

Raised-Bed Troughs for Strawberries: Irrigation Water Management

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Medium**Irrigation Level (%ET)**

2008-2009**A****B****C****D****Soil (sandy loam)****100****150****NA****200****Coir****100****150****NA****200****Peat****100****150****NA****200****Peat-Perlite****100****150****NA****200****Peat-Rice hulls****100****150****NA****200****Coir-Rice hulls****100****150****NA****200****2009-2010****Coir****100****150****150/6****200****Peat-Perlite****100****150****150/6****200****Peat-Coir-Rice****100****150****150/6****200**

2009

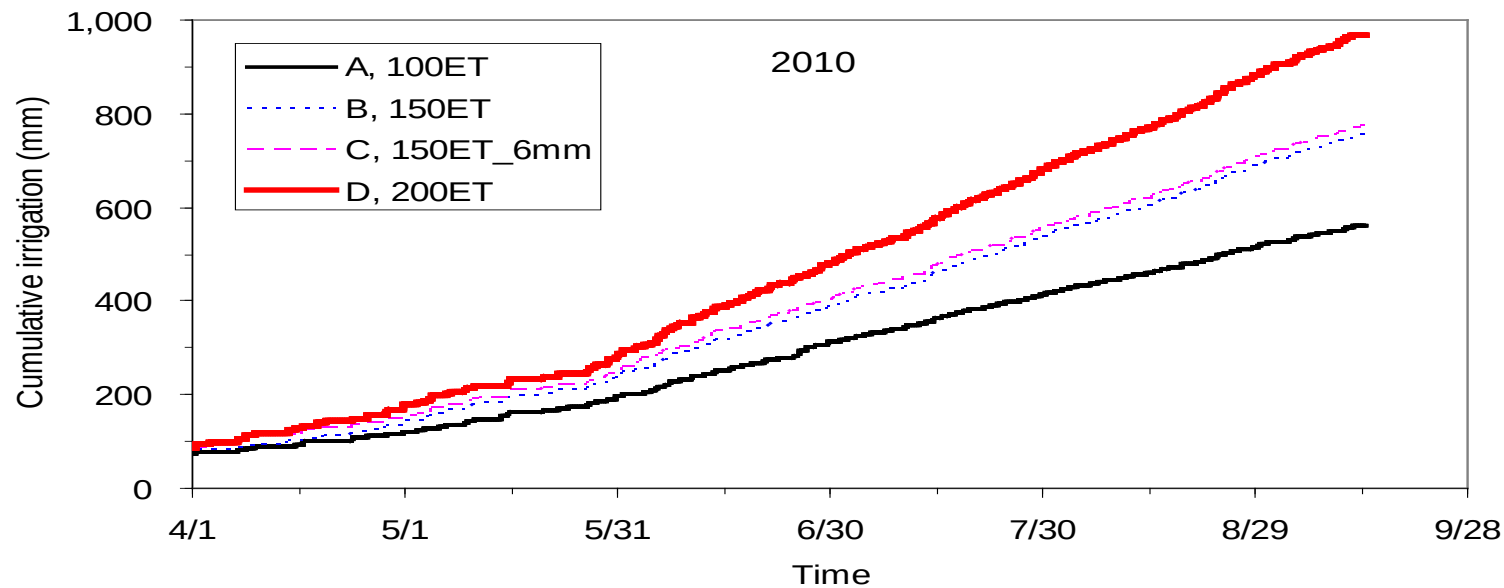
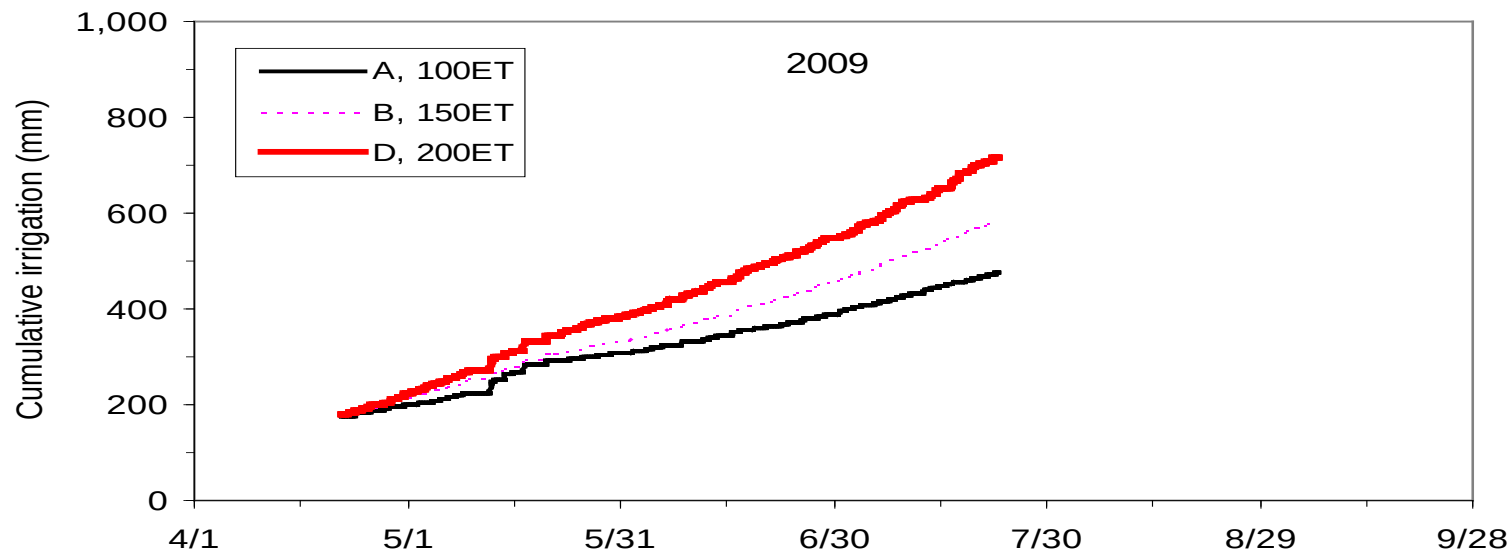


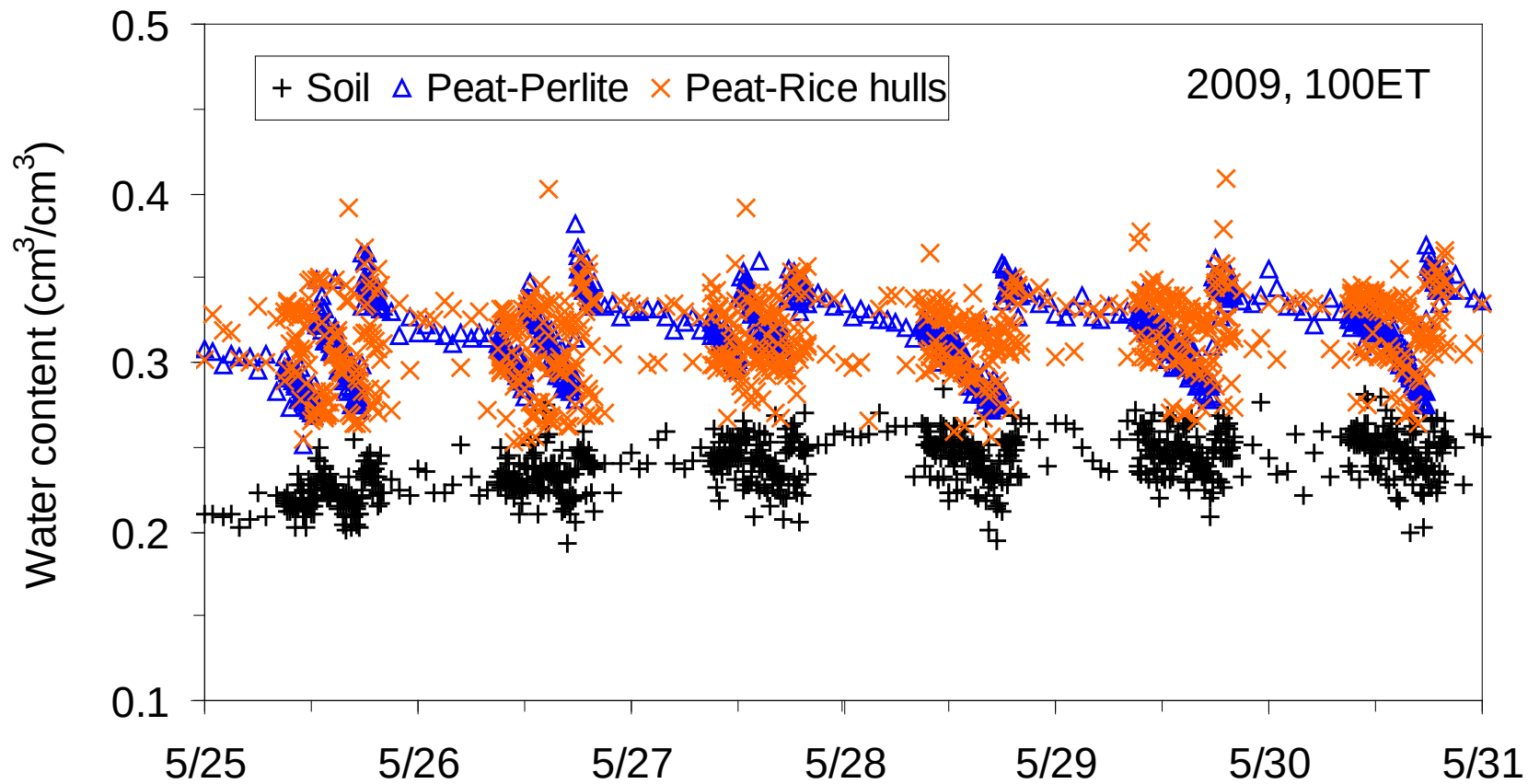
Field Measurements

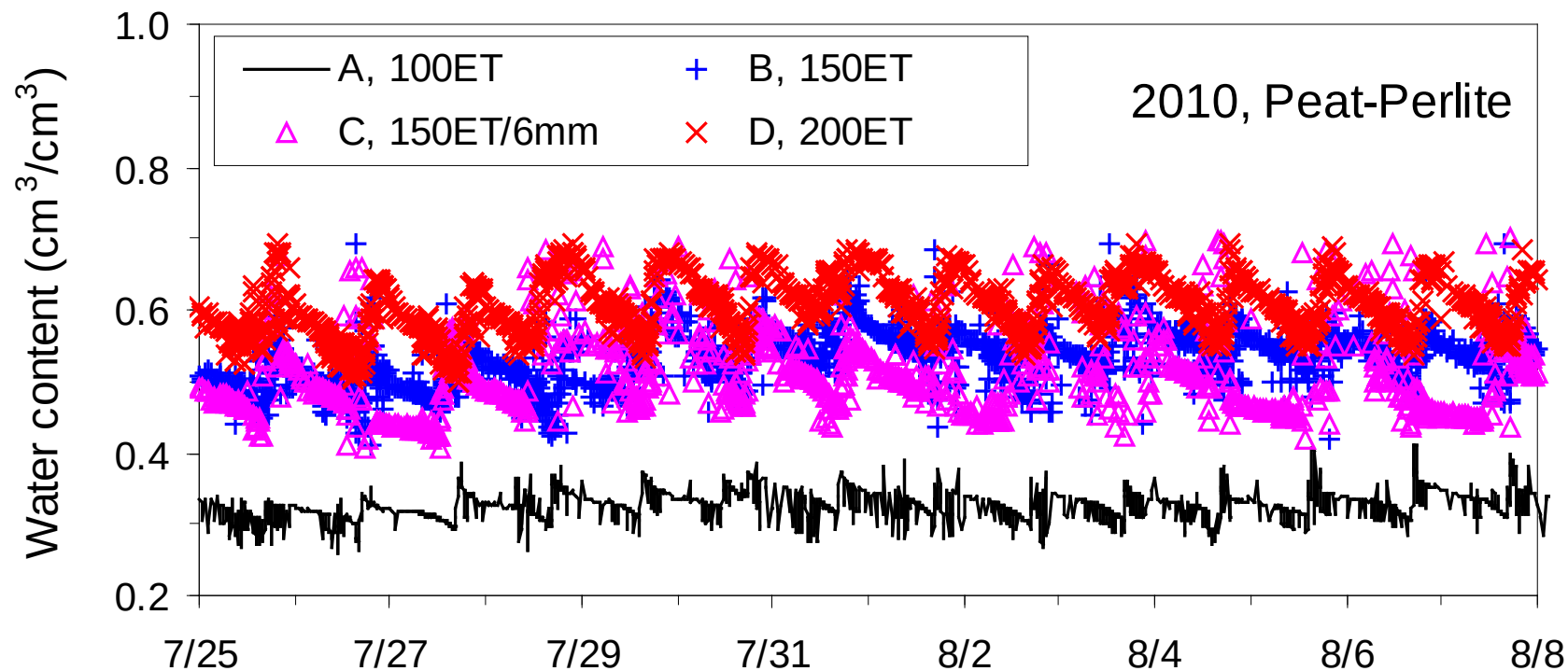
- TDR water content
- Temperature
- Weather
- Yield

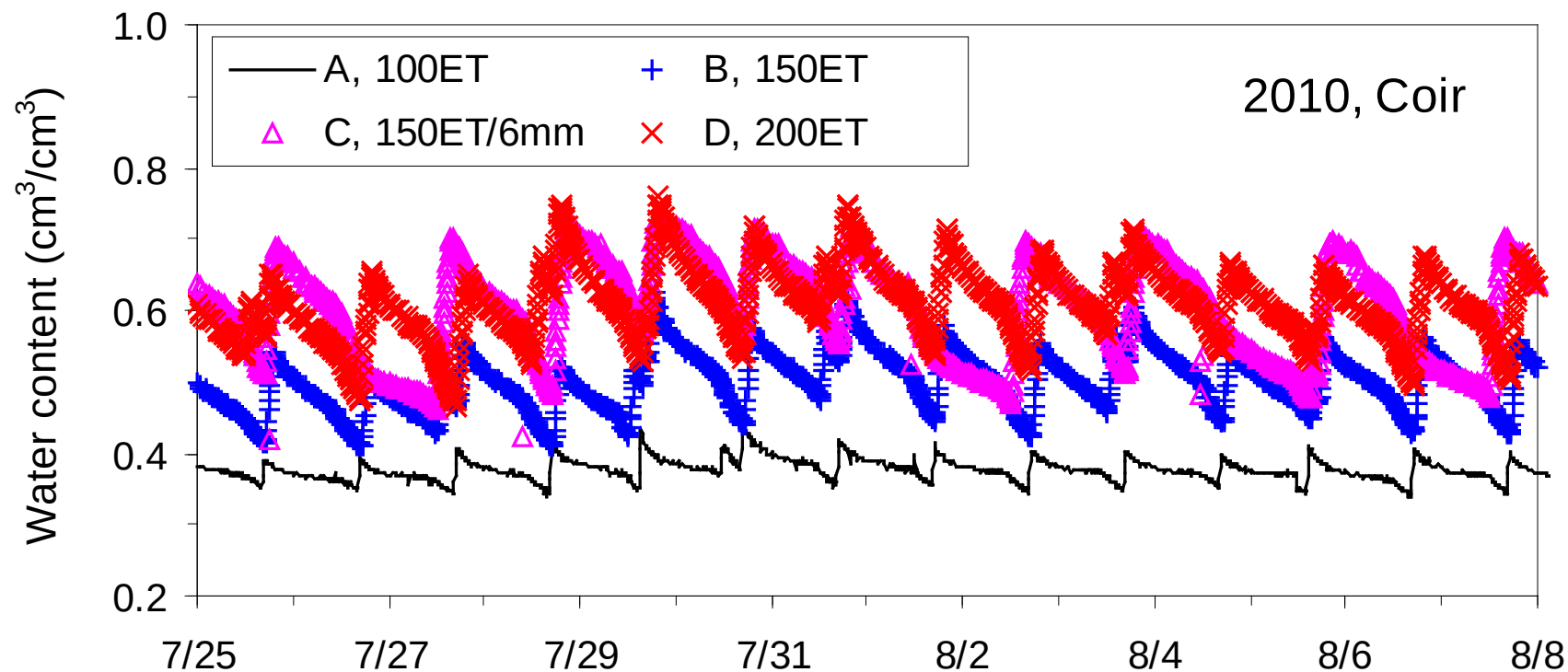
2010



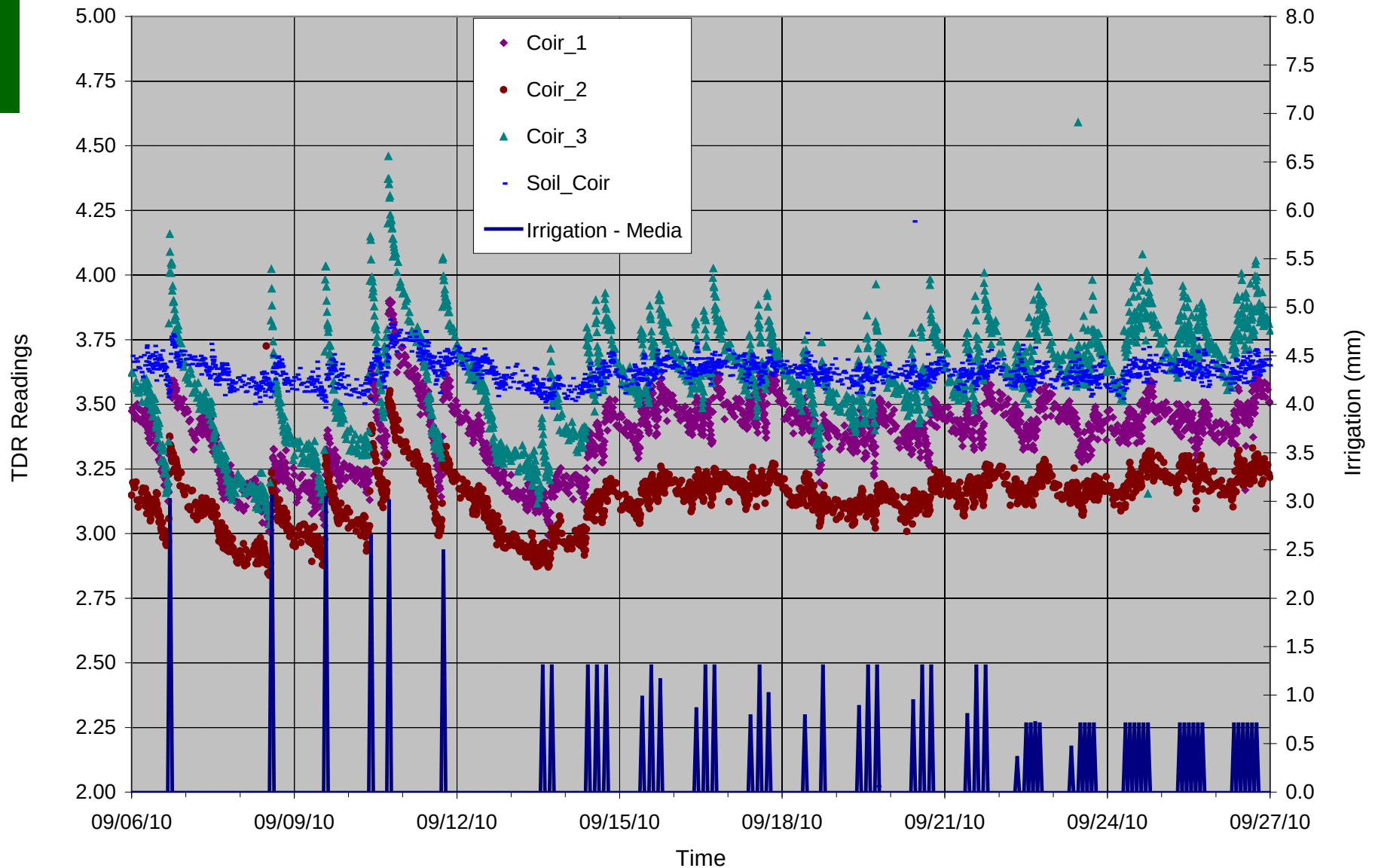




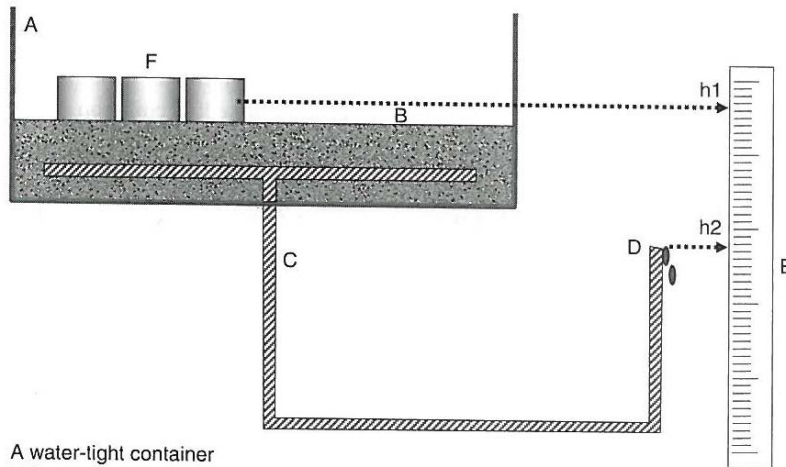




2009-2010 Santa Maria/Nipomo Irrigation Experiment

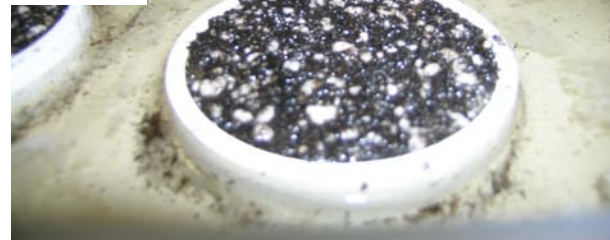


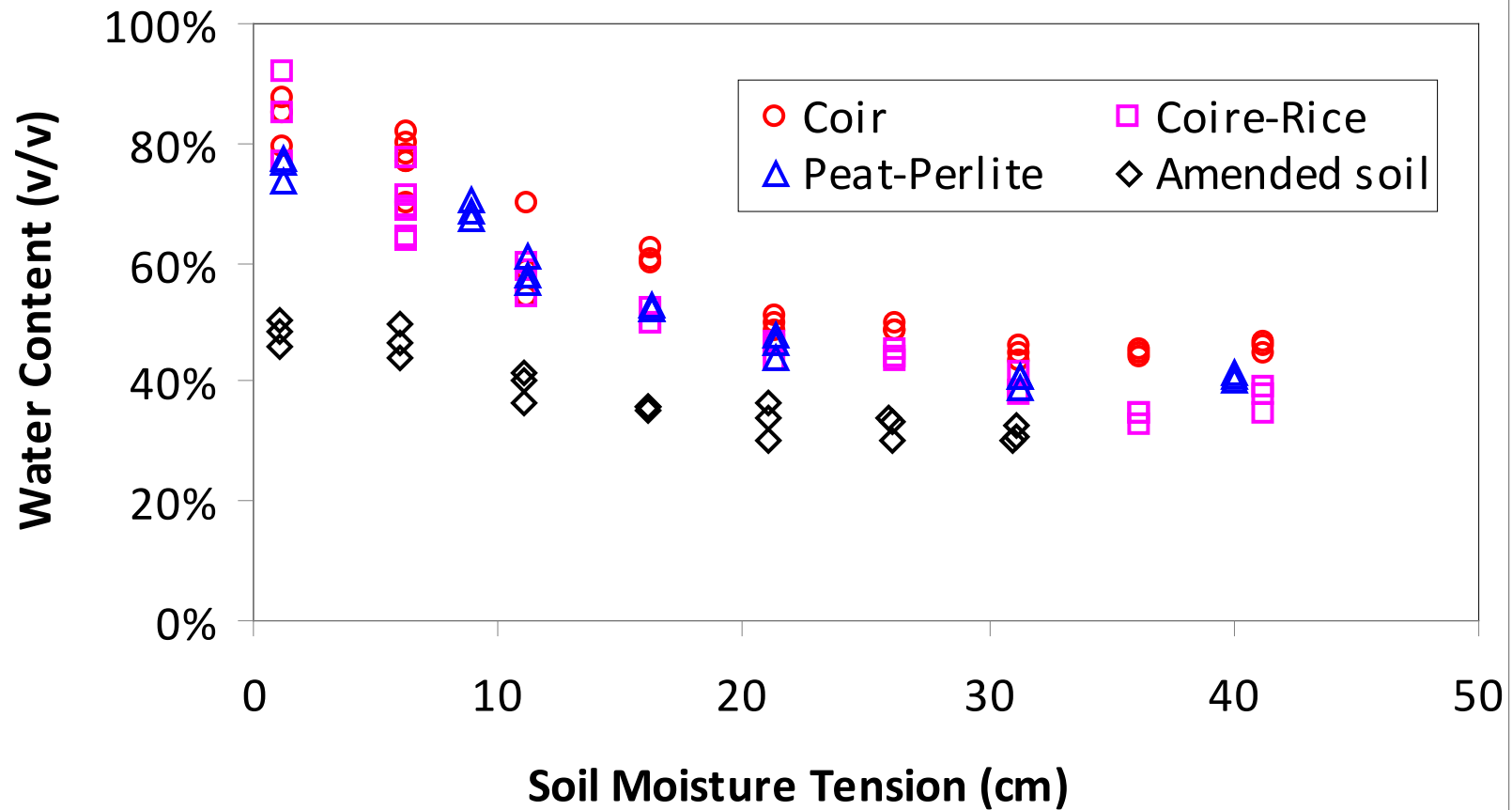
Water Retention Apparatus



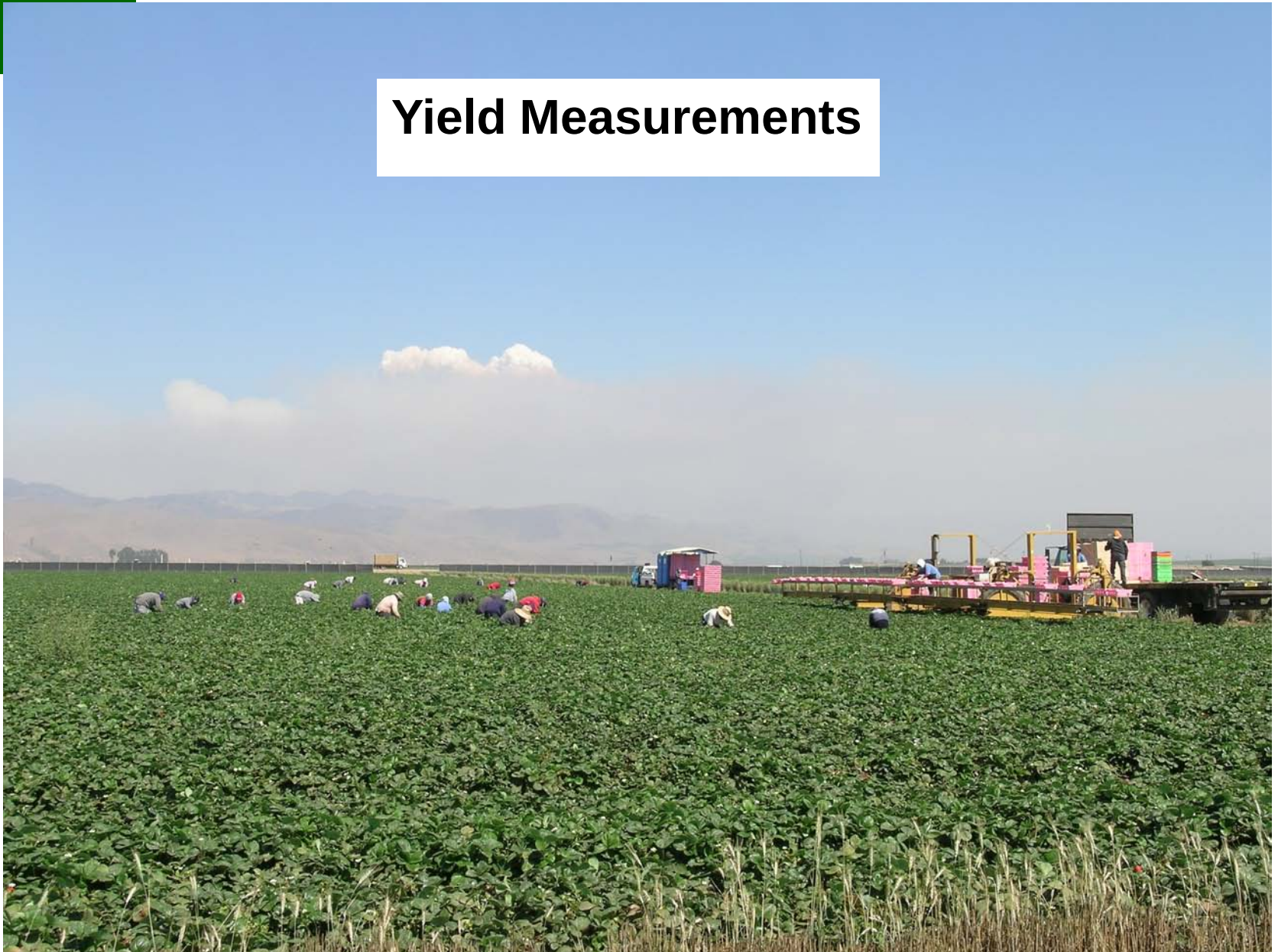
- A water-tight container
- B fine-graded and packed sand in a flat layer of ± 10 cm
- C drainage system with multiple well-distributed entries
- D adjustable overflow
- E scale in mm to register the suction ($h_2 - h_1$)
- F sample in sample holder

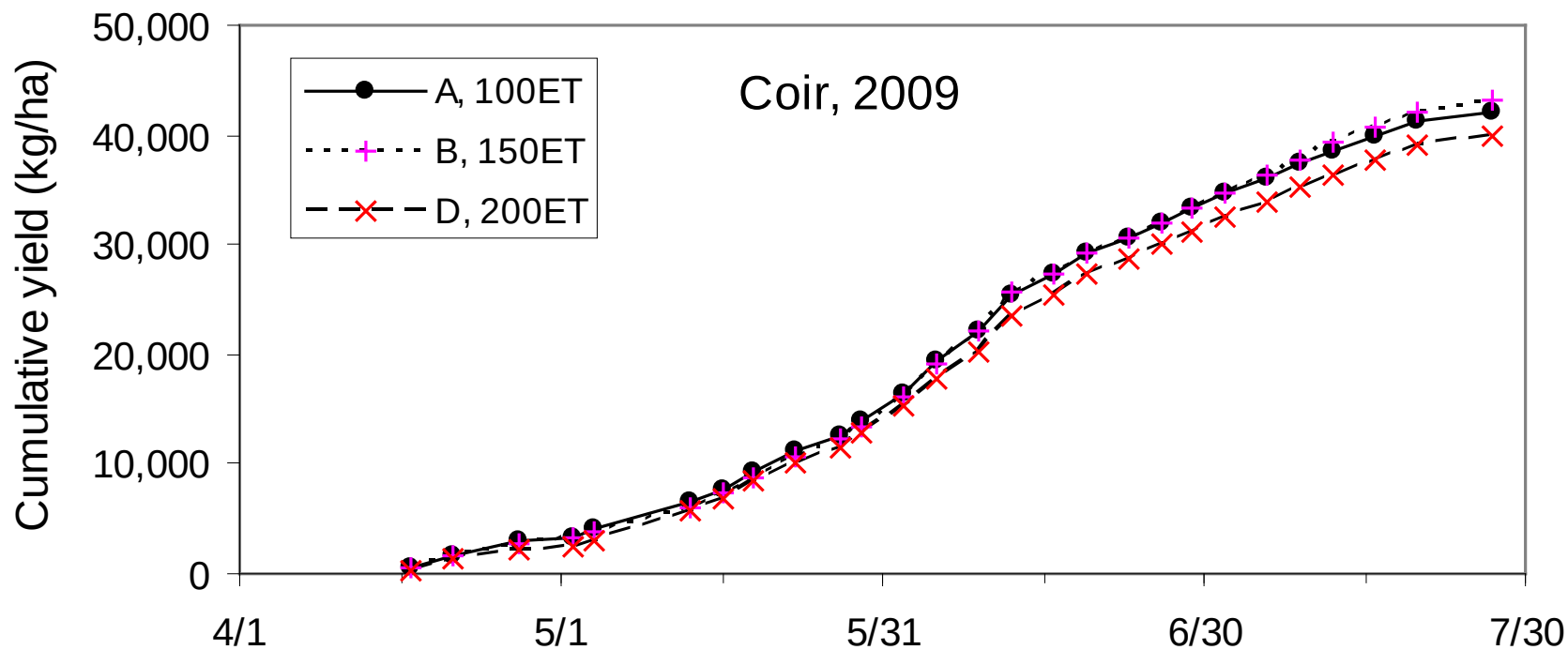
* Modified from Blok et al., 2008. Analytical methods used in soilless cultivation. Pp. 245-289. IN: M. Raviv and J.H. Lieth (Eds) Soilless Culture-Theory and Practice. Elsevier, Amsterdam.

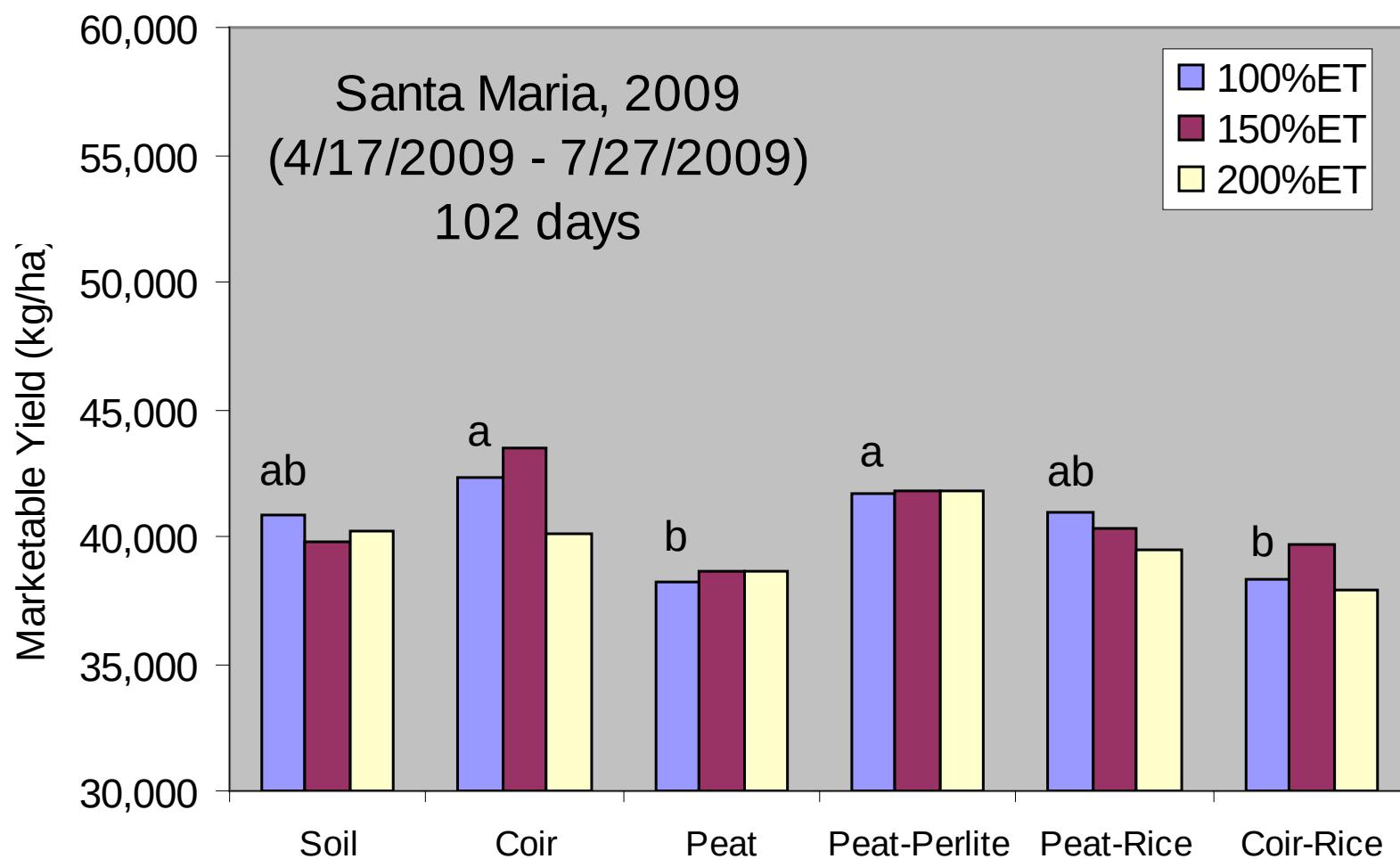


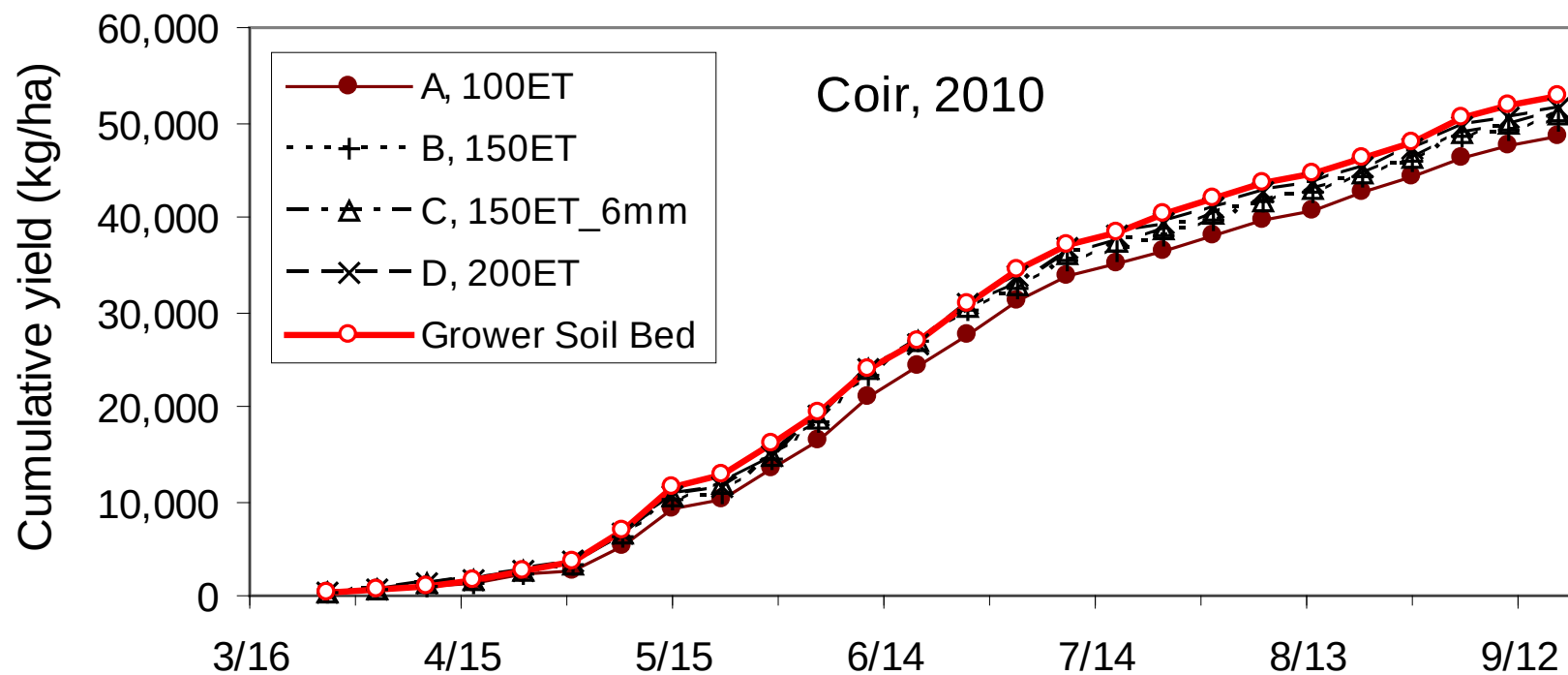


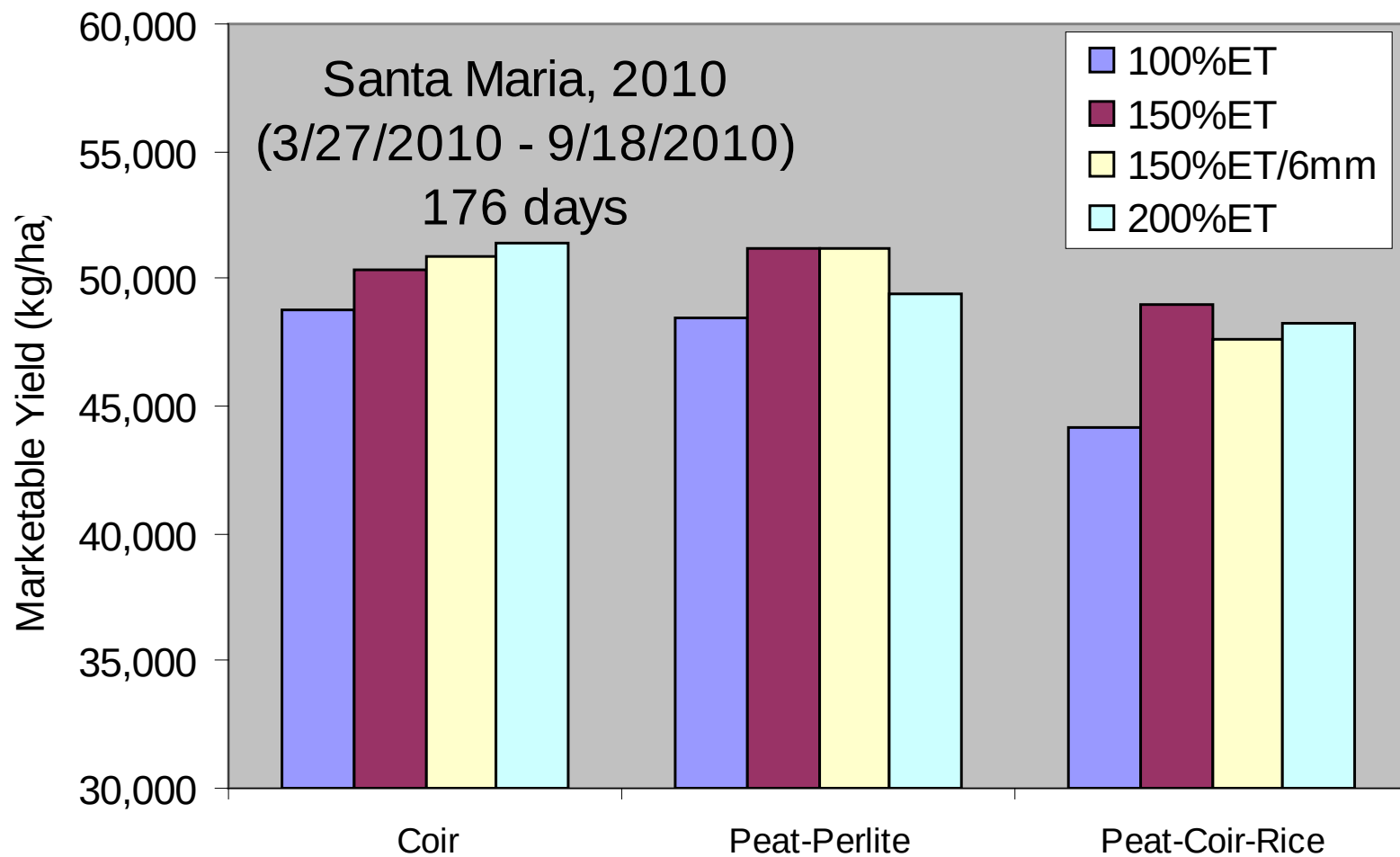
Yield Measurements







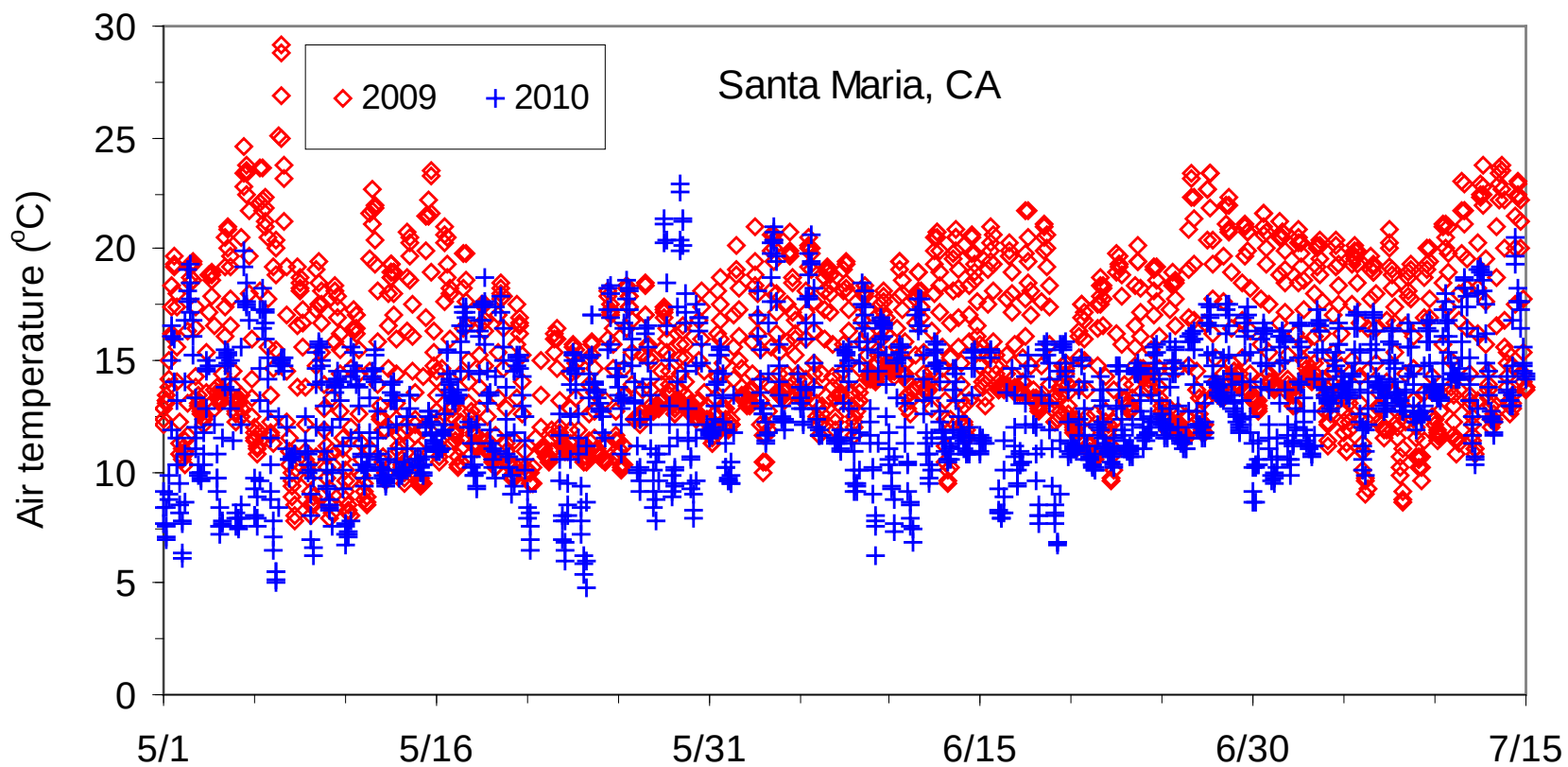




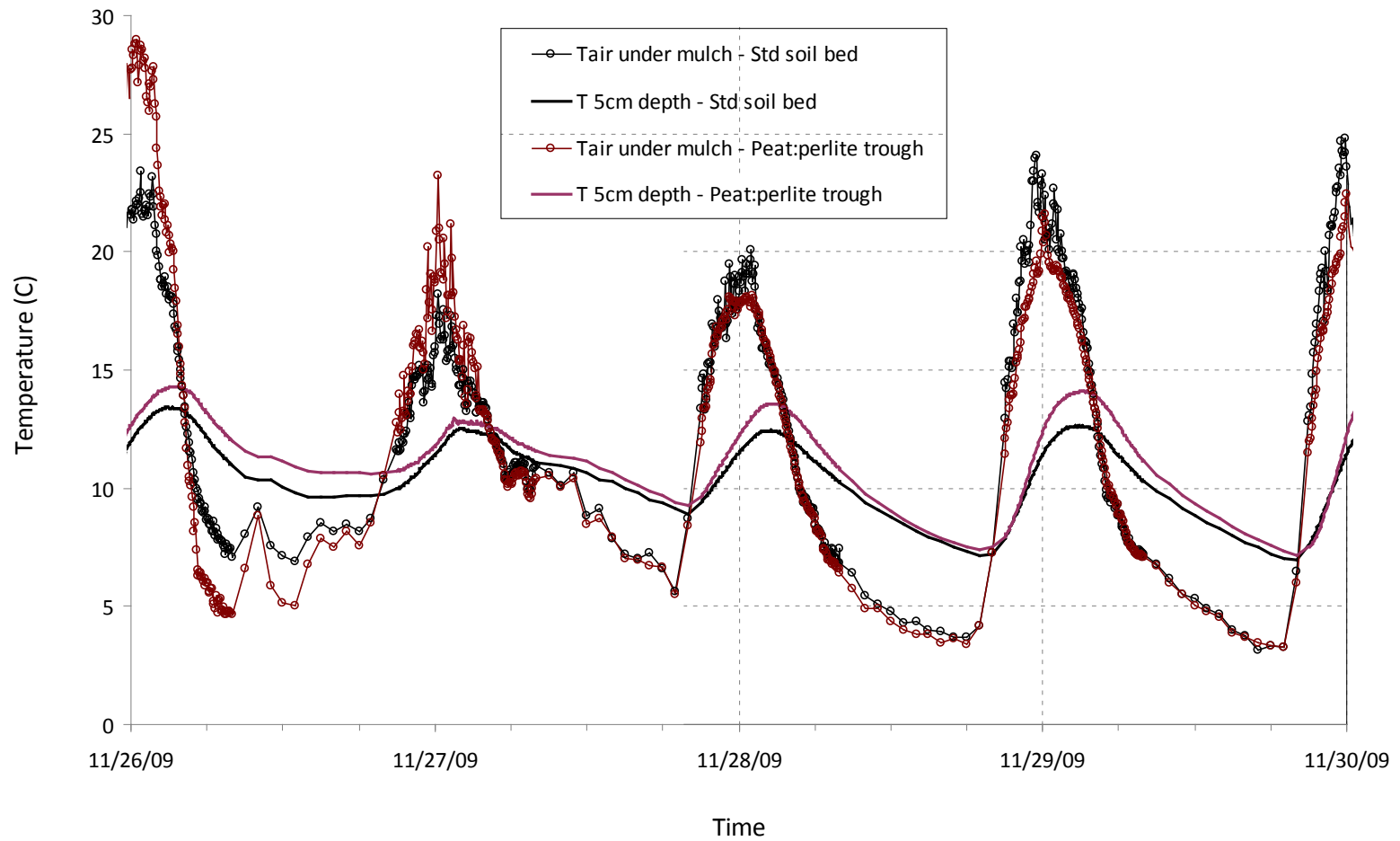
2009-2010 Santa Maria/Nipomo

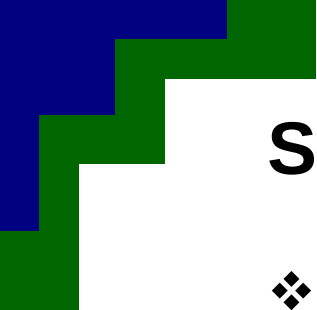
Irrigation Experiment

Irrigation Treatment	Medium	Yield (kg/ha)	Pct of Std
Grower Standard	Fumigated Soil	52,698	100%
Irrig-100%ET, 3mm	Coir	48,490	92%
Irrig-150%ET, 3mm	Coir	50,293	95%
Irrig-150%ET, 6mm	Coir	50,872	97%
Irrig-200%ET, 3mm	Coir	51,432	98%
Irrig-100%ET, 3mm	Peat-Rice-Coir	44,734	85%
Irrig-150%ET, 3mm	Peat-Rice-Coir	48,939	93%
Irrig-150%ET, 6mm	Peat-Rice-Coir	47,652	90%
Irrig-200%ET, 3mm	Peat-Rice-Coir	48,215	91%
Irrig-100%ET, 3mm	Peat-Perlite	48,541	92%
Irrig-150%ET, 3mm	Peat-Perlite	51,213	97%
Irrig-150%ET, 6mm	Peat-Perlite	51,184	97%
Irrig-200%ET, 3mm	Peat-Perlite	49,385	94%



2009-2010 Santa Maria/Nipomo RaBet Experiment, Green Mulch





Summary:

- ❖ TDR soil moisture measurements reflected in irrigation treatments, i.e.
 $200\%ET > 150\%ET > 100\%ET$
- ❖ Substrate media have lower water retention capacity than amended soil, e.g. higher near-saturation water content
- ❖ Significant yield responses between substrate treatments in 2009, not in 2010
- ❖ Variable yield responses to irrigation treatments but not statistically significant
- ❖ Higher subsurface temperature in media than in standard soil beds