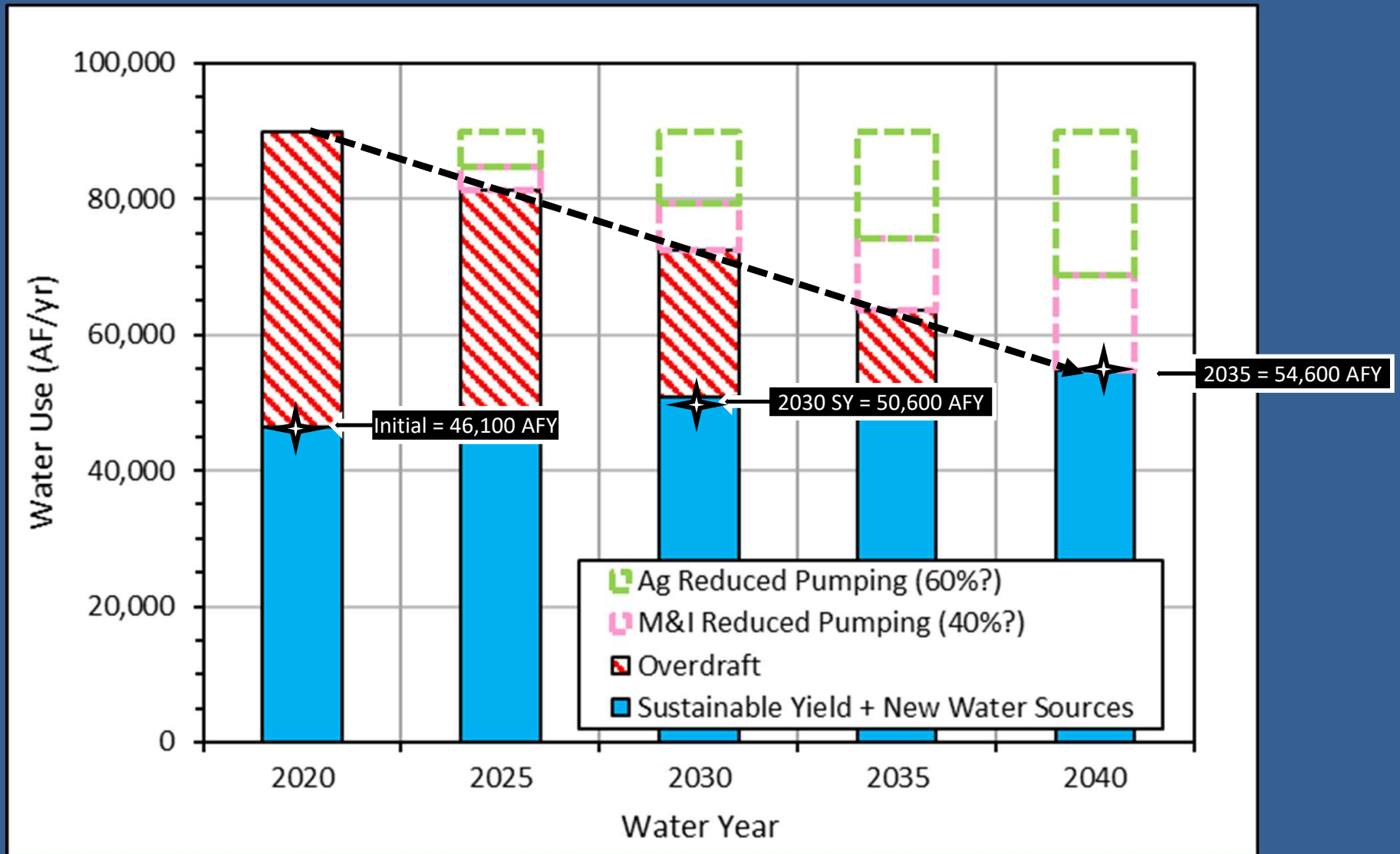


Developing of an Irrigation App to Increase Data-Driven Decisions for Optimal Water Use

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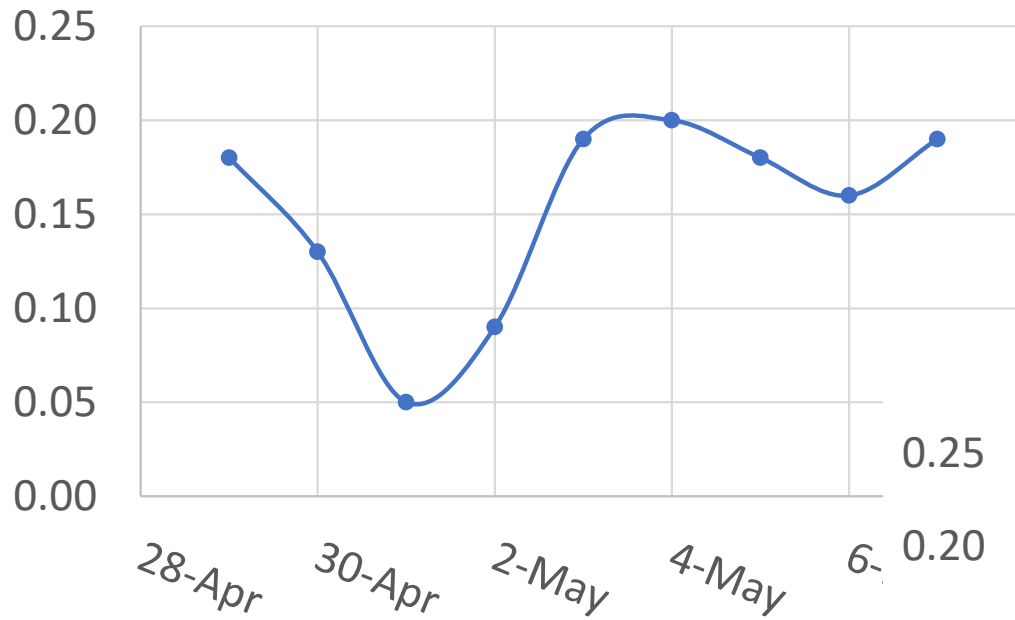
Path to Sustainable Yield with Current GSP Projects



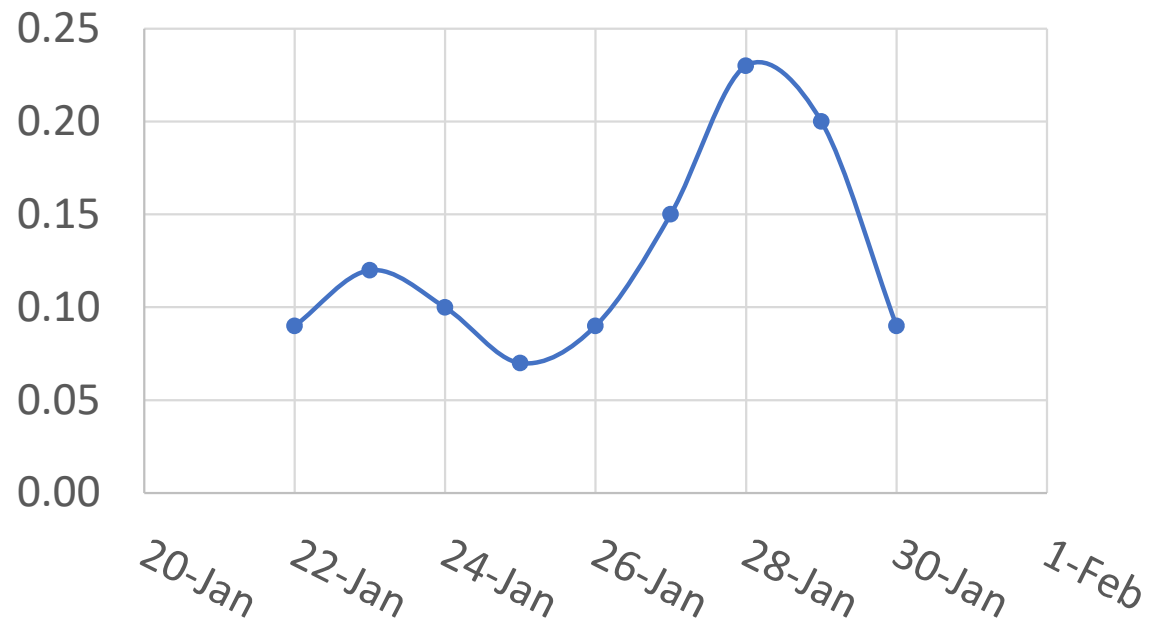
(Courtesy of Dan Detmer, 2021)

Why is irrigation scheduling challenging?

Daily ETo (in) - Camarillo

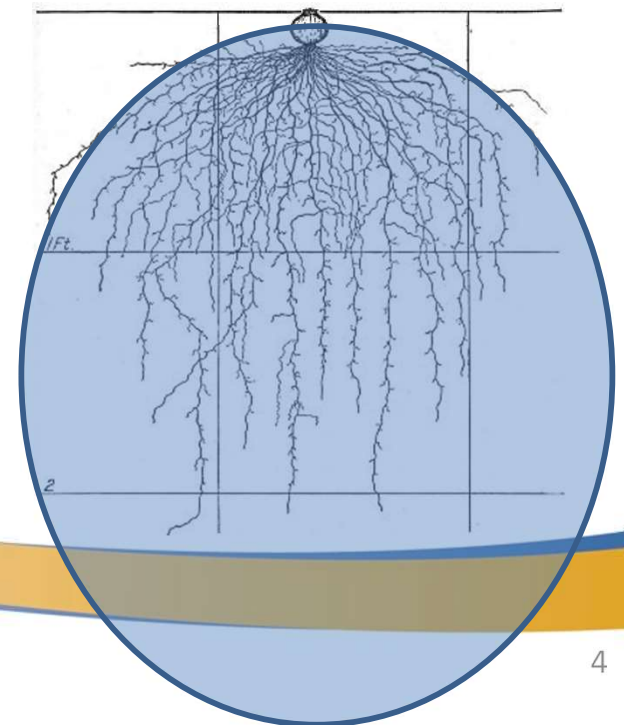
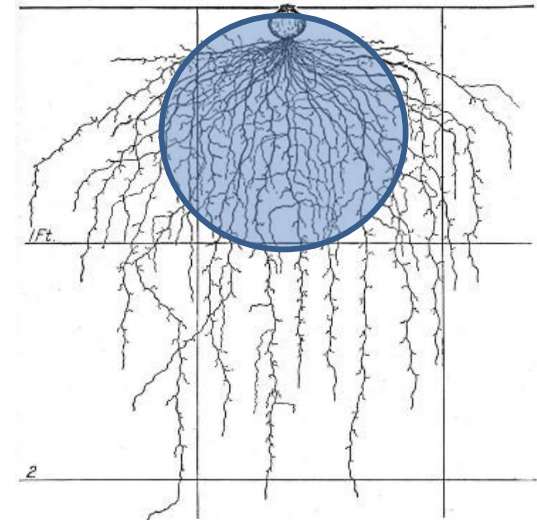
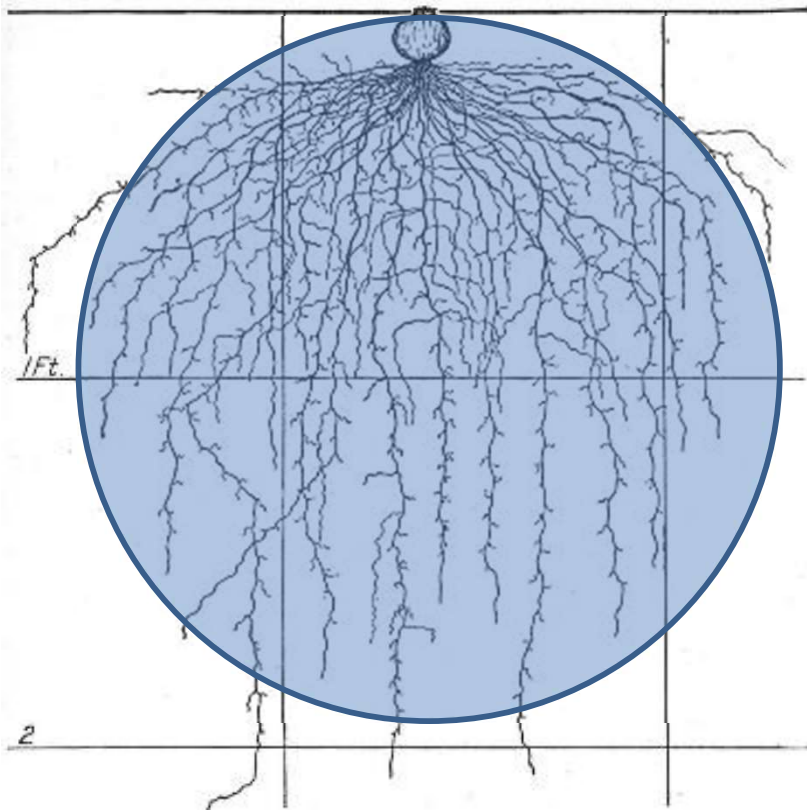


Daily ETo (in) - Camarillo



Inefficient irrigation

Ideal irrigation



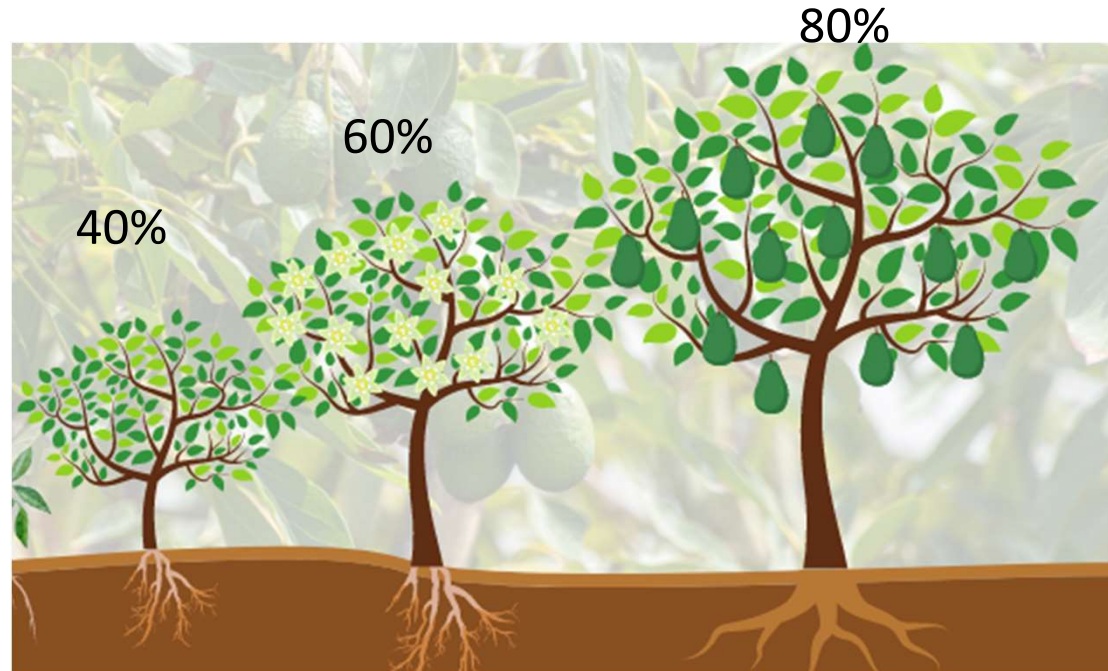
ET-Based Irrigation

Kc (varies with different canopy cover)

ET_o



x



Water
Recommen-
dation

Basic equation: $ET_c = ET_o * K_c$

ET_c = Crop evapotranspiration

ET_o = Reference evapotranspiration

K_c = Crop coefficient

Accounting for distribution uniformity
and leaching fraction:

$$ET_c = ((ET_o * K_c) / (DU/100)) / (1 - LF/100)$$

DU = Distribution uniformity

LF = Leaching fraction

Example:

$K_c = 0.2$

$K_c = 0.8$

Last irrigation on May 27

Date	ET _o (in)
5/28/24	0.14
5/29/24	0.10
5/30/24	0.15
5/31/24	0.14
6/1/24	0.05
6/2/24	0.06
6/3/24	0.13



Total ET_o = 0.77 in

Young orchard:

$$ET_c = 0.77 * 0.2 = 0.15 \text{ in}$$

Mature orchard:

$$ET_c = 0.77 * 0.8 = 0.62 \text{ in}$$

DU = 80%
LF = 10%

$$ET_c = ((0.15) / 0.8) / 0.9 \\ = 0.21 \text{ in}$$

$$ET_c = ((0.77) / 0.8) / 0.9 \\ = 0.86 \text{ in}$$

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<https://cropmanage.ucanr.edu/>





Irrigation Calculator EN 



This calculator estimates irrigation requirements based on weather station and crop stage data. It is currently designed for strawberry, celery, cabbage, broccoli and cauliflower production in Ventura County, CA. [More about this calculator](#).

Zip Code 
93010

Last Irrigation Date 
Aug. 21

Crop 
Celery

Crop Stage 
Early

Application Rate (in/h)  
0.1

Calculate

UNIVERSITY OF CALIFORNIA
Agriculture and Natural Resources

Chooses the weather station

Collects reference evapotranspiration data since last irrigation

Adjusts the crop coefficient

Converts volume to time

- ✓ Distribution Uniformity: 85%
- ✓ Leaching Fraction: 10%

Summary

- ✓ Currently beta-testing at celery commercial fields (Duda and Deardorff Family Farms)
- ✓ Avocado Commission grant; beta-testing coming soon.
- ✓ Anticipated outcomes:
 - Increased adoption of data-driven management
 - Improved water use efficiency

Ventura County ETo Stations

