

# Strawberry Production in Soilless Substrate Troughs

## - An Alternative to Soil Fumigation

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# Strawberry soil fumigation facts:

- ❖ About 96% of strawberry fields in California are fumigated with either methyl bromide or alternative fumigants
- ❖ Approximately 70% of all fumigants used in California are on strawberries
- ❖ Strawberry has been grown in Europe using peat moss, coconut coir, perlite, or a mixture of these substrates in different types of containers or troughs

# Why using substrate in troughs?

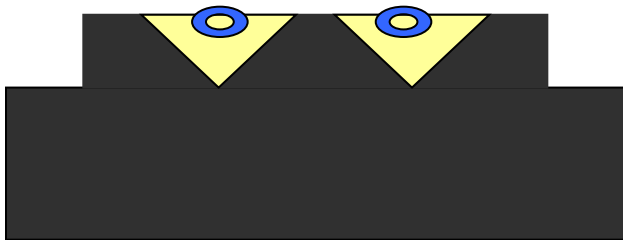
- Disease avoidance

Project initiated Aug 2008 in

- Santa Maria
- Watsonville (Mont. Bay Academy)

## Objective:

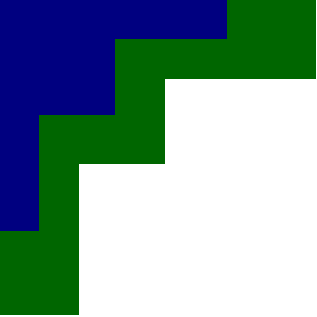
Overall feasibility &  
system performance



# Substrates



1. Field soil
2. 60% Peat : 40% Perlite
3. 67% Peat : 33% Rice hulls
4. 67% Coir : 33% Rice hulls
5. 100% Coir
6. 100% Peat



# Santa Maria Trial

- Planted Nov 2, 2008
  - 2 rows per trough
  - 4 rows per bed
- Cultivars
  - *Albion*
  - *Camino Real*,
  - *Ventana*
    - Replaced in June with *Portola*

## Hemispherical Troughs (10-inch dia.)



**Raised beds are typical of district,  
four-row, 64" spacing, 40" bed-top,  
18" height**

**Each substrate-mulch combination is represented by a single 390-ft raised bed**

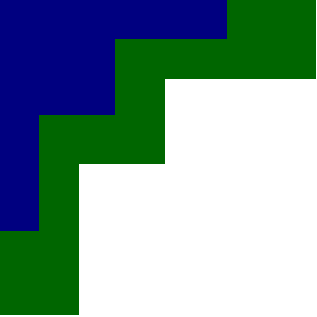


# Mulch was applied over troughs



Mar Vista Farm, Santa Maria, CA  
April 16, 2009





# Watsonville Trial

- Planted Nov 14, 2008
  - 1 row per trough
  - 2 rows per bed
- Cultivars
  - *Albion*
  - *Monterey*
  - *Portola*
  - *San Andreas*

# Watsonville “W” Design

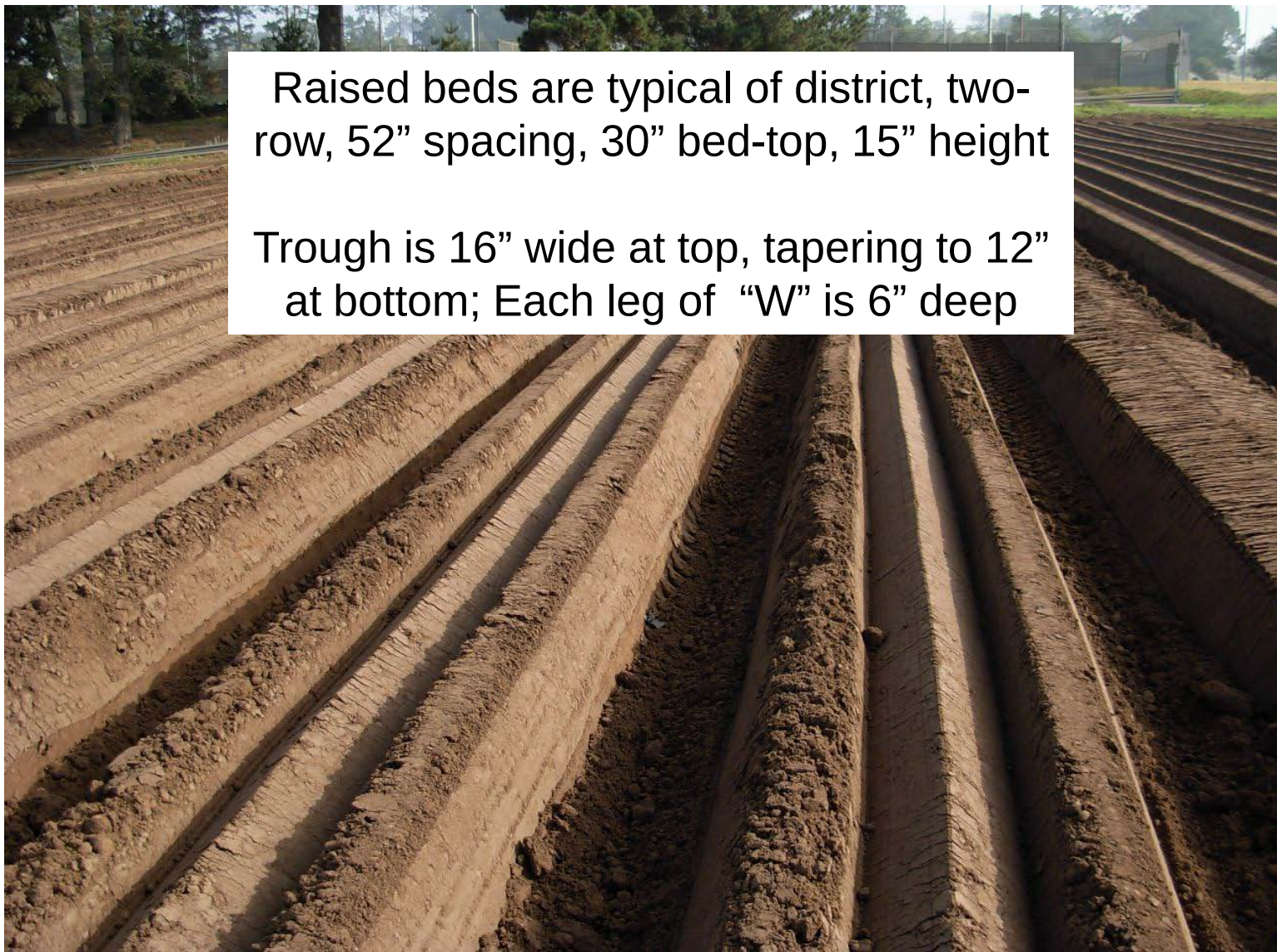


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# Completed Troughs Formed in Beds

Raised beds are typical of district, two-row, 52" spacing, 30" bed-top, 15" height

Trough is 16" wide at top, tapering to 12" at bottom; Each leg of "W" is 6" deep



# Laying Landscape Fabric into Troughs



# Adding Substrate to Troughs



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# Planting Through Mulch

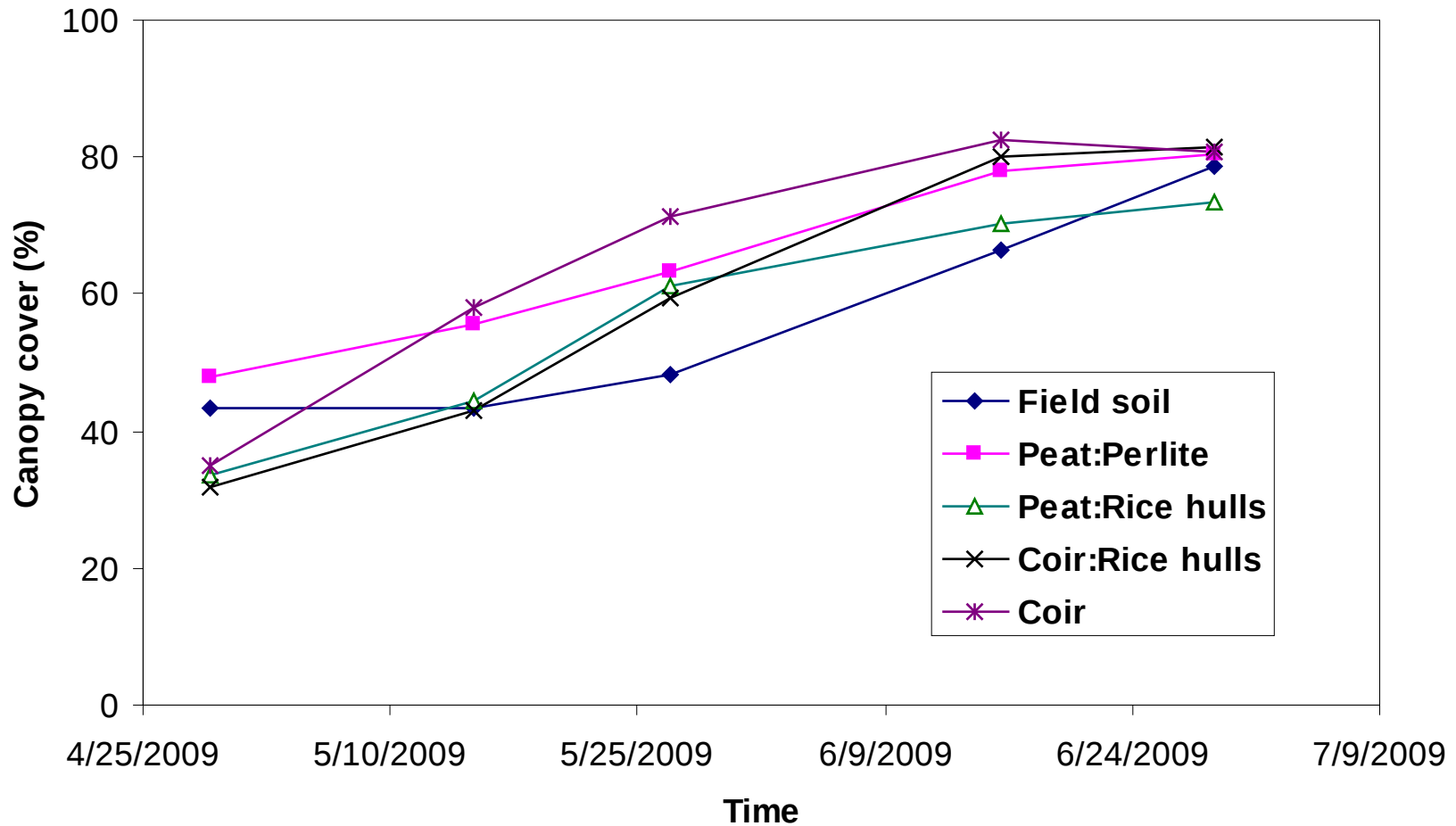


## IR Canopy Cover Measurement

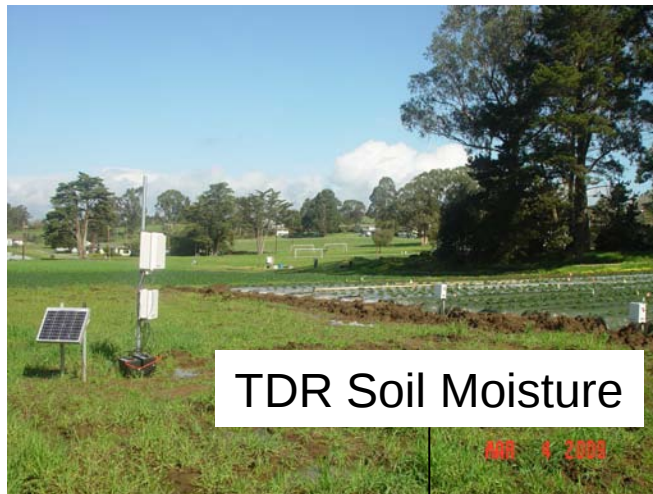


Monterey Bay Academy Farm, Watsonville, CA  
April 8, 2009

**Santa Maria RaBet Study  
(Albion, 100 ETc)**



# Watsonville Trial – Irrigation



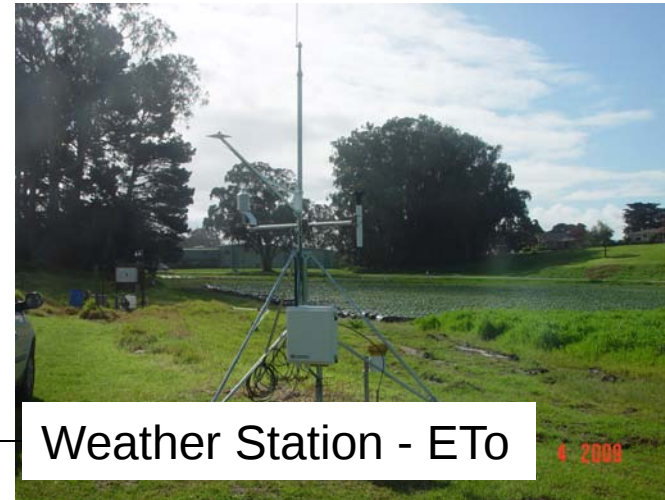
TDR Soil Moisture

USDA-ARS  
Water Management Lab  
Parlier, CA

Land Line Modem

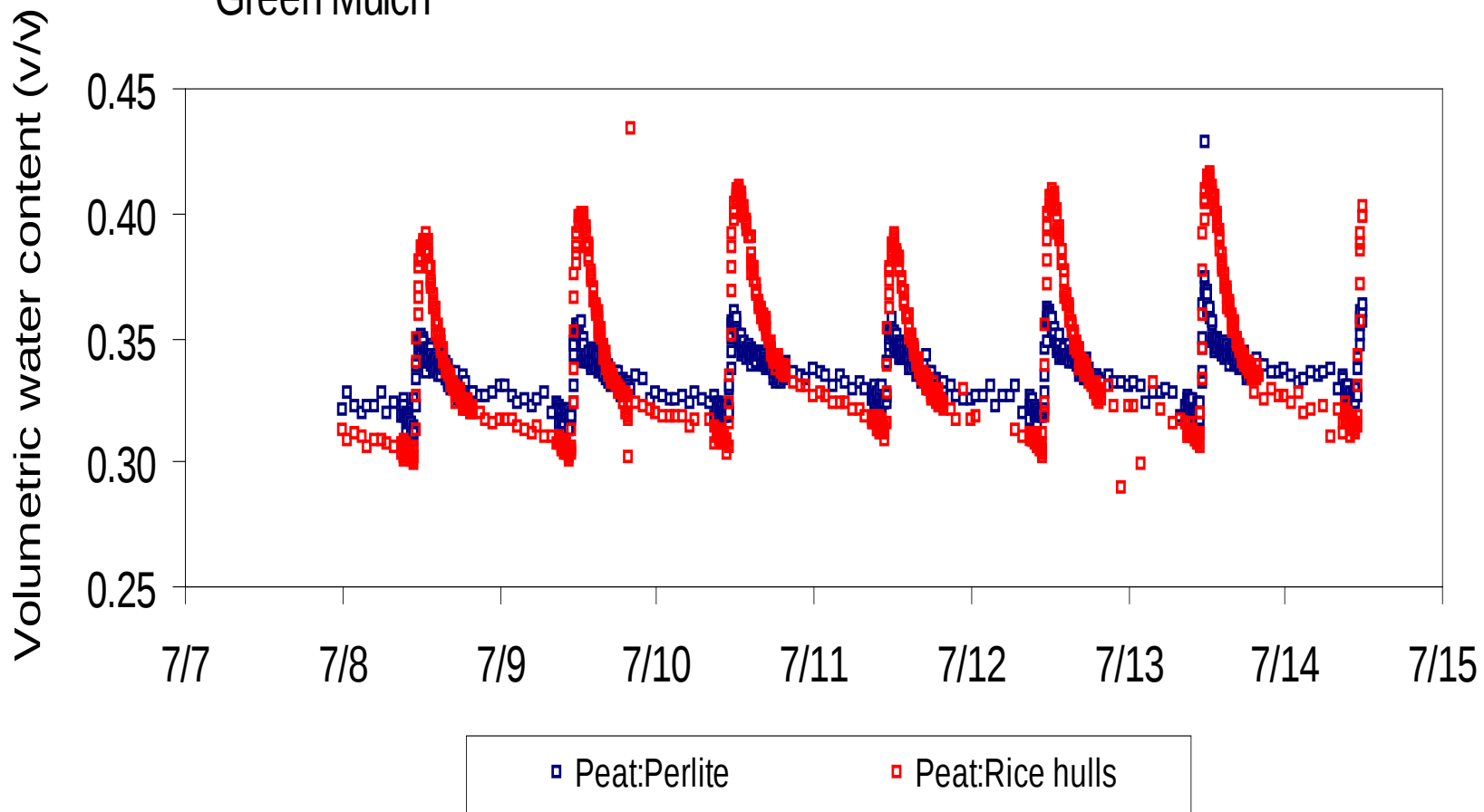


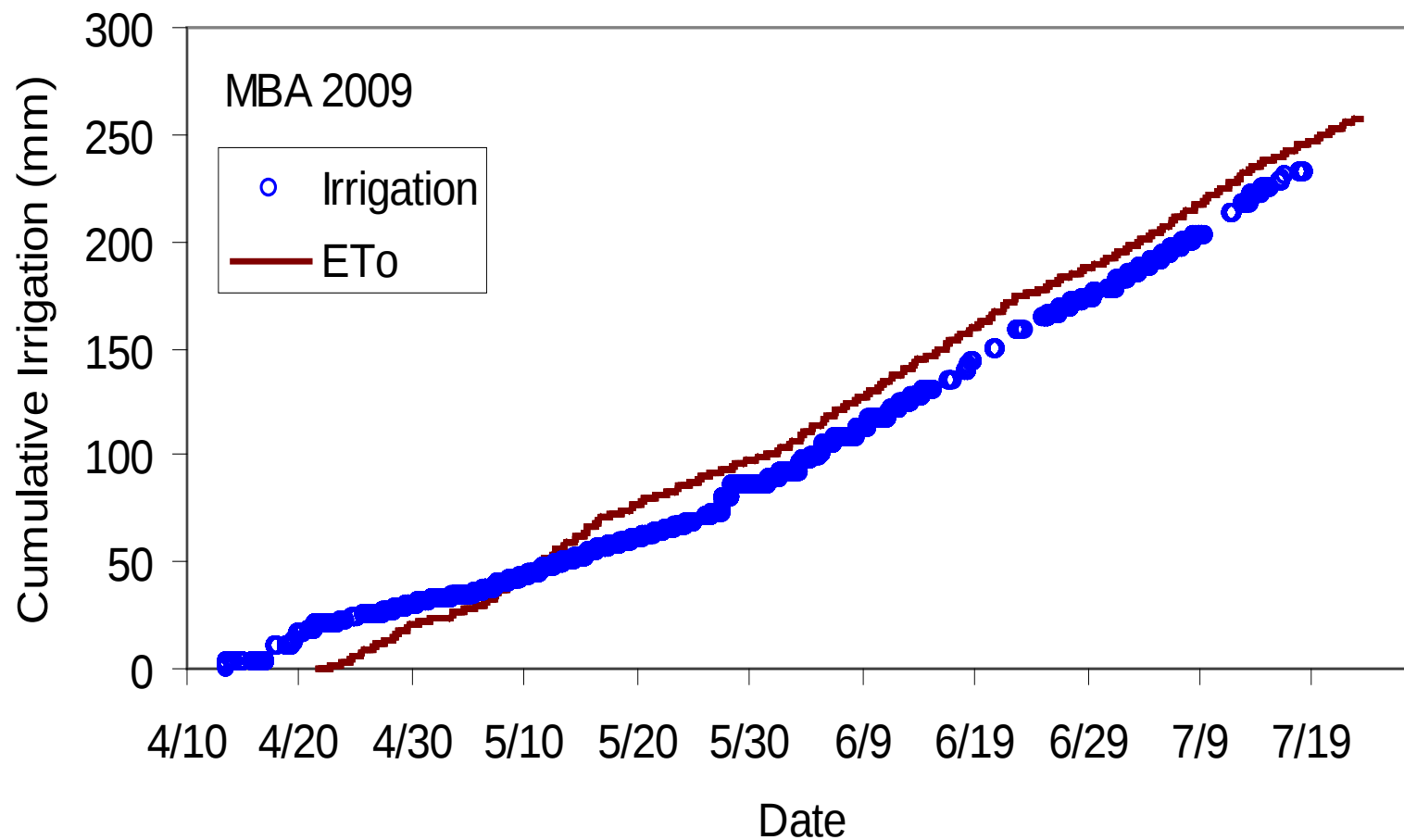
Irrigation/Fertigation



Weather Station - ET<sub>0</sub>

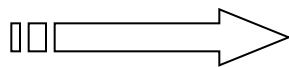
MBA 2009  
Green Mulch



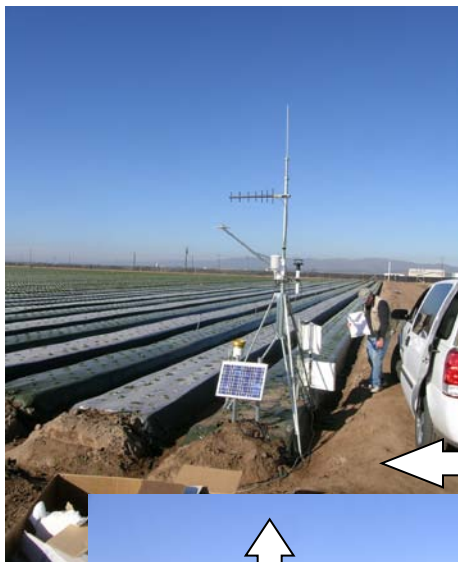


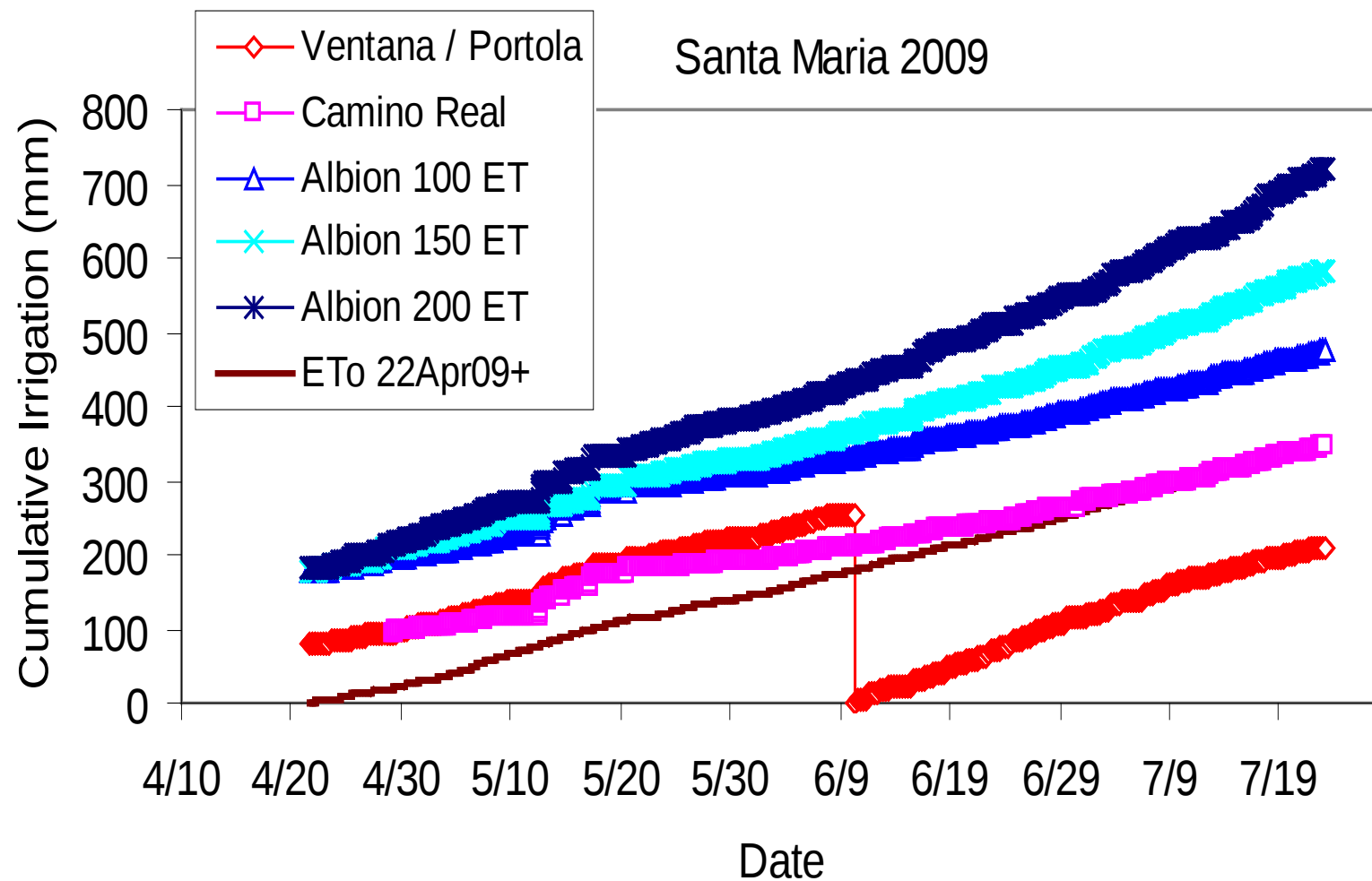
# Santa Maria Trial – Irrigation

**Wireless Modem**

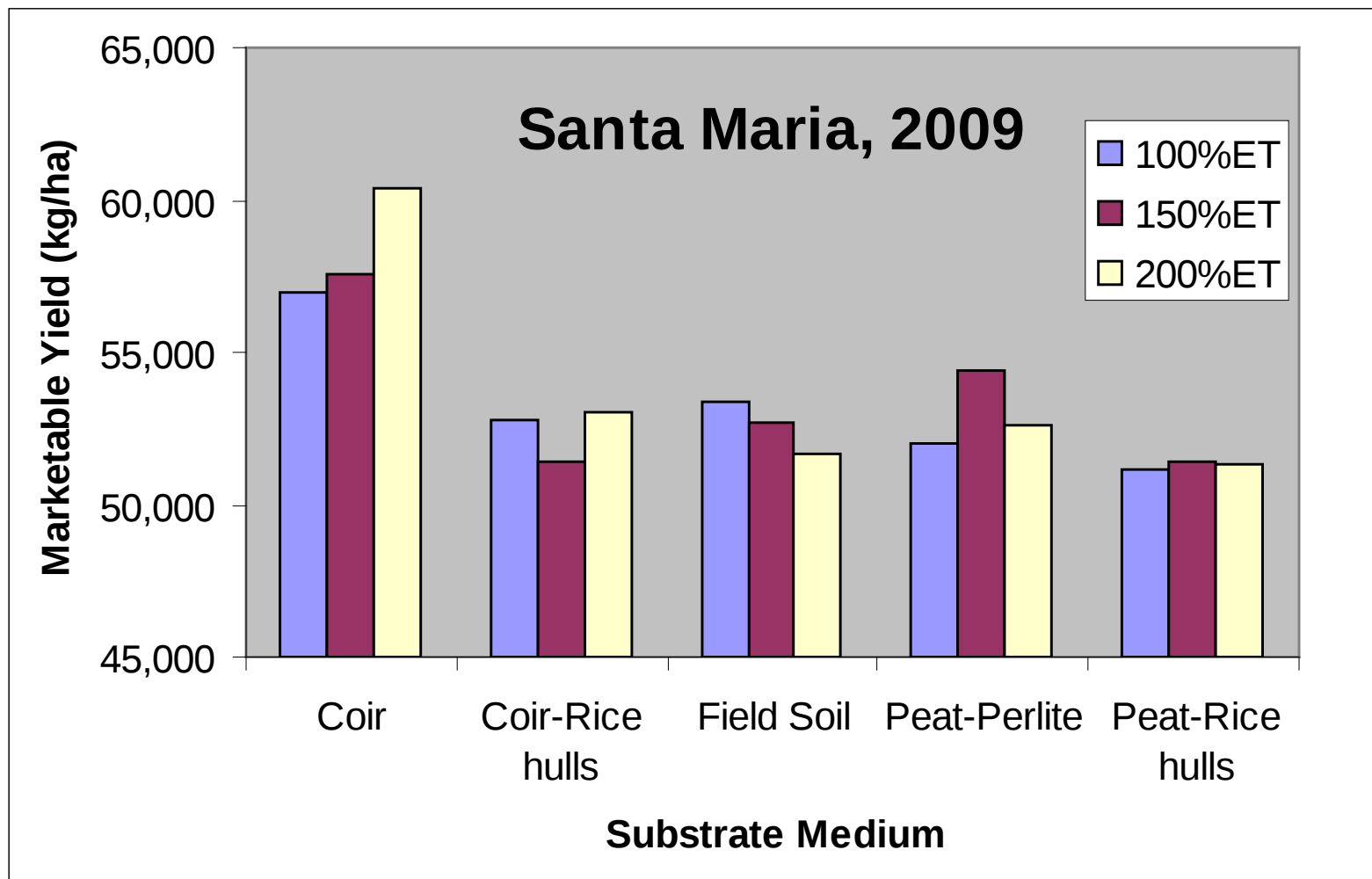


USDA-ARS  
Water Management Lab  
Parlier, CA





# Santa Maria Trial – Yield



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