



Drip irrigation system and Irrigation management for vegetable production

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Irrigation Scheduling

1

Systematic irrigation
method

Water is applied in a time or volume base, regardless of weather and soil water conditions

2

Crop water demand
method

This method consists of a calendar-based scheduling according to previous seasons, where water is applied according to the crop evapotranspiration (ET_c). This method should account rainfall events.

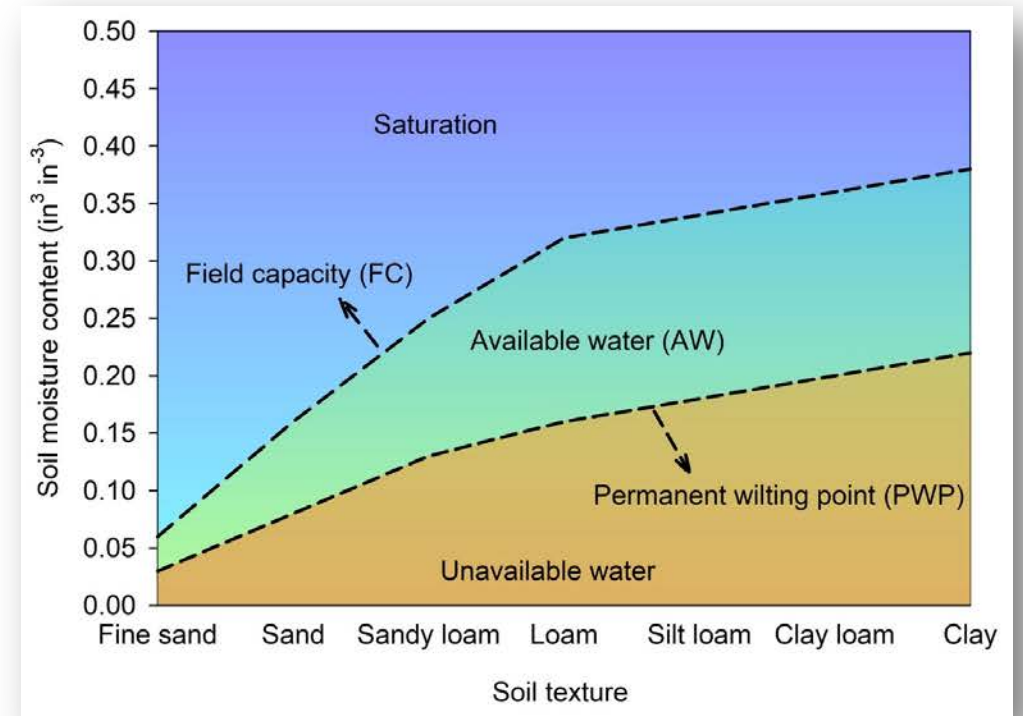
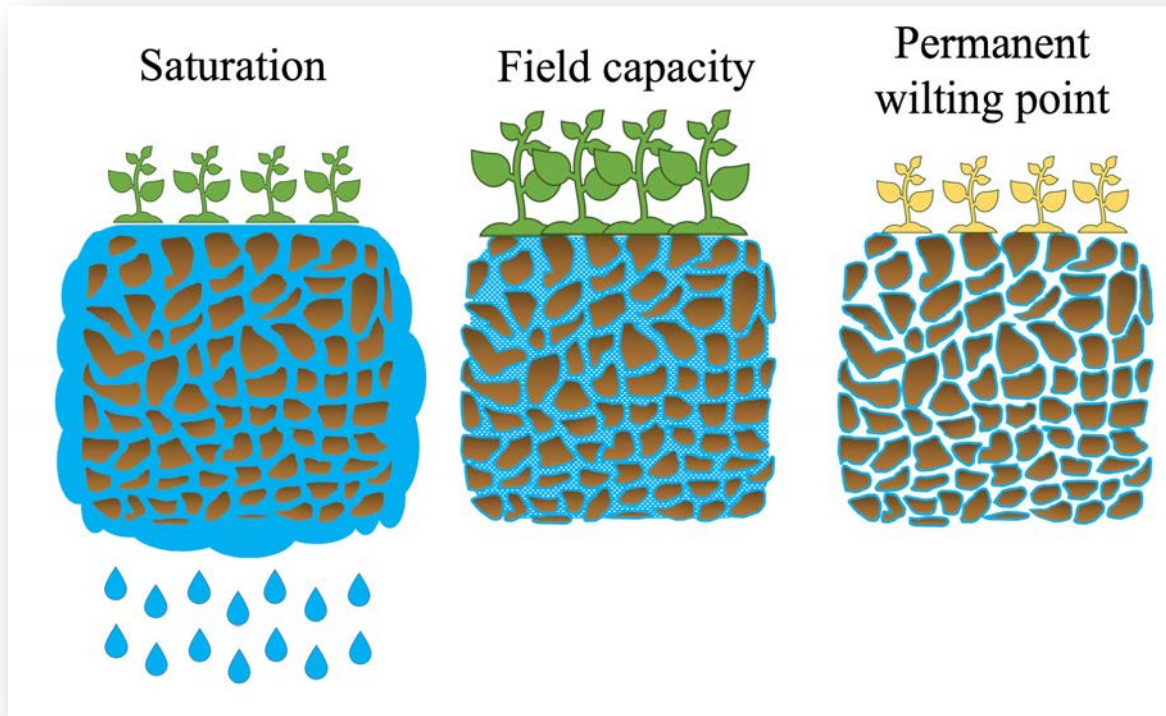
3

Soil water status
method

Water application is based on soil moisture content, typically, supplying a percentage of soil available water in the crop root system. This method should account for rainfall events

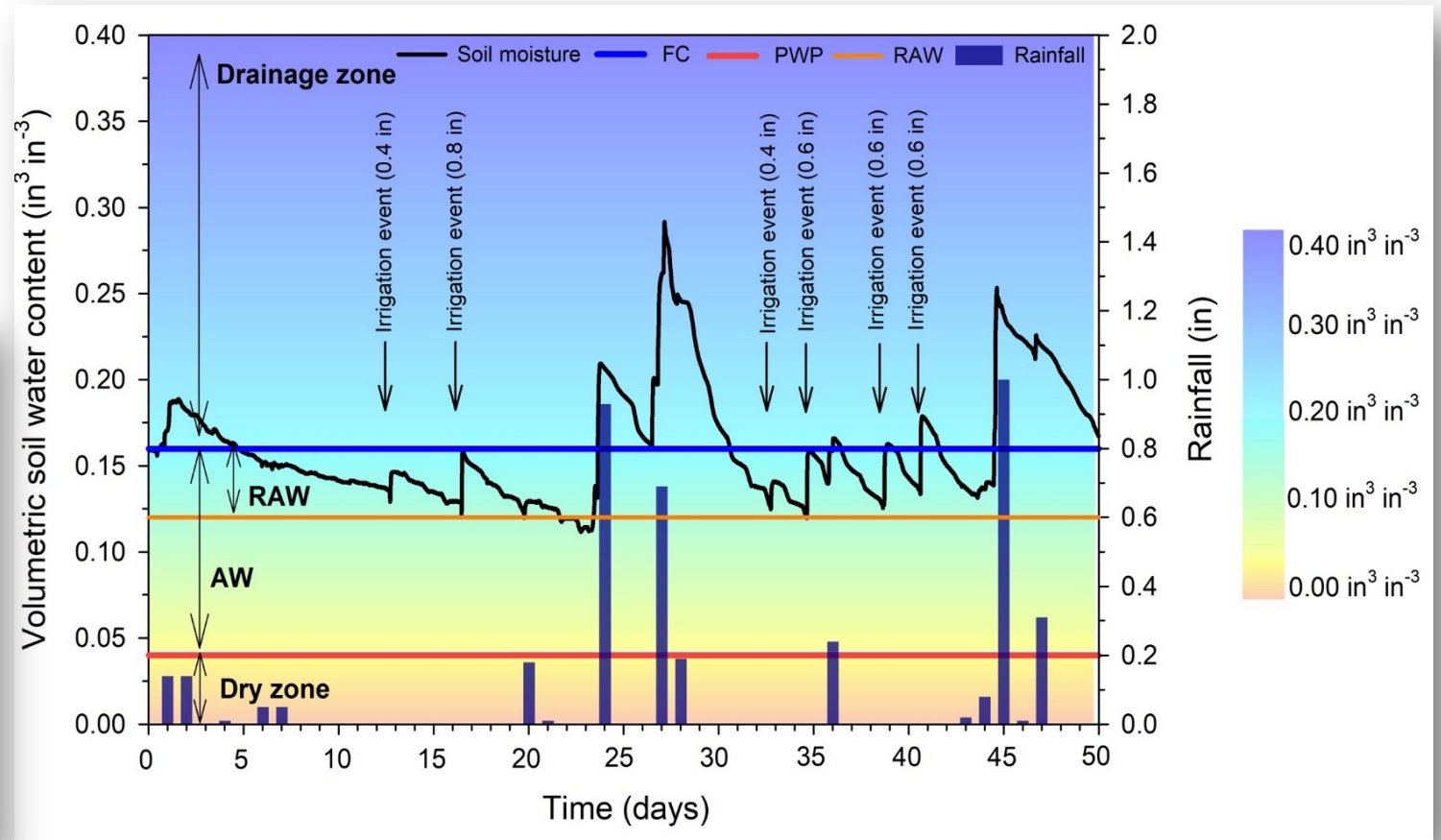
Soil water status Method

Soil water properties

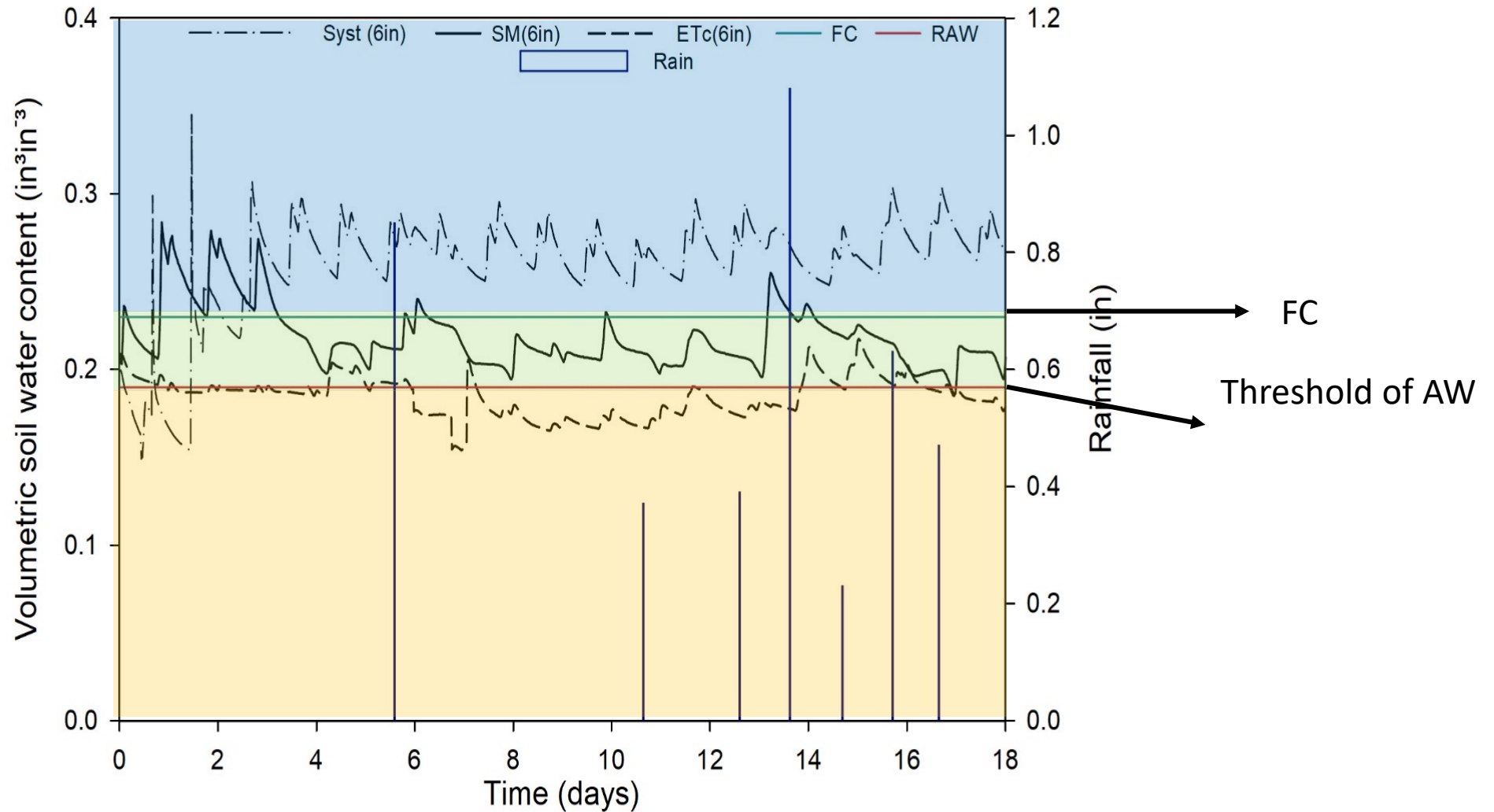


Soil water status Method

Irrigation Moisture Sensors



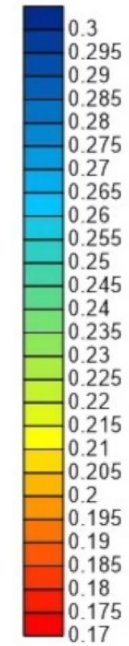
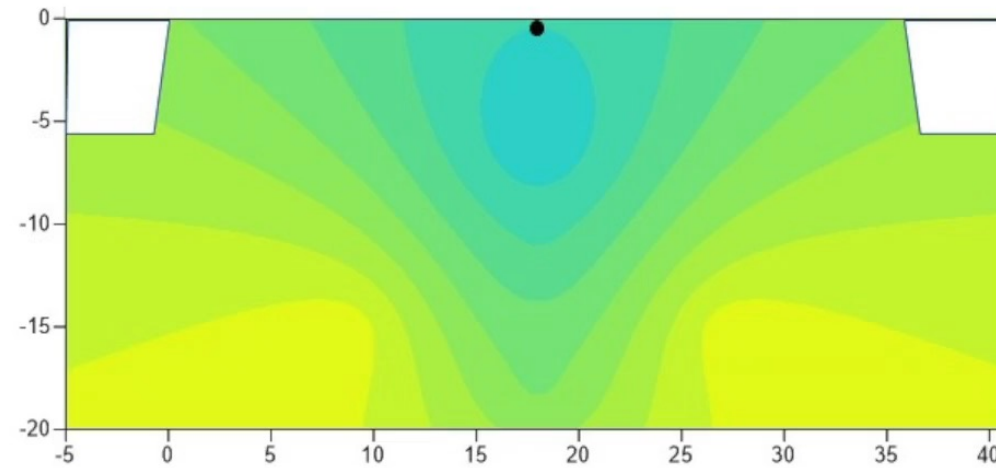
Soil water status Method



Soil water movement



12 PM



Irrigation Management

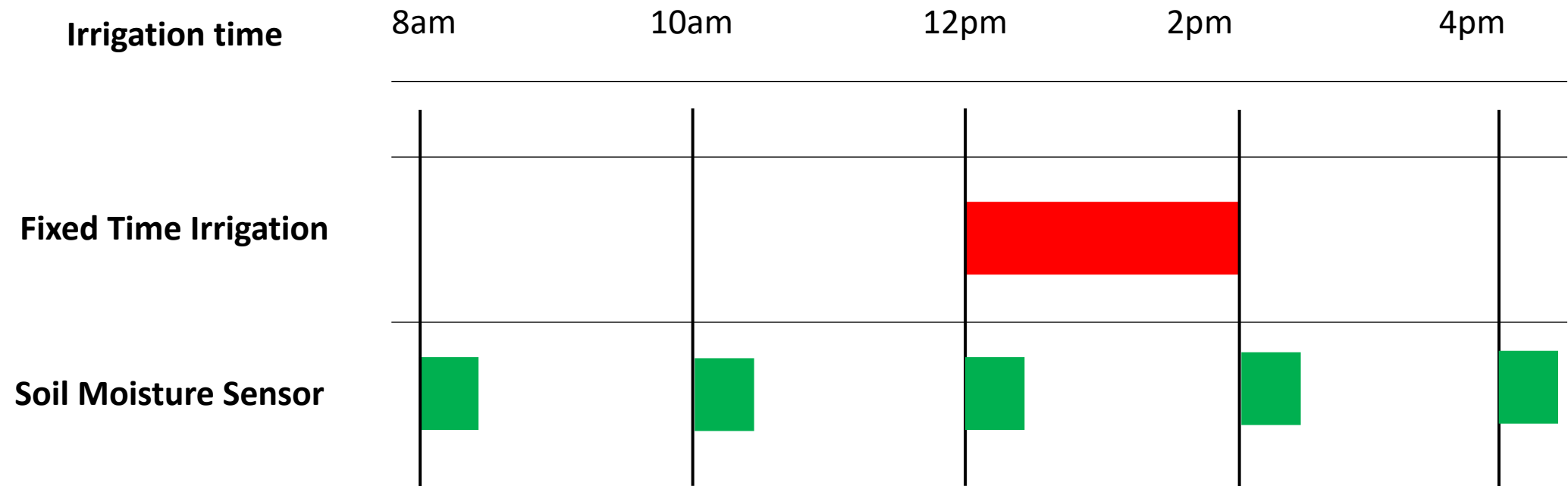
Two irri strategies for Zucchini

- **Fixed irrigation (SYS)**
 - 2 hours continuously;
 - Equivalent to 0.21 inches per day (5.5mm);

- **Controlled irrigation (SMS)**
 - 5 possible irrigation windows controlled;
 - 0.042 inches (1.1 mm) per irrigation event;
 - Controlled by soil moisture sensors set at soil FC;



Irrigation Management



Irrigation Management

Controlled Irrigation

Fixed Irrigation

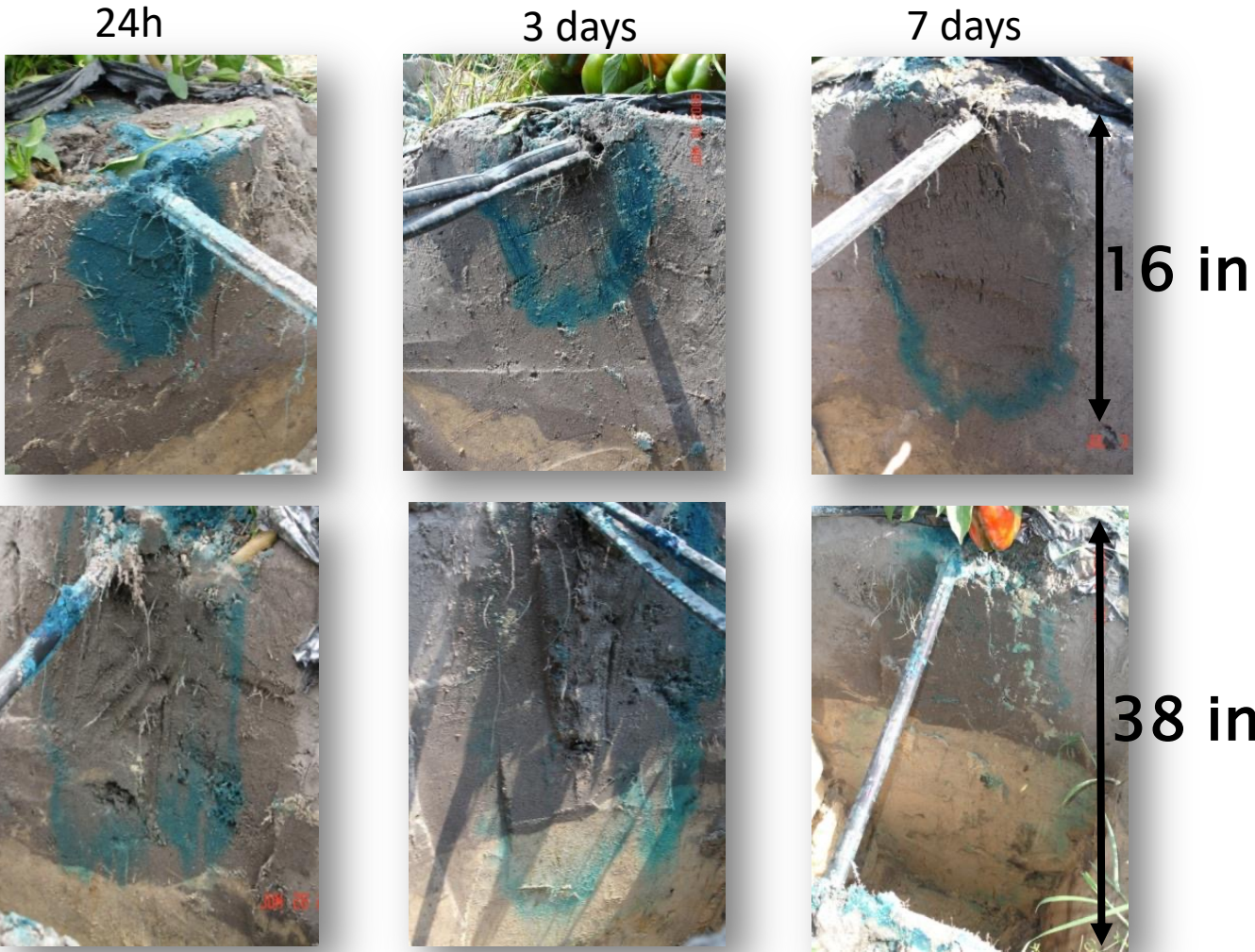
Controlled Irrigation



Irrigation Management

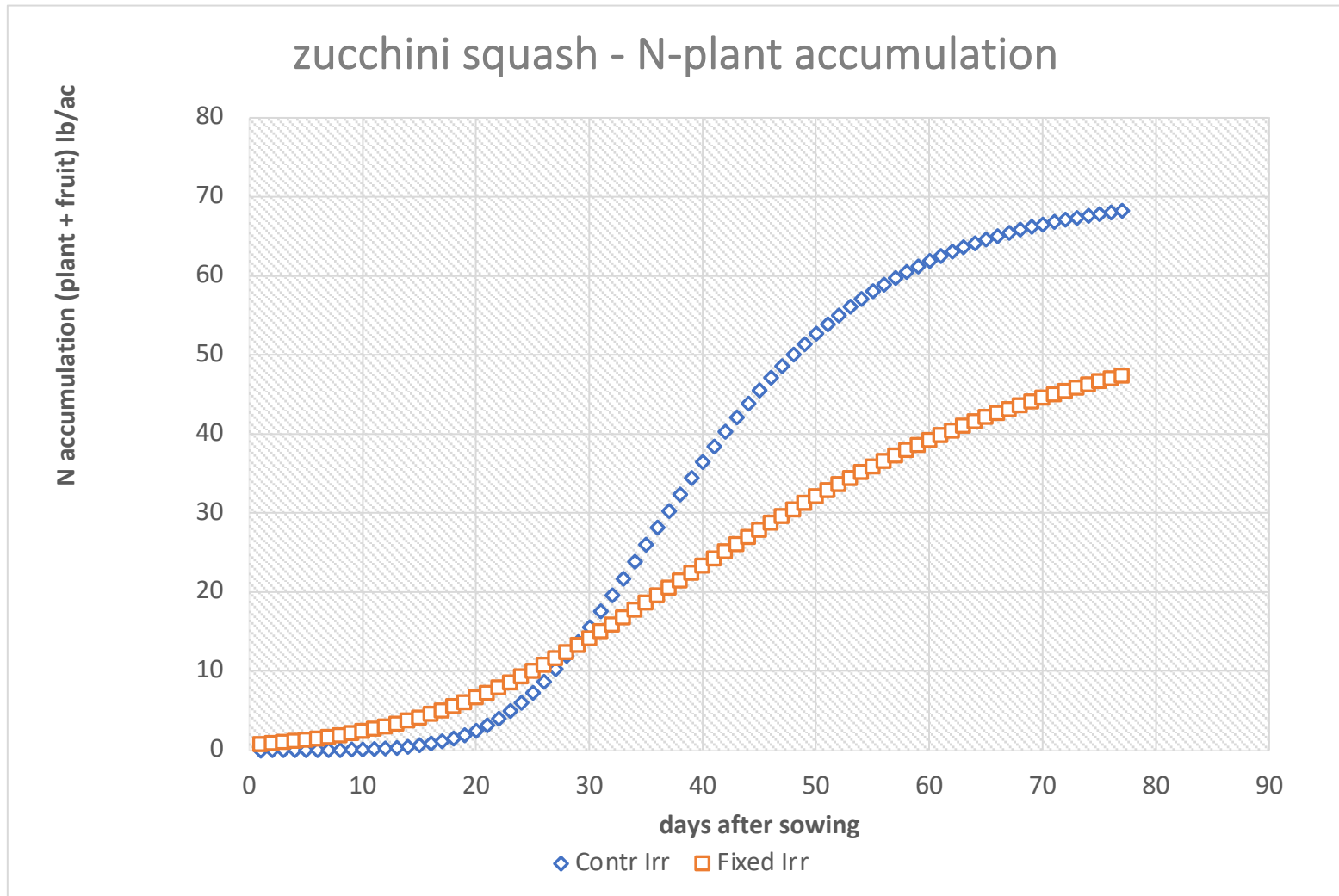
Soil sensor-based irrigation

Fixed time irrigation



Irrigation Management

N = 28 % +



Source: Zotarelli et al 2008. Scientia Horticulturae

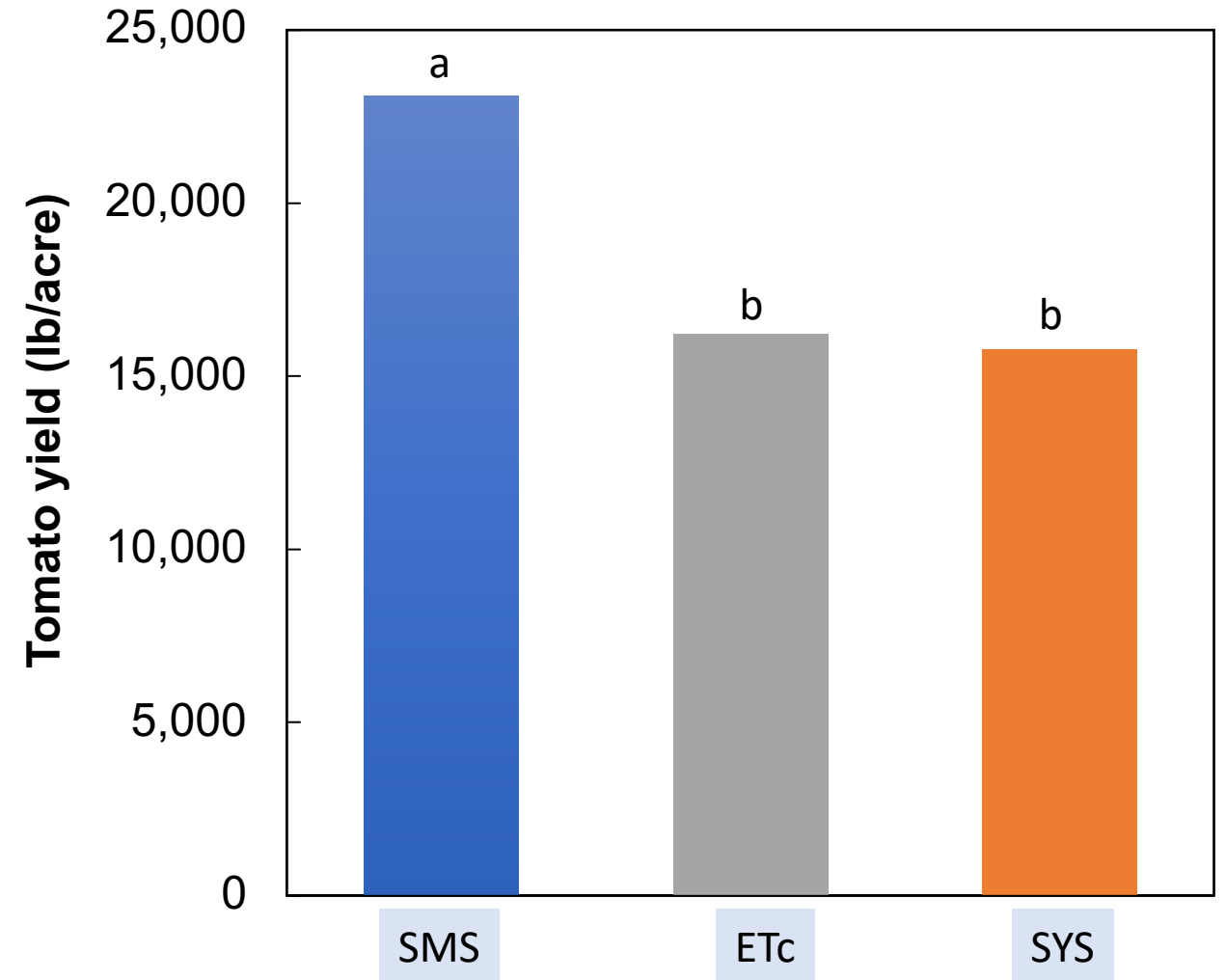
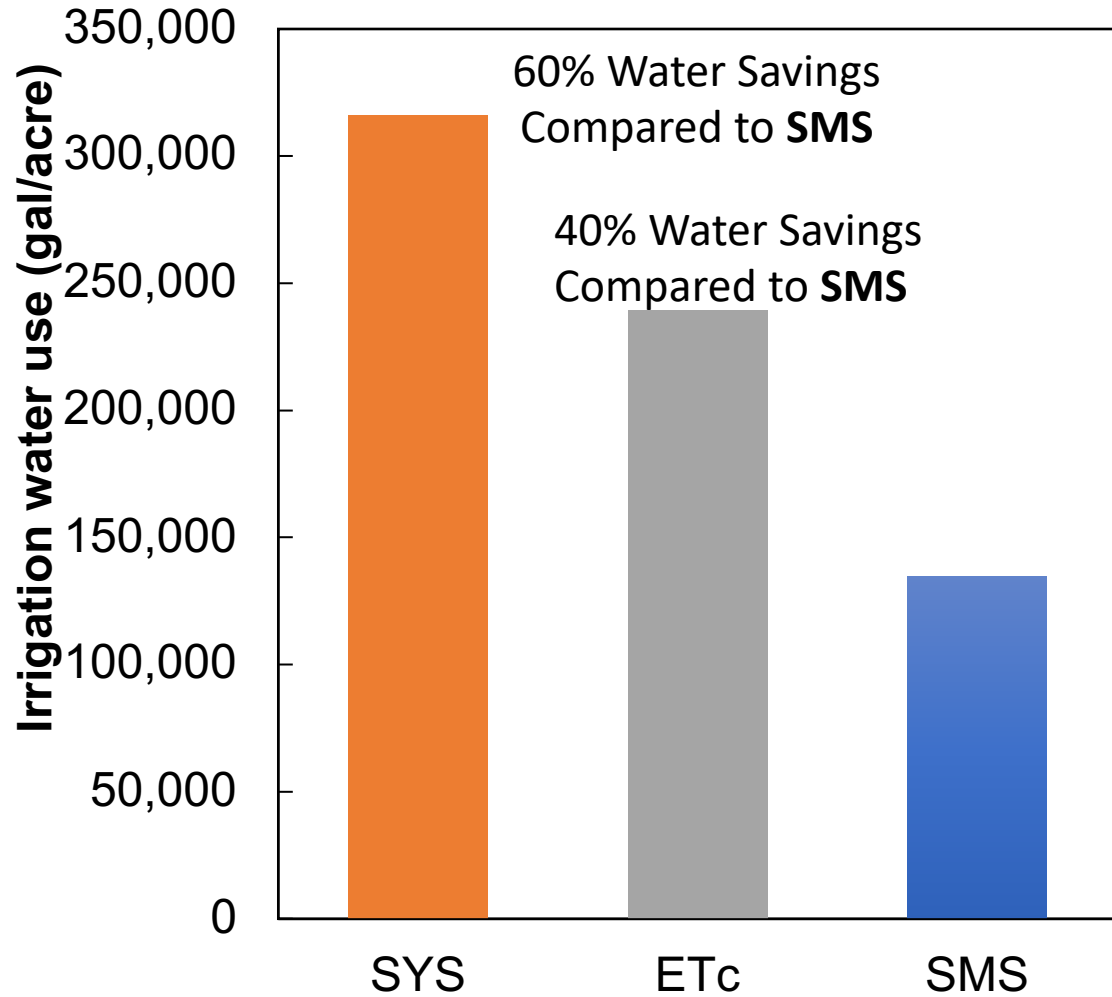
Irrigation management

Treatment	Yield
Controlled irrigation	24,649 A
Fixed irrigation of 2h/day	18,316 B

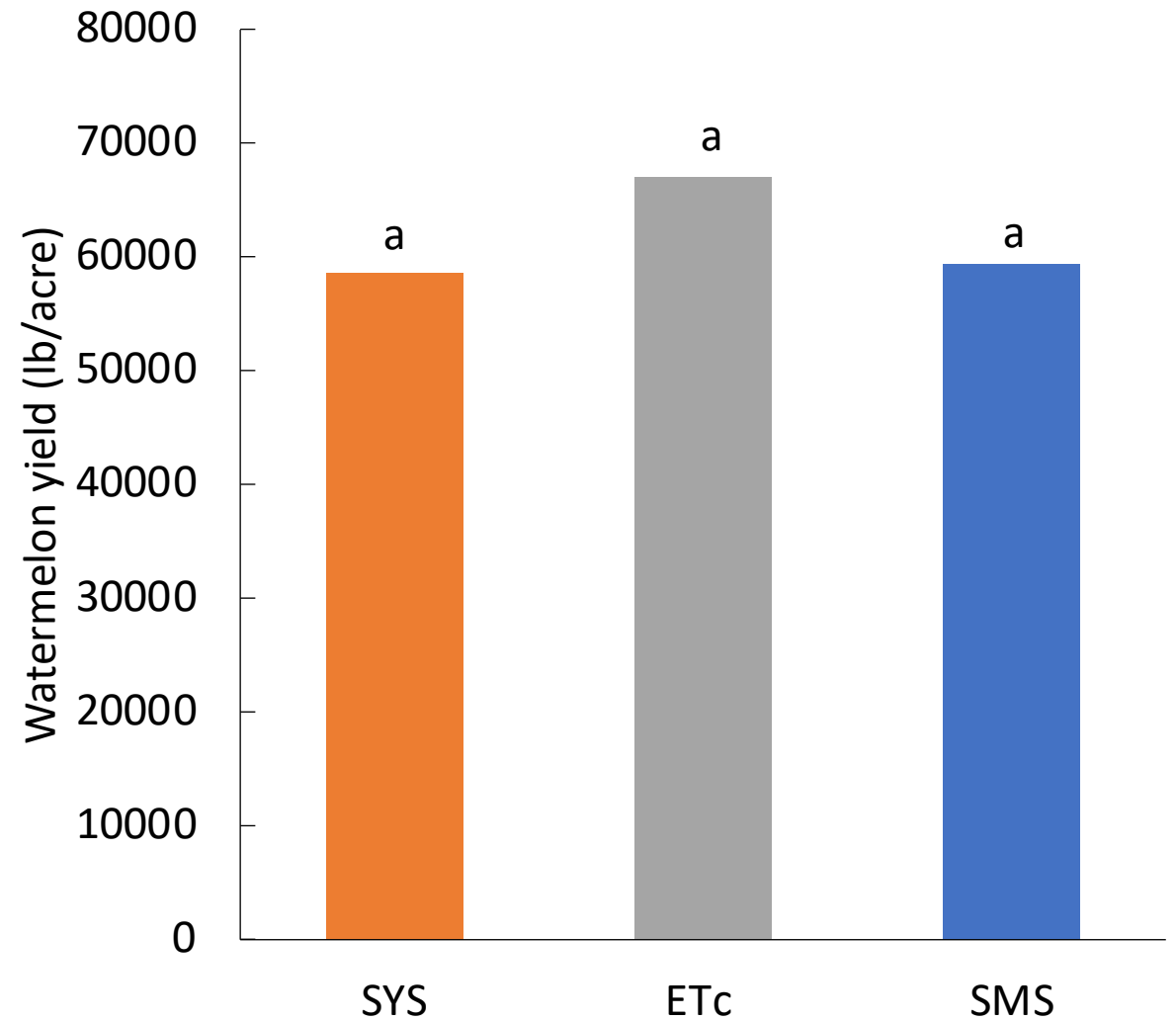
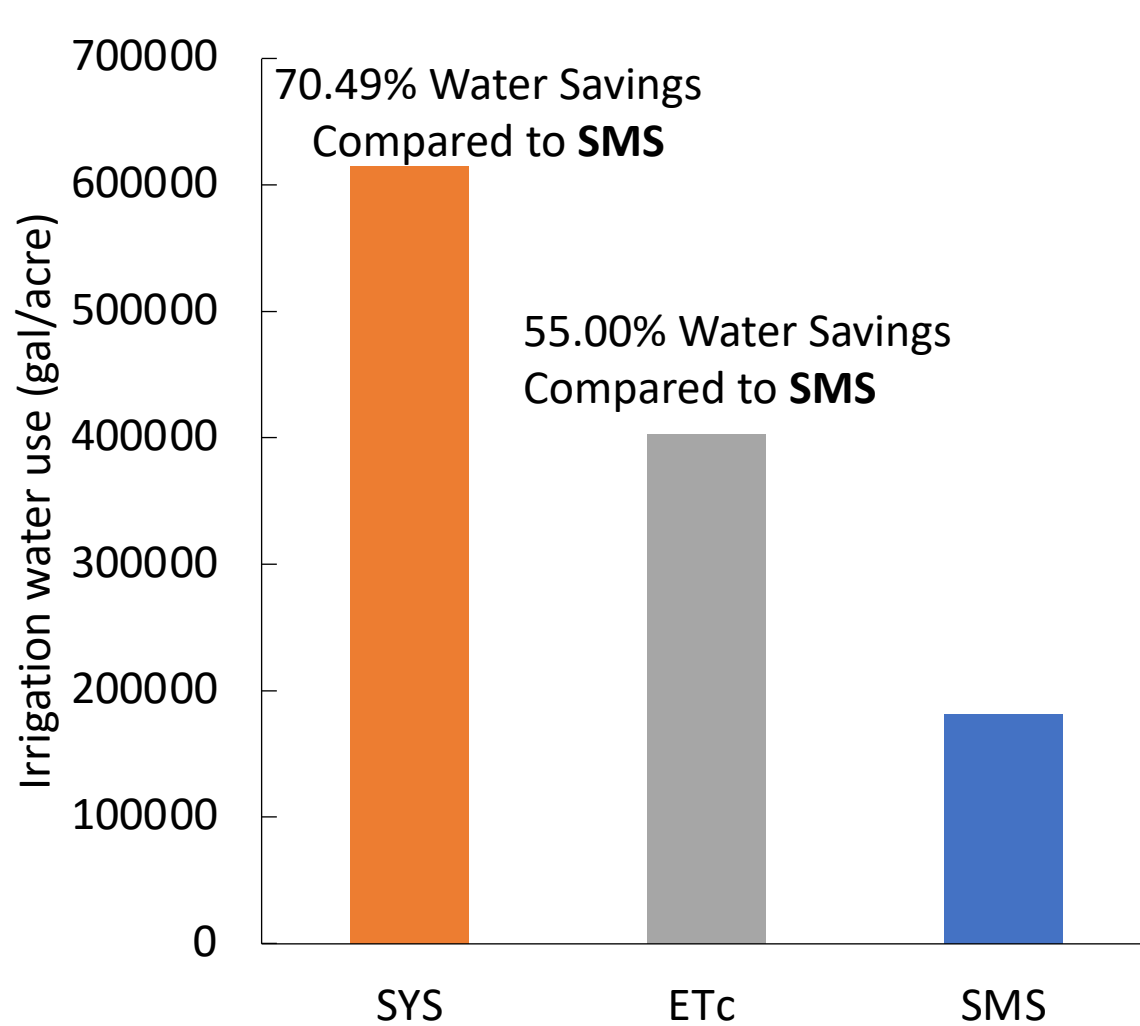


26 %

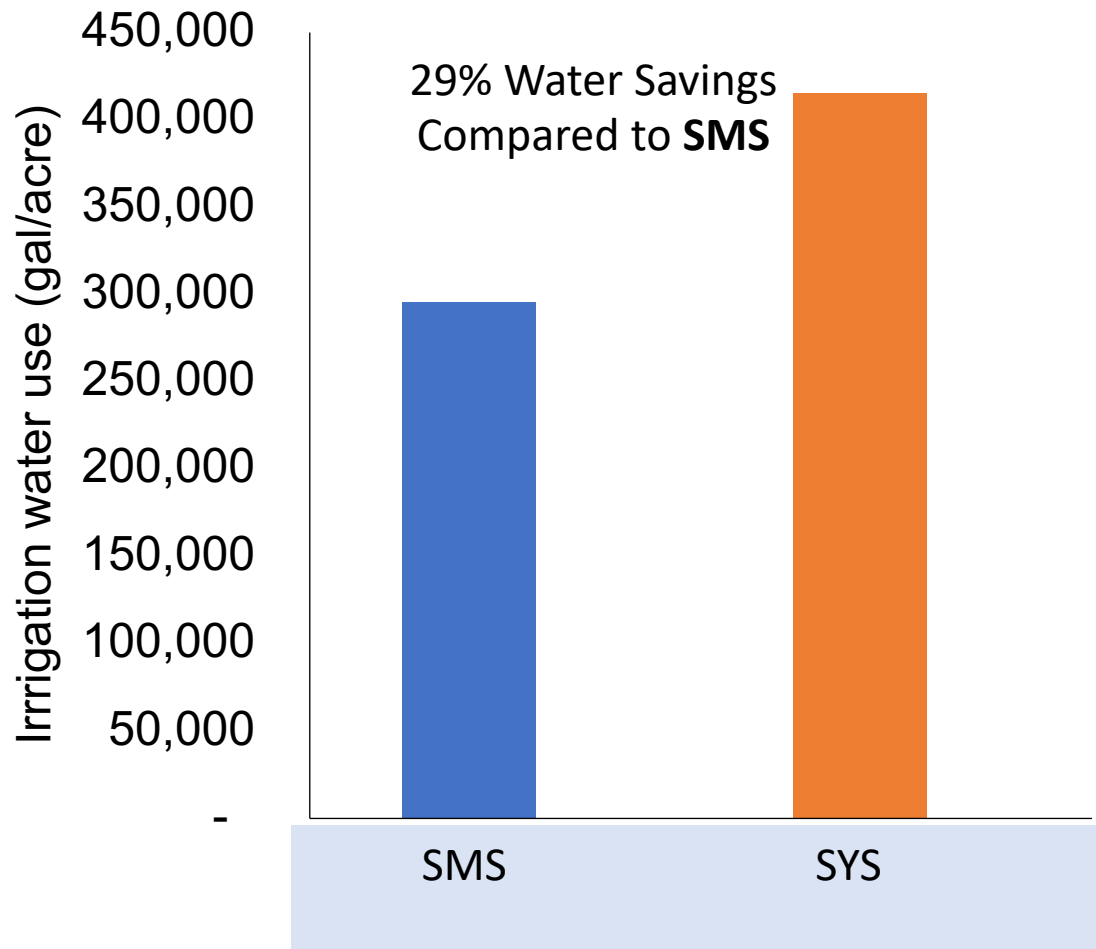
Impact on tomato



Impact on watermelon



Impact on bell pepper



Treatment	Yield (box/acre)
Soil moisture sensor	925 A
Systematic	835 B

Take home message

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Importance of irrigation strategy:

Reduction of irrigation water (Sustainability)

Reduction of fertilizers application (Savings)

Maintenance/increase of yields (Profit)

Tools for water scheduling are available



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Thank you