	Number of Projects	Total Project Area (ac)
Shift Crop Type	22	5,048
Deficit Irrigation	18	4,769
Forgo Cash Crop	14	4,362
Other Annual	2	209
Other Perennial	2	1,370
Total Analyzed	58	15,758

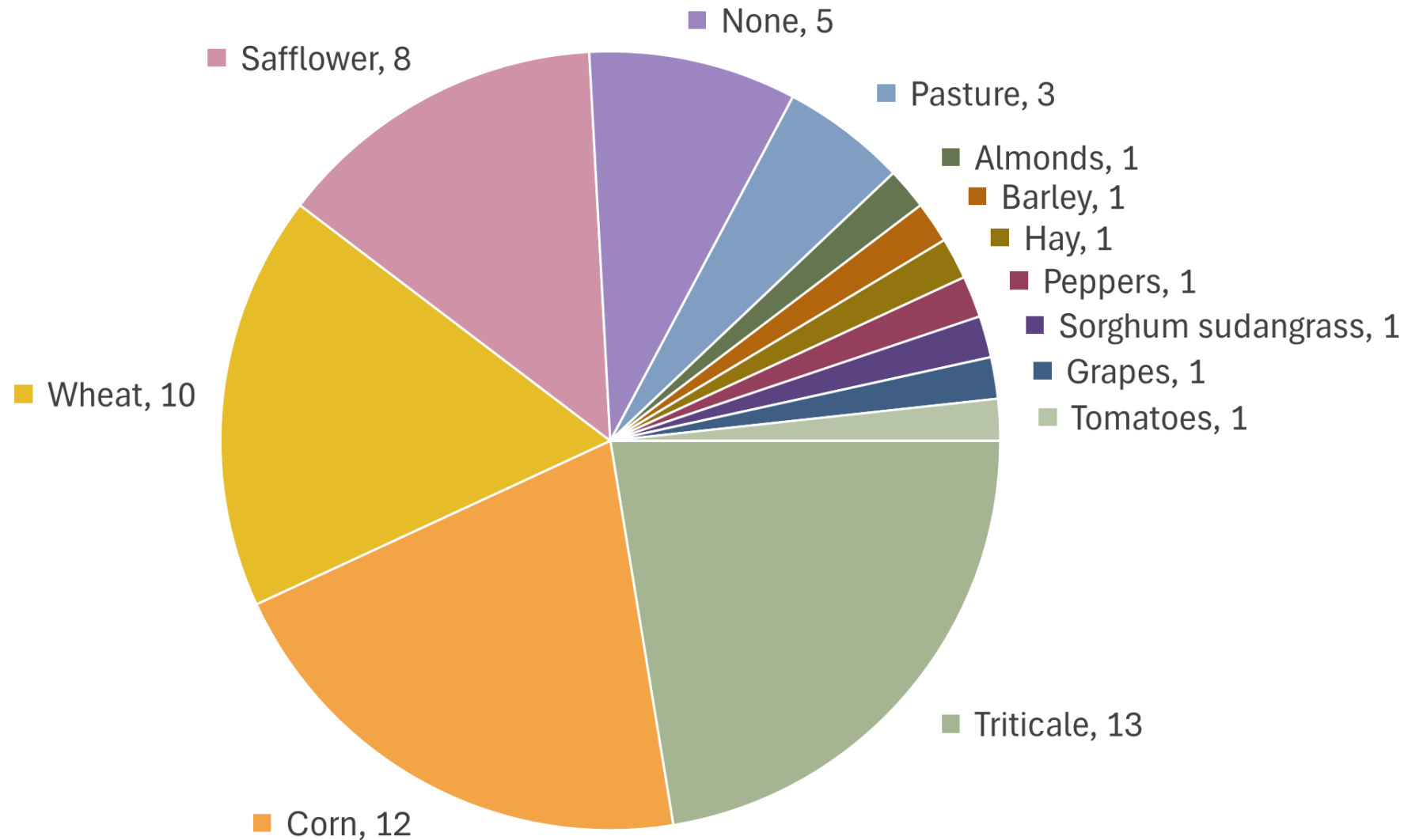


No Differences Among Water Conservation Practice Types

- Large variation within and among practice types
- **Categorizing by these practice types did not help explain the variability among fields**



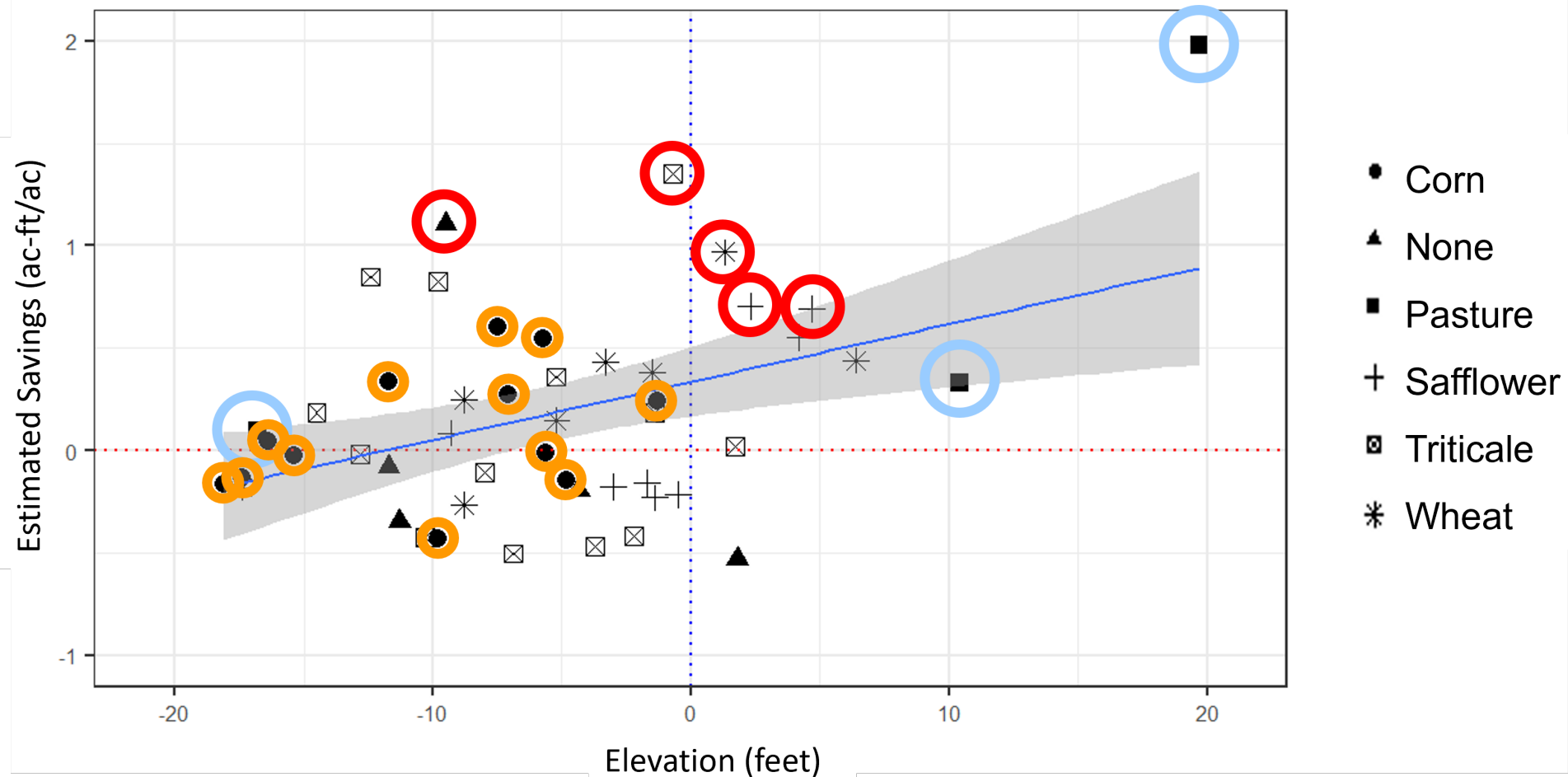
Project Fields Varied by Crop Planted in 2023



Crop Types and Water Savings Vary Across Elevations

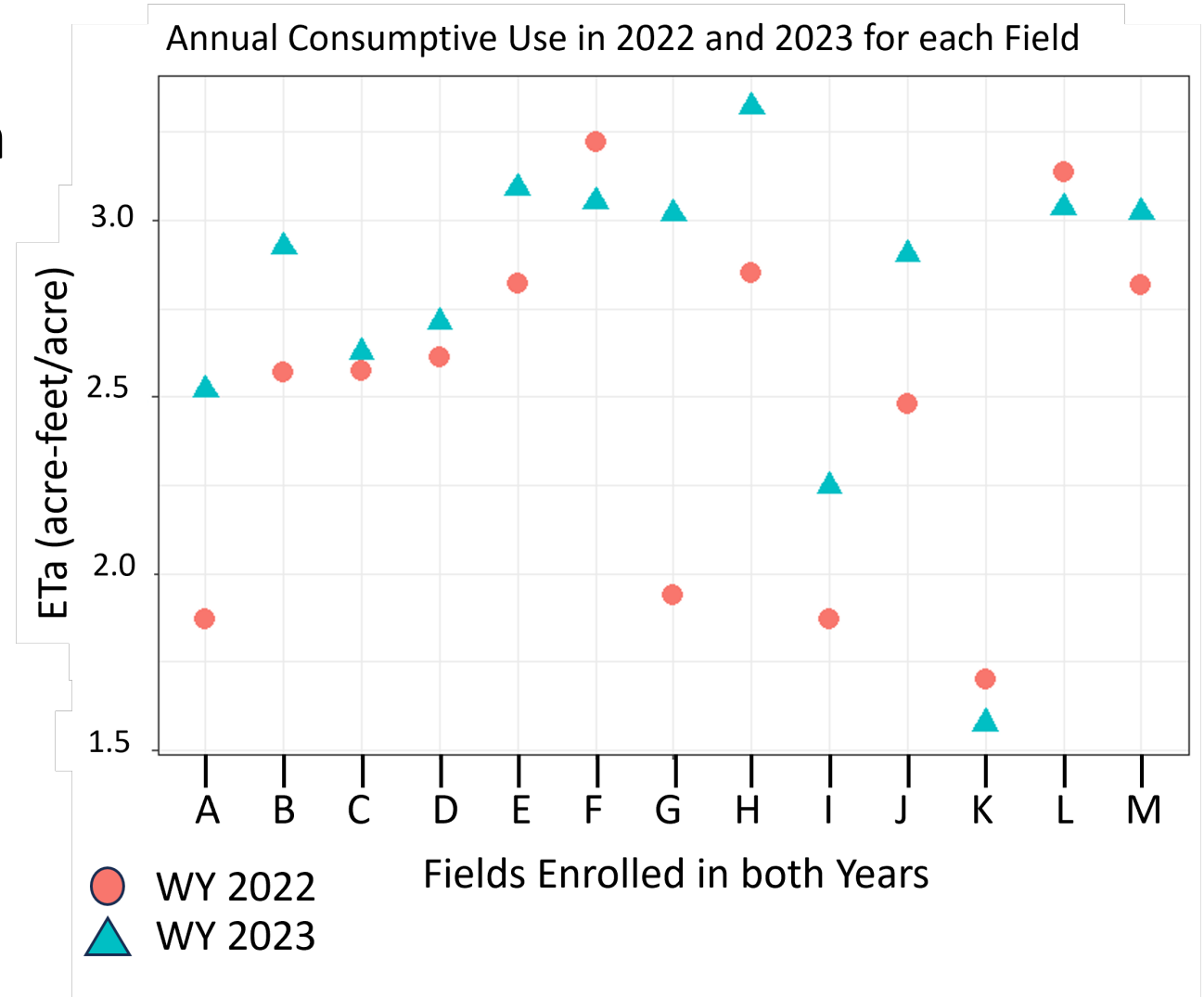
Savings variation may have been driven by crop type, vegetation management, soil type, and local flooding

2023 Comparative Savings vs Elevation Top Crops



Higher Consumptive Use in 2023

- Small sample size of field enrolled in both years (13 fields; 3,717 ac)
- Average ETa in 2022 lower than in 2023
- Plants likely able to grow more vigorously because of overall conditions
- **Estimated average water use was slightly higher in the 2023 water year than in the 2022 water year, likely due to higher soil moisture**



Conclusions/Recommendations



Future water conservation programs and regulations will need to balance actions that produce the most water savings with consideration for climate and biodiversity objectives.



Crop planning often takes place before water year conditions are apparent. Future water conservation programs could work with growers to build in flexibility for postponement or rapid deployment of practices, depending on water year conditions.



Overall water savings were lower than anticipated, particularly at lower elevations. Future programs could use elevation as a selection criteria and/or focus on areas further up in the watershed.



OpenET makes it possible to cost-effectively study water use. Additional studies could identify field characteristics, practices, and regions likely to produce the most cost-effective and efficient agricultural water savings.



2023 DDRPP Forum and Program Partners

- Hosted by Delta Conservancy on June 20, 2024
- Shared outcomes of the 2023 DDRPP and related research from project partners
- Solicited feedback from Delta water users, researchers, and members of the public
- Thanks to all the project partners that made the DDRPP possible



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Attendees at the June 2024 DDRPP Forum

“One of the best [forums] I've attended.”

“DDRPP was/is a very good program. All the admin staff are very helpful.”

Questions?

Key Takeaways:

- Reducing applied irrigation may not be sufficient to produce substantial water savings within the legal Delta, especially at low elevations
- Agricultural areas at lower elevations resulted in water savings less consistently, and at higher elevations show more potential for water savings and lower cost/acre-foot of water saved
- Consumptive use and water savings estimates did not differ among water conservation practice types
- Variation may also have been driven by crop type, vegetation management, soil type, and local flooding
- Estimated average water use was slightly higher in the 2023 water year than in the 2022 water year, likely due to higher soil moisture

Scan the QR code to visit the DDRPP webpage and see the full report





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