Madera County GSAs, FB and MAWA

Madera County GSAs
Madera, Chowchilla, and Delta-Mendota Subbasins

Irrigation Management with IrriWatch Functions and Features

10:00 to 11:30 a.m., May 3, 2021
Zoom, Madera County
Madera, CA

Presentation Outline

- Workshop Schedule
- Grower Action Items
- County GSA Action Items
- GSA Allocation Tracking Overview
- Functions and Features
  - GSA Measurement Tool
  - Grower's Allocation Tool
  - Grower's Irrigation Tool

Q&A/Discussion Following Each Topic
Questions Welcome Any Time

Workshop Schedule

- November 6, 2020 – SEBAL and root zone water budget
- December 16, 2020 – Enrollment workshop with MAWA
- January 20, 2021 – IrriWatch set up and use
- April 19, 2021 (MAWA) farm units and allocations
- May 3, 2021 (MAWA) functions and features
- May 17, 2021 (MAWA) How does SEBAL/Irriwatch work?
- Mid/late summer 2021 – IrriWatch feedback and comparison to field measurements
  - Listen to feedback
  - Respond to questions
  - Discuss comparisons with field measurements.
  - Discuss relationships between AW, ET and ET_{aw} for selected fields

Grower Action Items

1. Register your parcels by sending APNs, crop types, irrigation types and soil types to Etmeasurement@maderacounty.com
2. Log on and make sure the parcels are correct (including crop, irrigation and soil types)
3. Register for May 17 MAWA workshop
4. Email questions or crop, soil or irrigation type adjustments to any parcels to support@irriwatch.com

GSA Action Items

1. Get all growers on Interested Party List and registered for allocation tracking.
2. Form farm units with Board-designated rules.
3. Accept large recharge grant.
4. Complete rate study with Raftelis to create volumetric rate with recharge, land repurposing, water supply, and domestic well mitigation.

GSA Allocation Tracking Overview

- Calendar year allocation for farm unit
- GSA staff review reports on ET of applied water for farm units
- Late July/early August GSA alerts growers that are on pace to exceed farm unit allocation.
- GSA sends farm unit ET_{aw} versus farm unit allocation report to all growers for calendar year
- Overage fees, if any, from previous calendar year invoiced on property tax bill

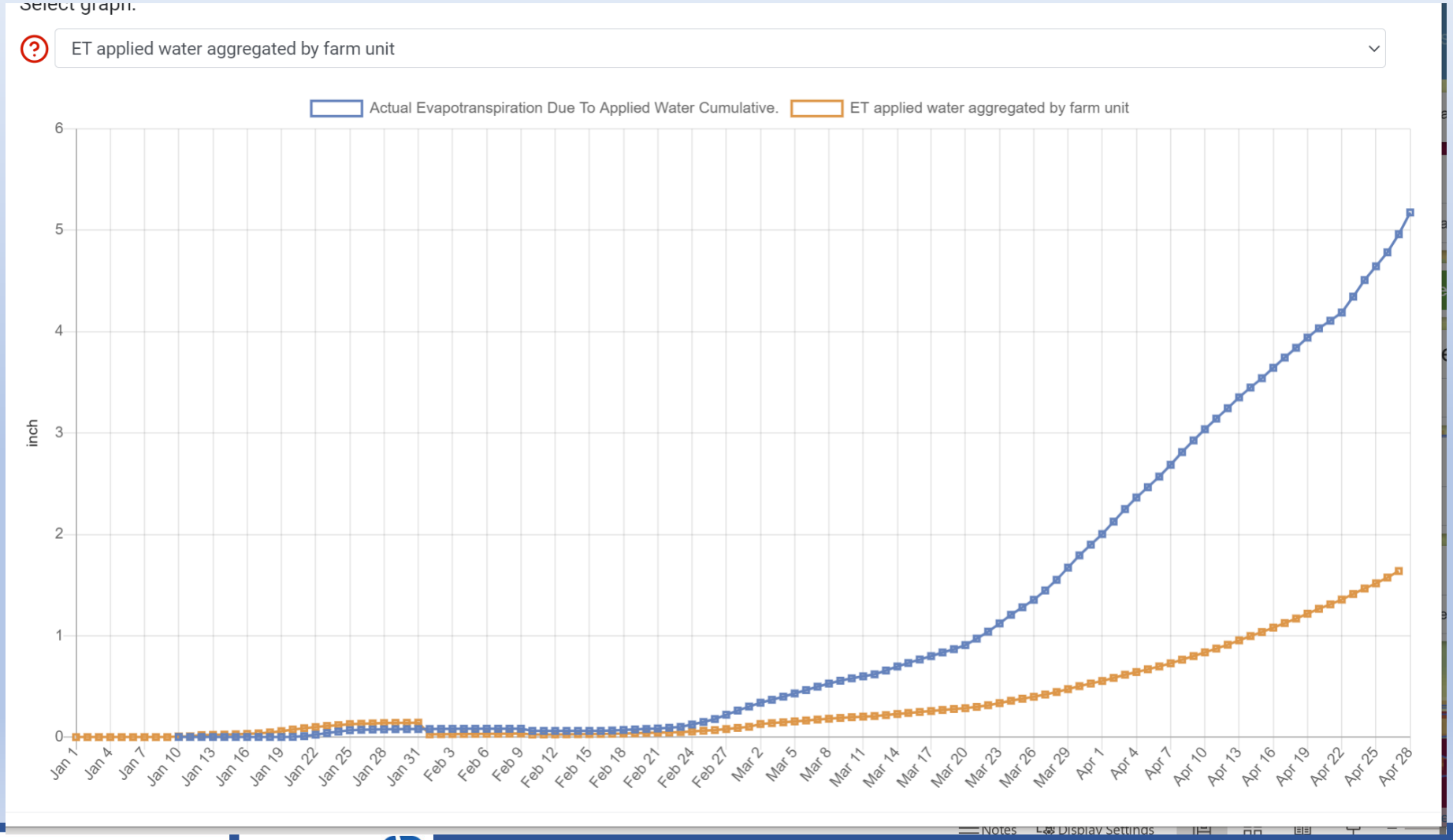
Grower and GSA Allocation and ET_{aw} Tracking Tool

- Crop ET_{aw} tracked daily by
  - Field
  - Farm unit
- Annual allocation of ET_{aw} provided as inches
- Same value by field and by farm unit
- Farm unit allocation might include
  - SY from never-irrigated land
  - SY from currently irrigated land
  - Transition water
  - Recharge credits
  - Defined surface supply

Functions and Features

- Track ET_{aw} for the County GSAs
- Track your allocation against your farm unit
- Provide information supporting grower irrigation scheduling decisions
- Field and pixel information provided by Irriwatch:
  - ET
  - ET_{aw}
  - Soil Moisture
  - Biomass Production
  - Leaf Nitrogen %

Grower and GSA Allocation and ET_{aw} Tracking Tool



Other Ideas for Graphs

- Cumulative graph with fixed axes—better idea of ET_{aw} relative to allocation
  - Jan 1-Dec 31
  - 0 to 30 inches ET_{aw}
  - Add historical line for 2021 in 2022
- Bar graph for monthly ET_{aw} and line for allocation (divide allocation into months based on typical ET_{aw} distribution)
  - Fixed axes for current calendar year
  - Last 12 months?

YouTube instruction movie How the viewer works (3 min)

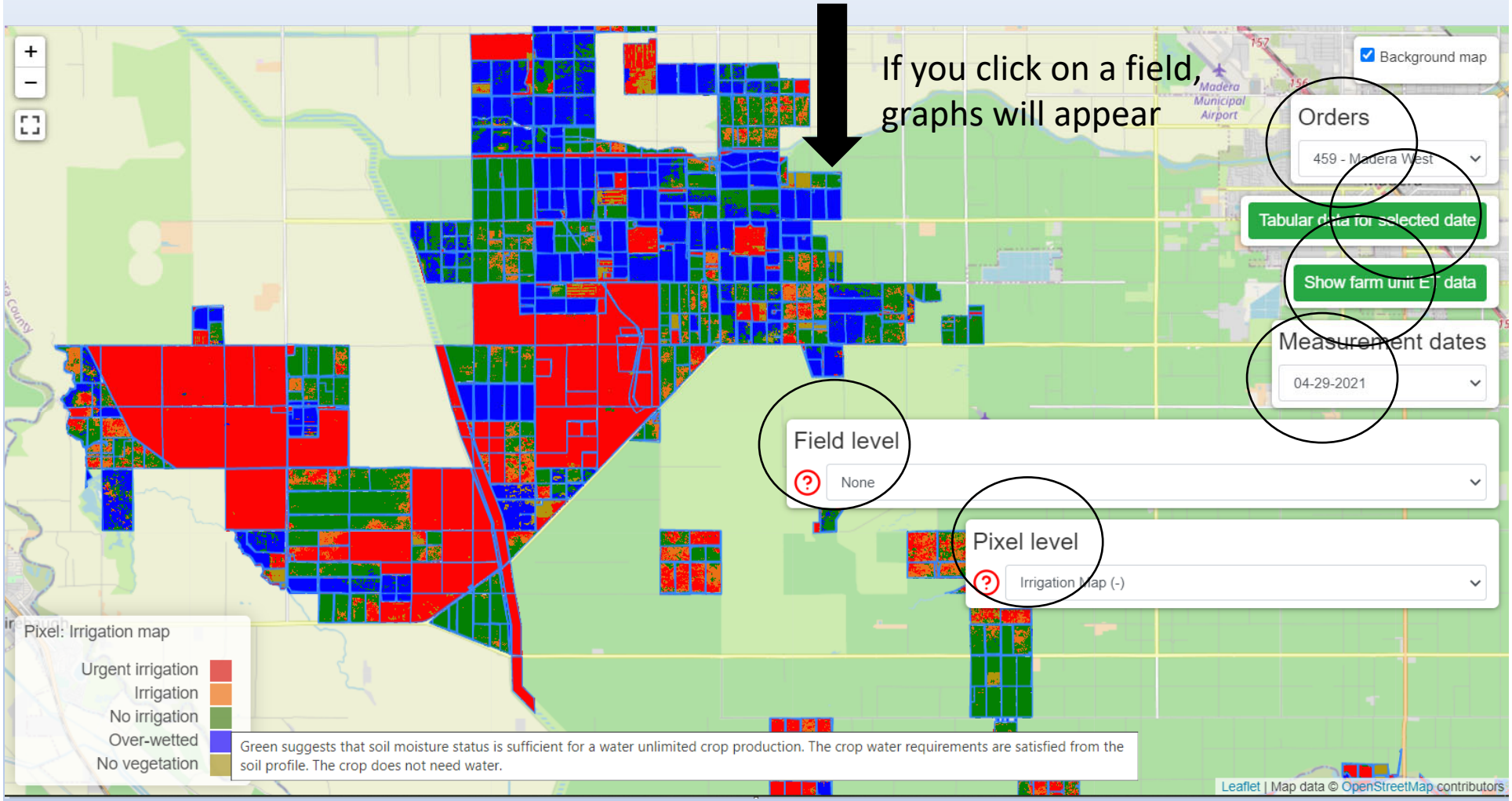
https://www.youtube.com/watch?v=qki07xrBQys

IrriWatch as a Grower's Irrigation Management Tool

- 3 types of user profiles
  - Field Irrigator
  - Local Manager
  - Expert
- 2 levels of spatial detail
  - Fields
  - Pixels (33-foot by 33 foot)

IrriWatch portal is generic and used in 30 irrigation countries

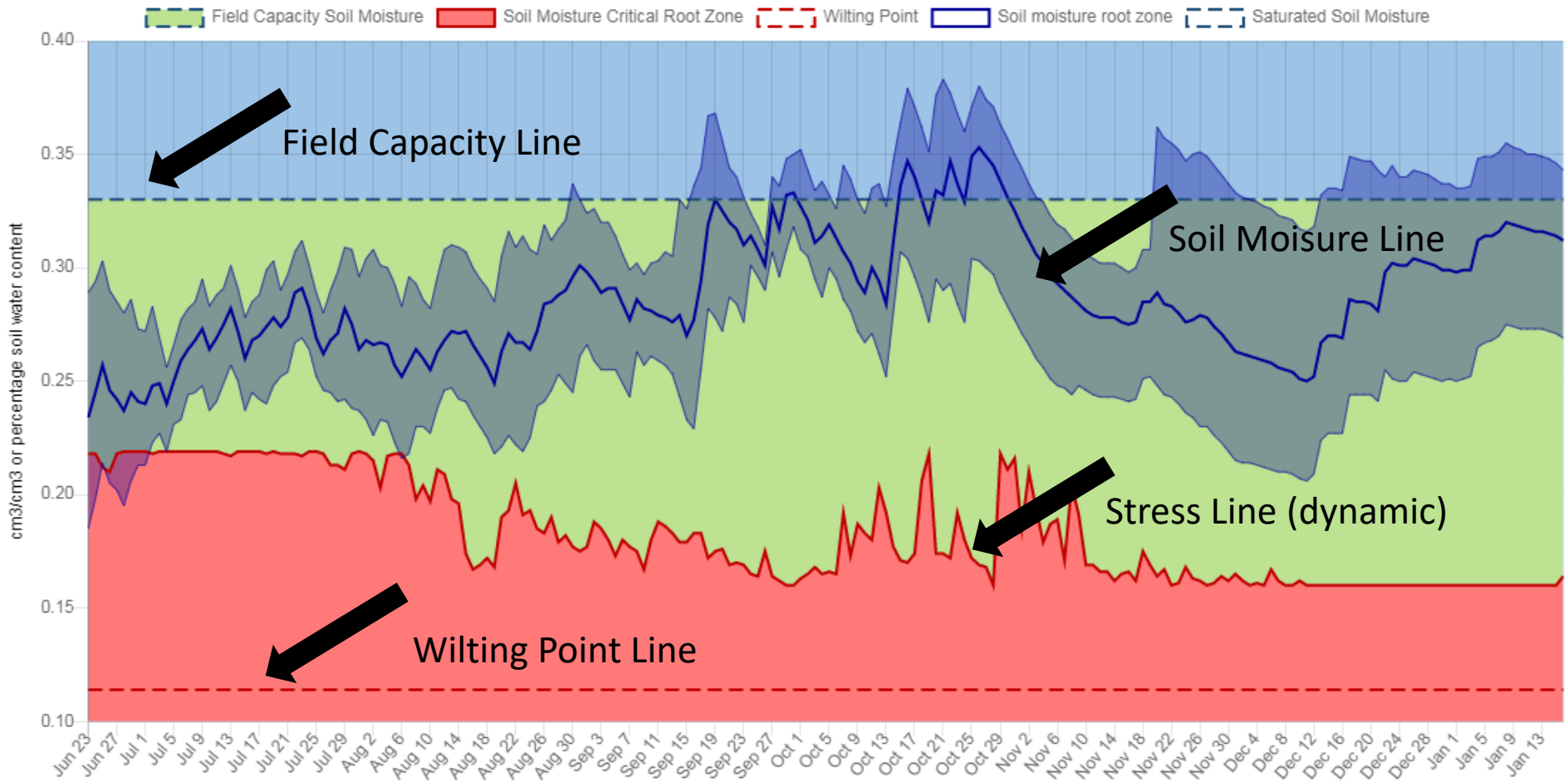
Opening page



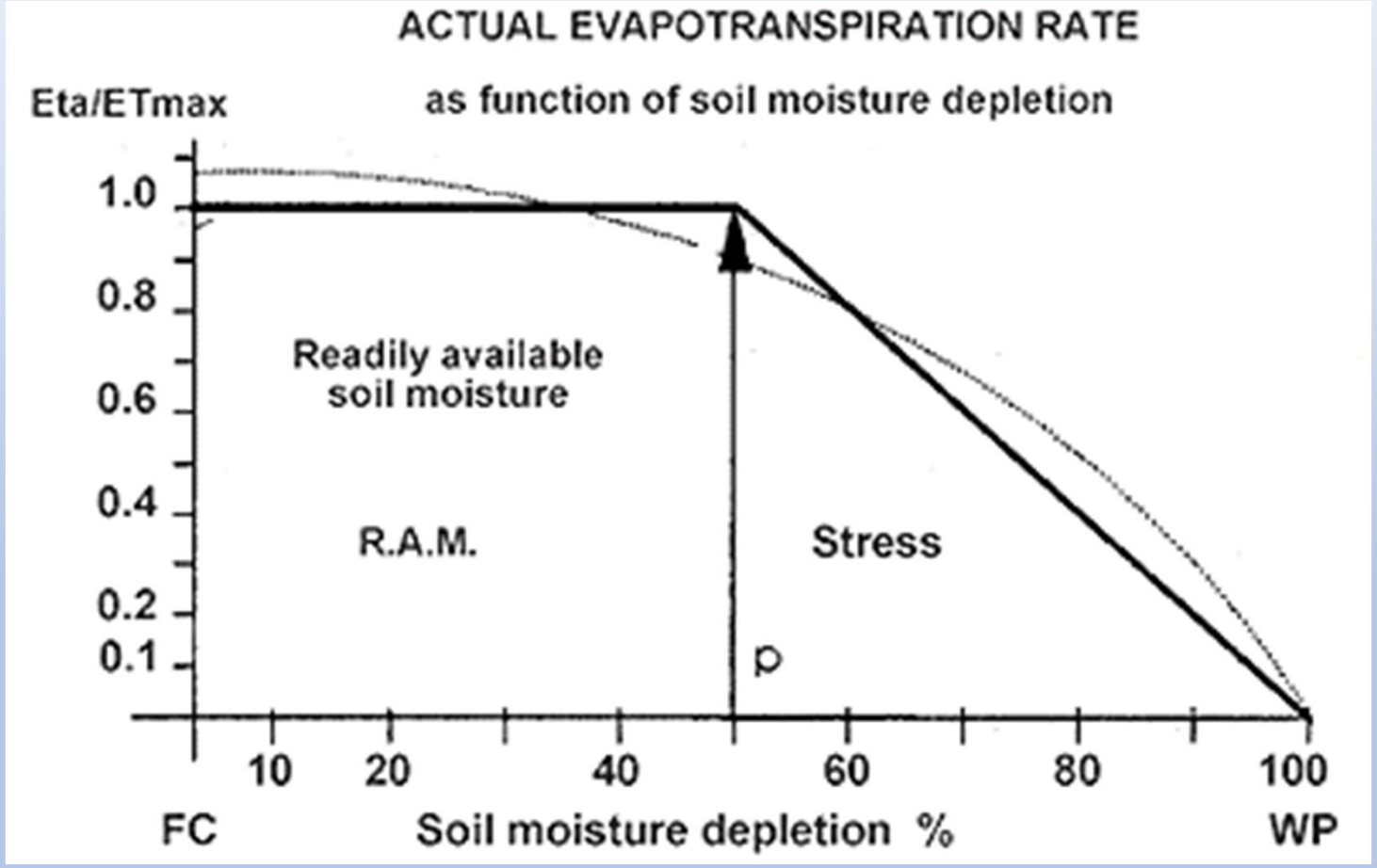
Field Level Soil Moisture

Graphs - C230_Almonds_field

Graphs | Table data



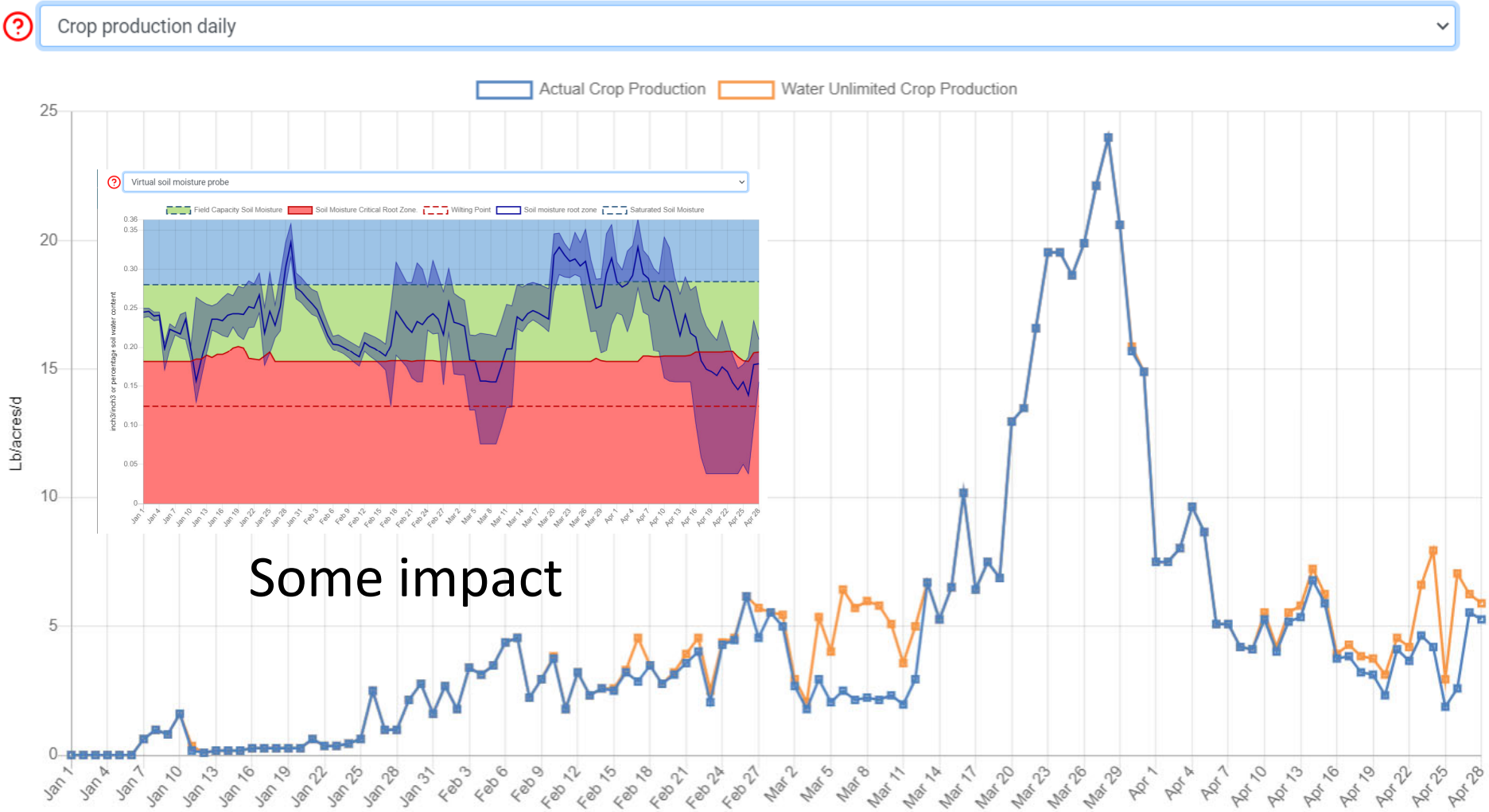
Critical soil moisture for crop water stress (IrriWatch can modify this for you)



Field Capacity

Wilting Point

Impact of irrigation on crop yield



Misconceptions

- "If I enroll in Irriwatch, I'll get an allocation. Therefore, I shouldn't enroll."
- FACT: Growers that do not enroll in IrriWatch will also get an allocation.
- "My cell phone never works out where I farm, so the satellite technology won't be accurate."
- FACT: Satellite measurements do not need cell phone service.
- "I use drip irrigation, but won't be rewarded for my irrigation efficiency."
- FACT: You will be rewarded with better production within the allocation of ET_{aw}. Drip irrigation generally results in less evaporation and, thus, more transpiration within the same ET_{aw} allocation, resulting in more production.
- "I grow a specialty crop that doesn't use a standard ET and won't be measured accurately."
- FACT: IrriWatch ET is based on crop temperature, not on crop type

ET is not based on crop type (but primarily leaf temperature)

Actual Evapotranspiration Example

Misconceptions (cont.)

- "If Irriwatch has the wrong crop and/or irrigation method, the ET calculated will not be accurate."
- FACT: IrriWatch is based on a surface energy balance with 25 years of testing and implementation. The ET calculations do not use crop or irrigation method. It is not a crop coefficient approach.
- FACT: Irrigation scheduling information in Irriwatch DOES require accurate crop and irrigation method information.
- "Irriwatch divides the transitional water."
- FACT: Irriwatch tracks ET and ET of applied water. The transitional water is divided up according to the rules discussed in the public meetings held throughout 2020 and the early part of 2021 and approved by the Madera County GSA Board of Directors.
- "Irriwatch needs to know when you irrigated to calculate your next irrigation."
- FACT: Irriwatch calculates your next irrigation based primarily on the satellite measurement of surface temperature of the vegetation in your field. High surface temperature equals dry soil. Low surface temperature equals wet soil.

Misconceptions (cont.)

- "Irriwatch is more about maximizing water use, not minimizing."
- FACT: Irriwatch provides information about crop ET, soil water moisture status and crop production. Irriwatch uses this information together with accurate crop and irrigation method information to estimate when and how much to irrigate to maintain soil moisture to keep the crops free of water stress.
- "Irriwatch has to know applied water to calculate ET of applied water."
- FACT: Applied water is not used in the ET of applied water calculation. Irriwatch calculates total ET based on remotely sensed radiation and climatic data. Total ET and local precipitation data are used to calculate ET of applied water.

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