



# Using Soil Moisture Sensors to Schedule Irrigation

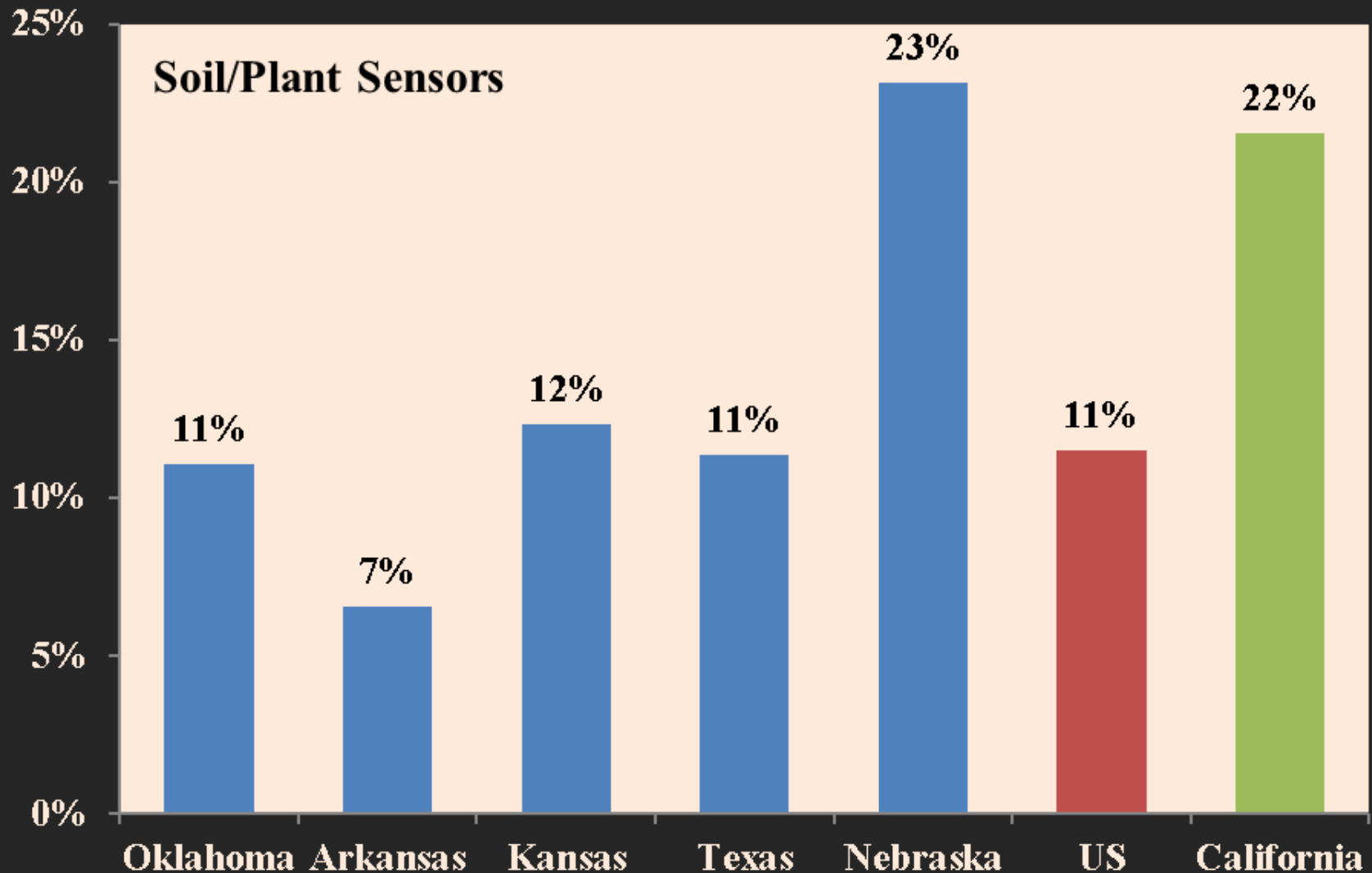
2017 Workshop at MOISST  
May 23-25, 2017; Stillwater, OK

**Saleh Taghvaeian**

**(405) 744-8395**

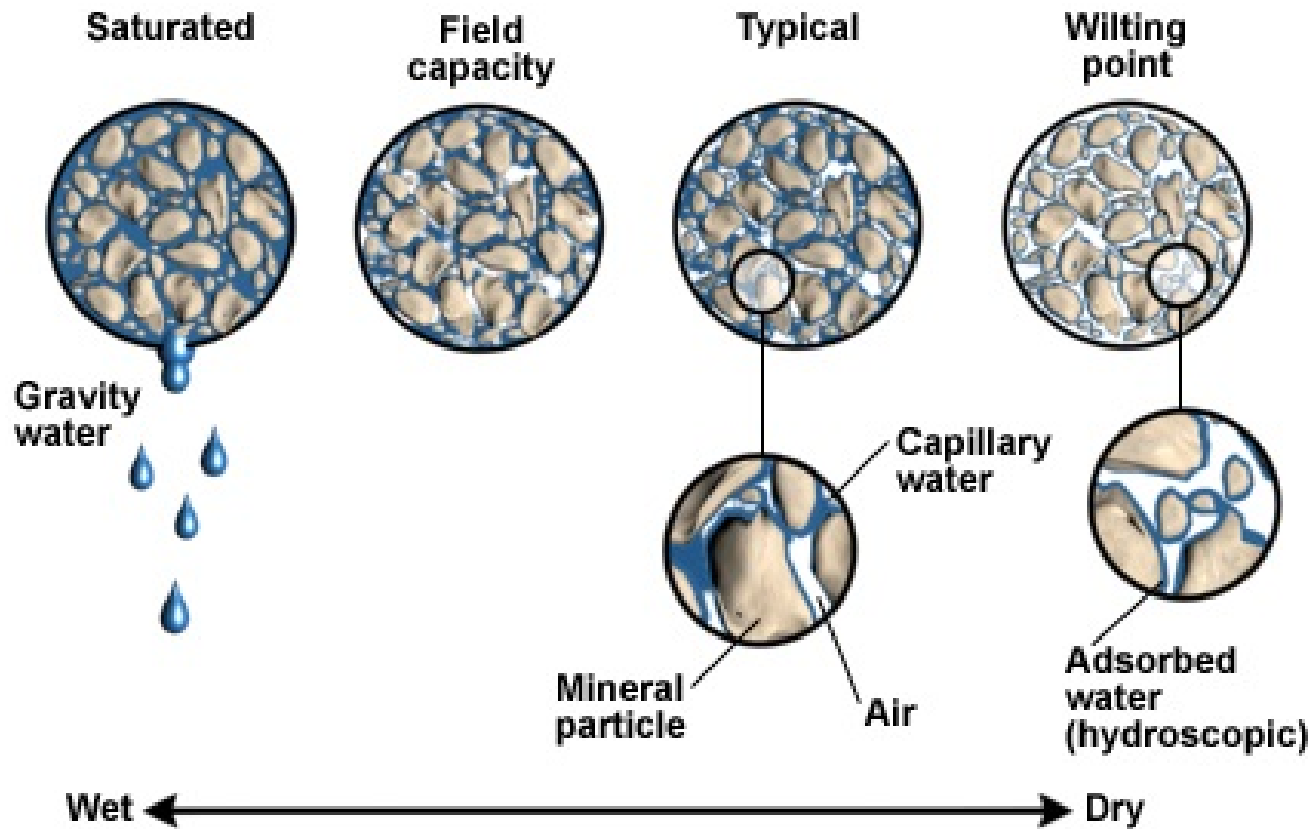
**[Saleh.taghvaeian@okstate.edu](mailto:Saleh.taghvaeian@okstate.edu)**

# Methods used for irrigate scheduling



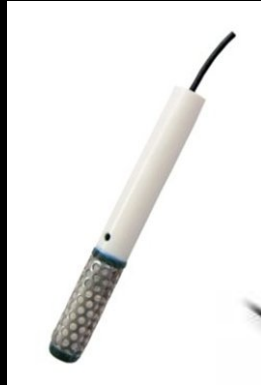
# Soil Moisture Limits

## Generalized Soil Moisture Conditions



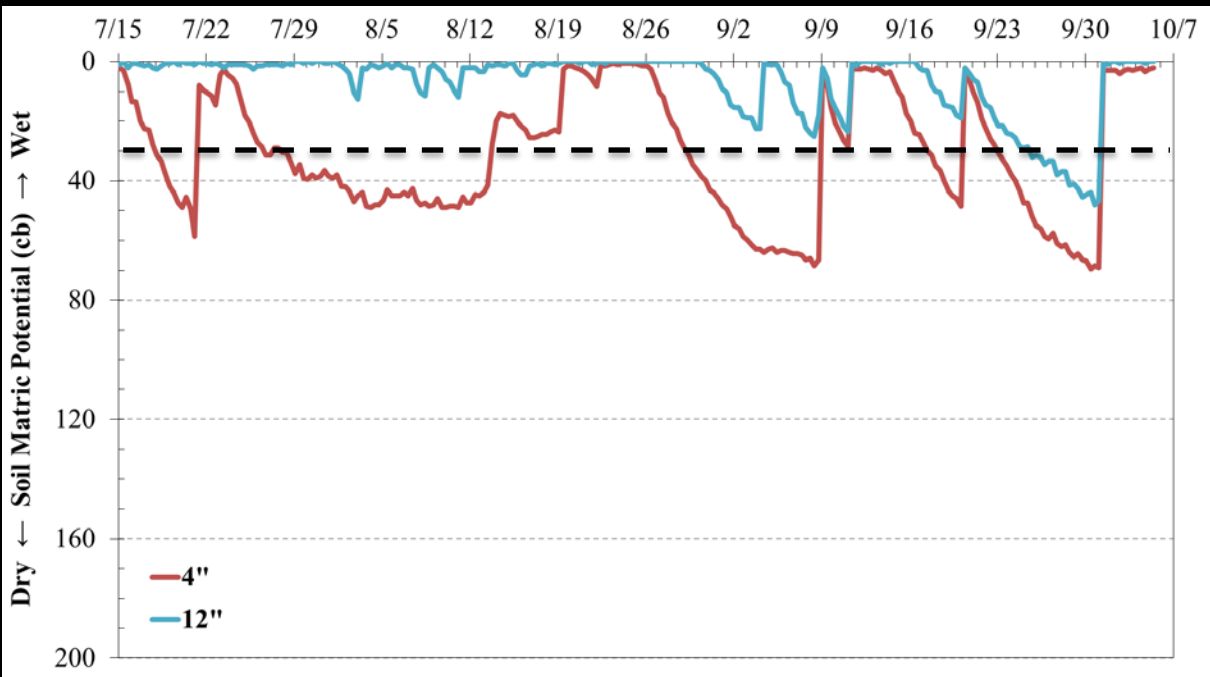
# Soil Moisture Sensors

- **Tensiometer**
- **Electrical resistance**
- **Heat dissipation**
- **EM-based:**
  - ✓ **Capacitance**
  - ✓ **Travel Time**



# Example

Vegetable production on city water





# Wireless data access



Can be accessed on any device at or near real-time

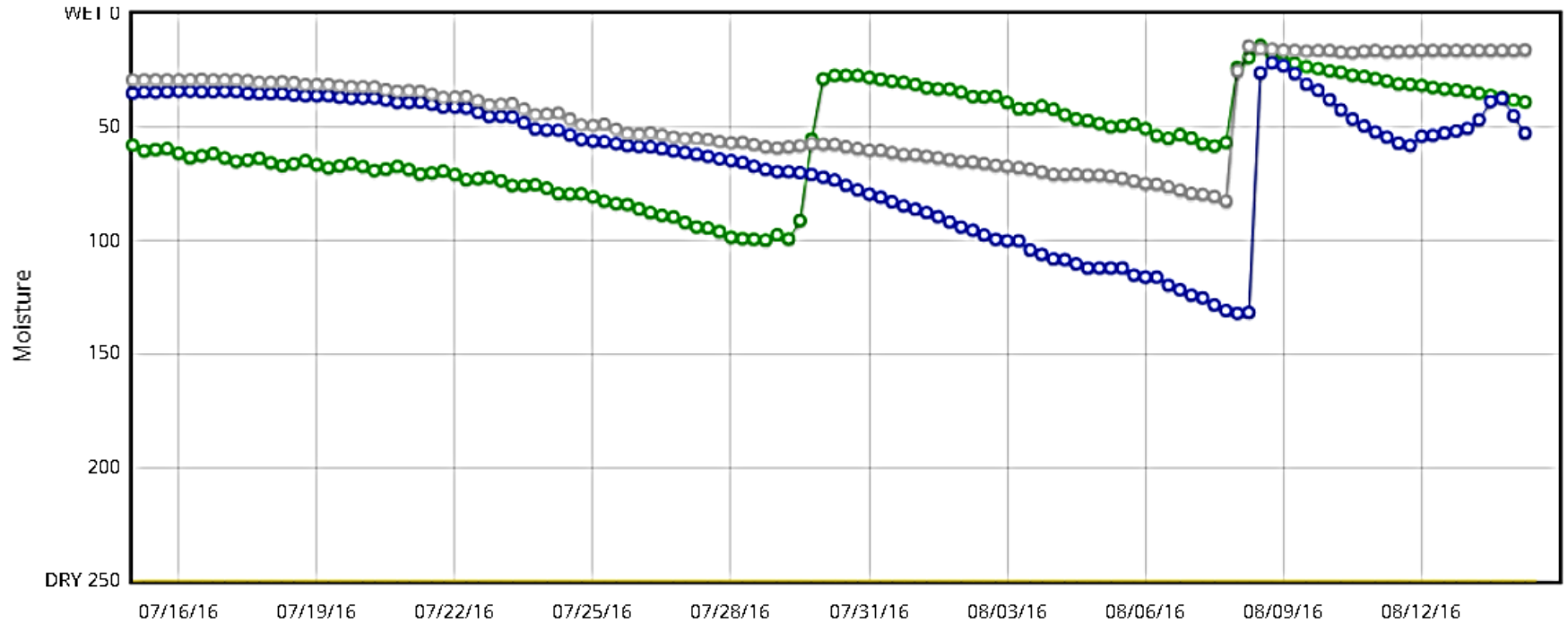


# Wireless data access



Base 975B Dryland

Irrigation Rainfall Moisture 1 Moisture 2 Moisture 3

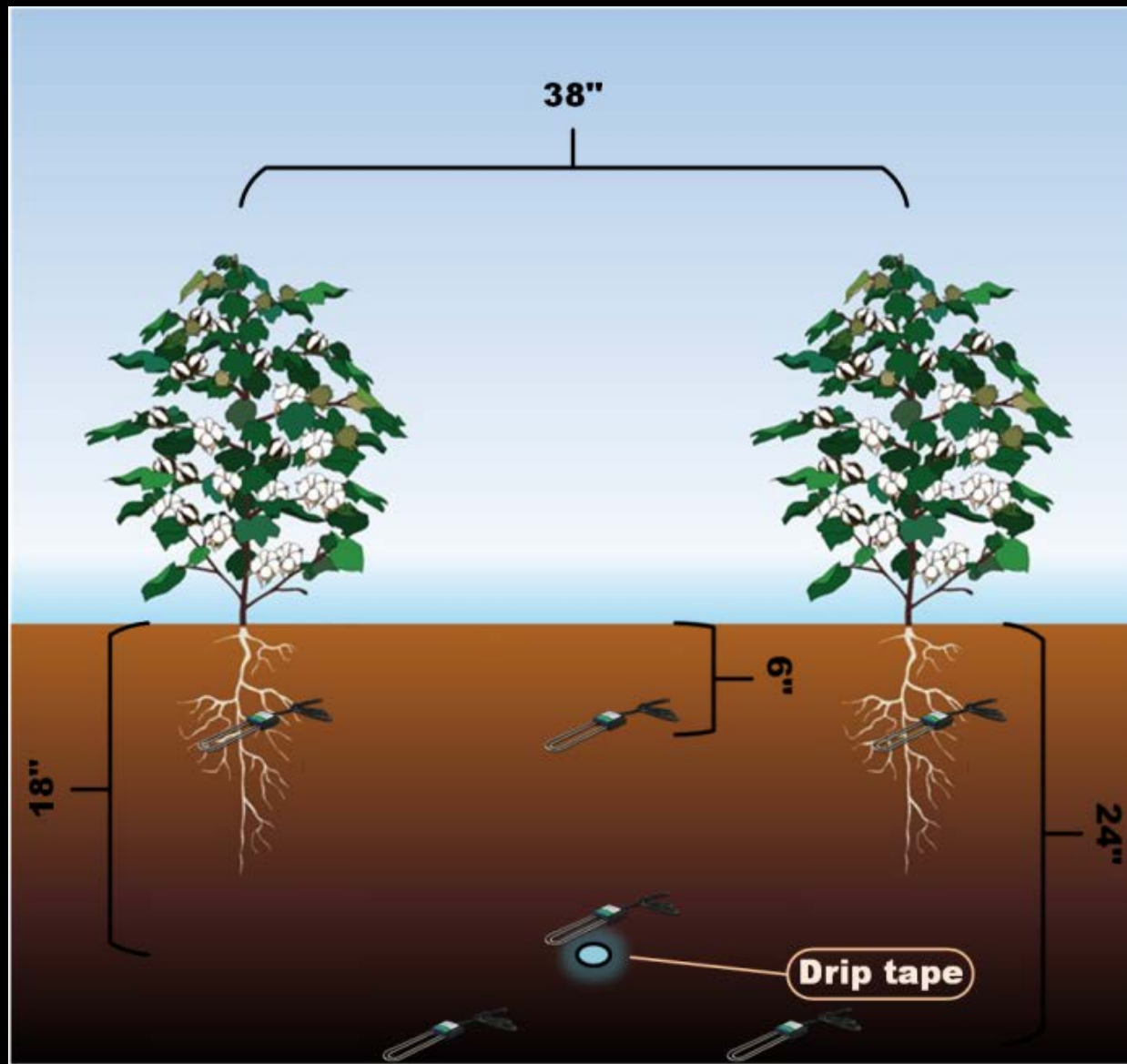


# Wireless data access

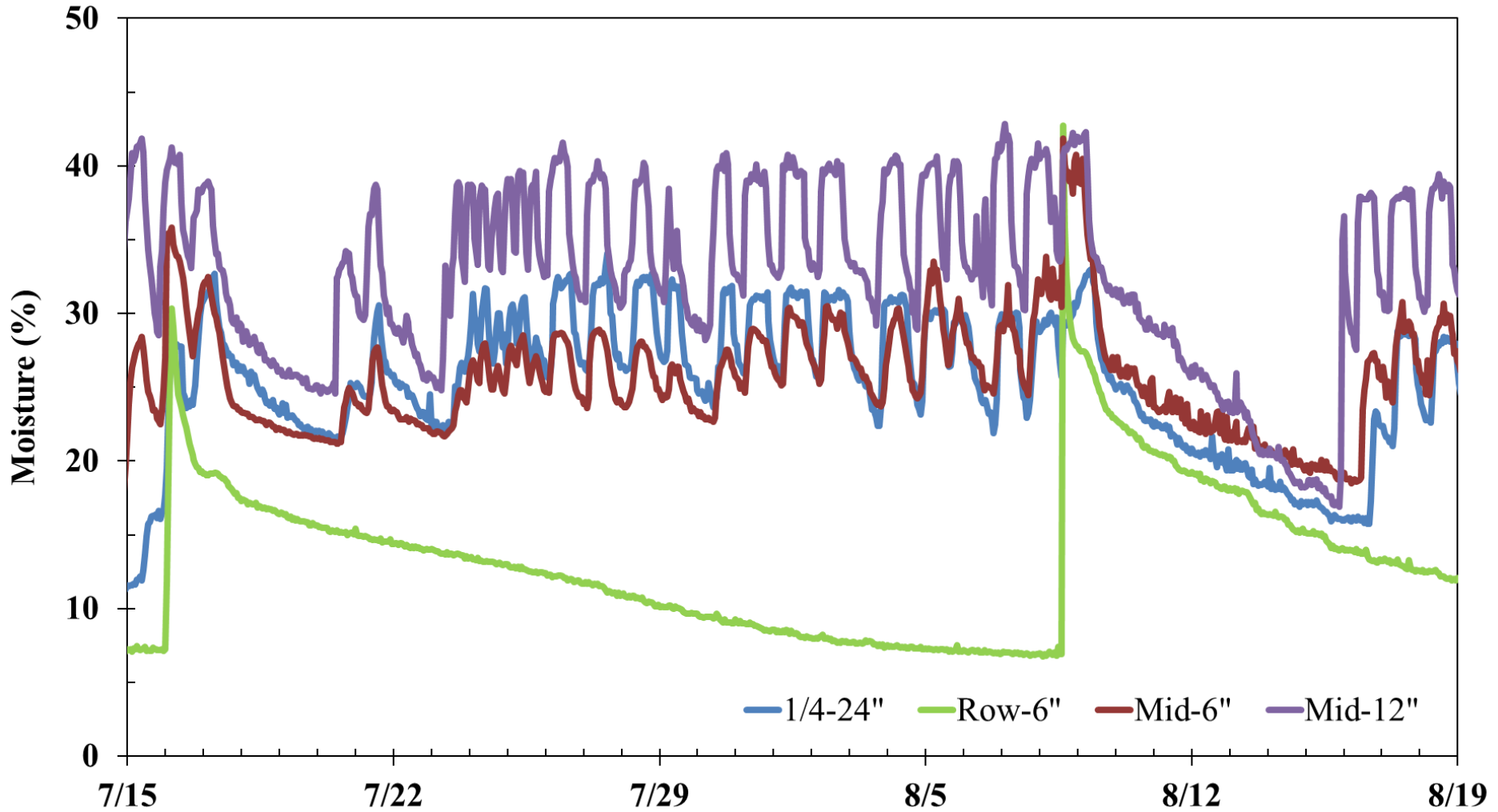




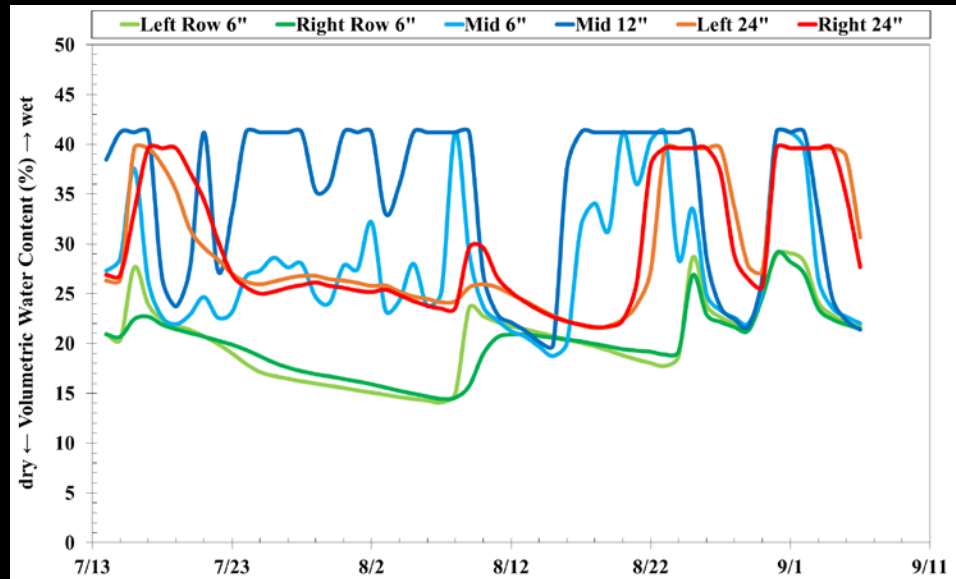
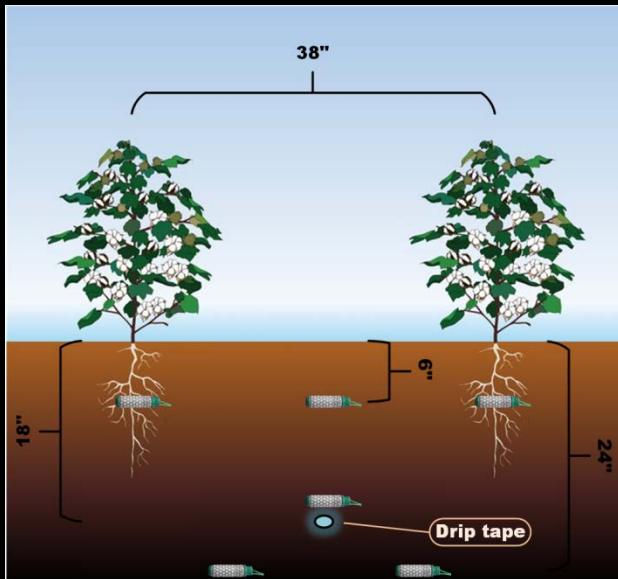
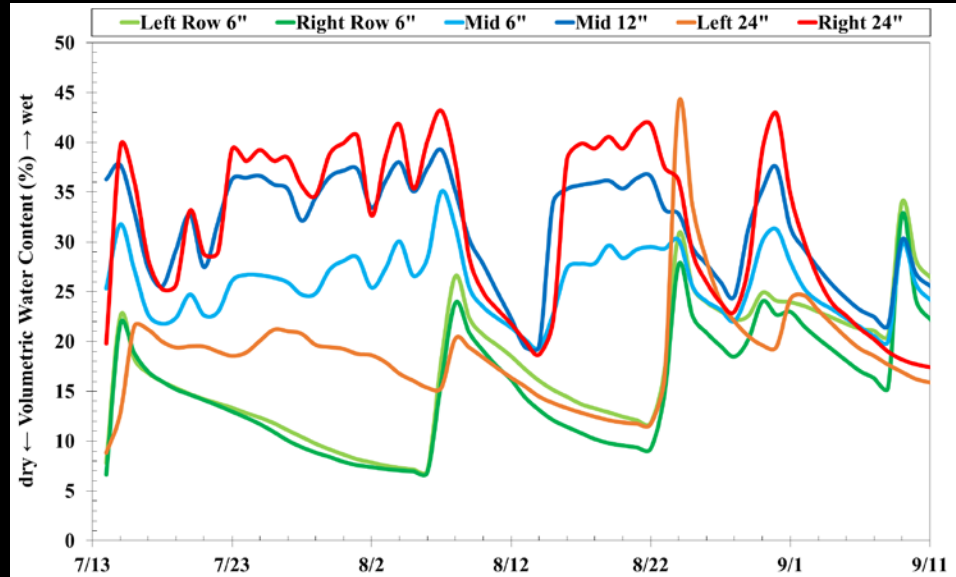
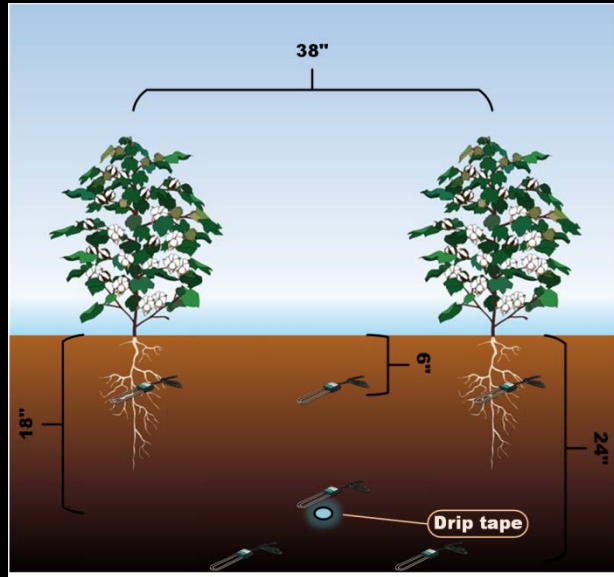
# Water movement under SDI



# Water movement under SDI



# Sensor Comparison





# Sensor Comparison

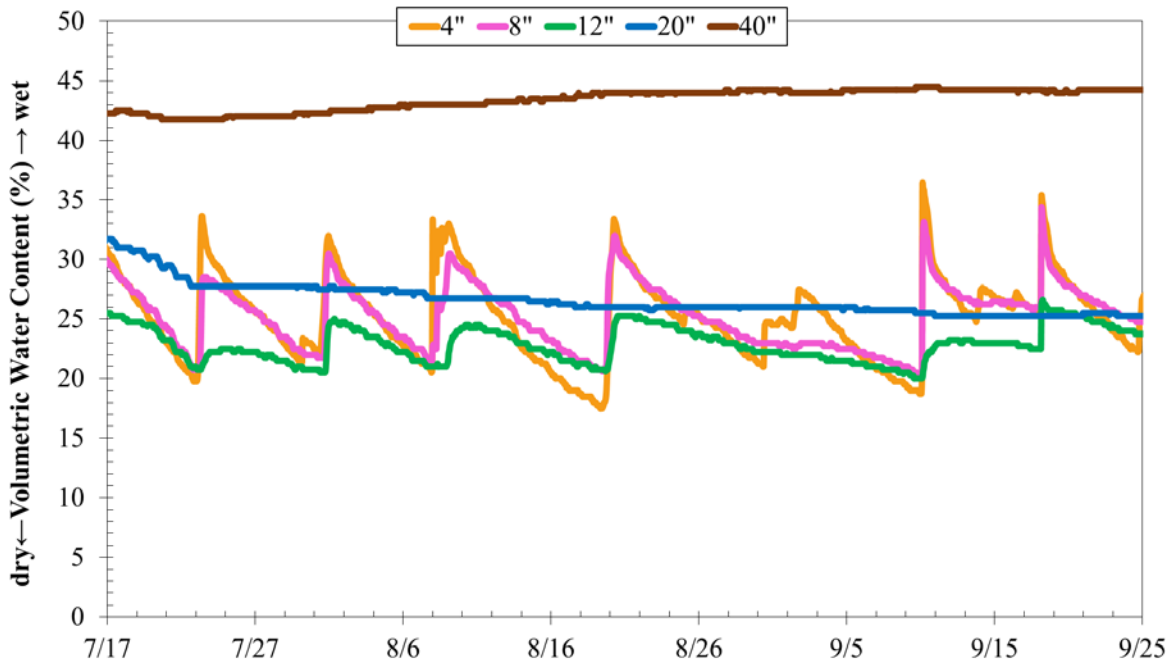
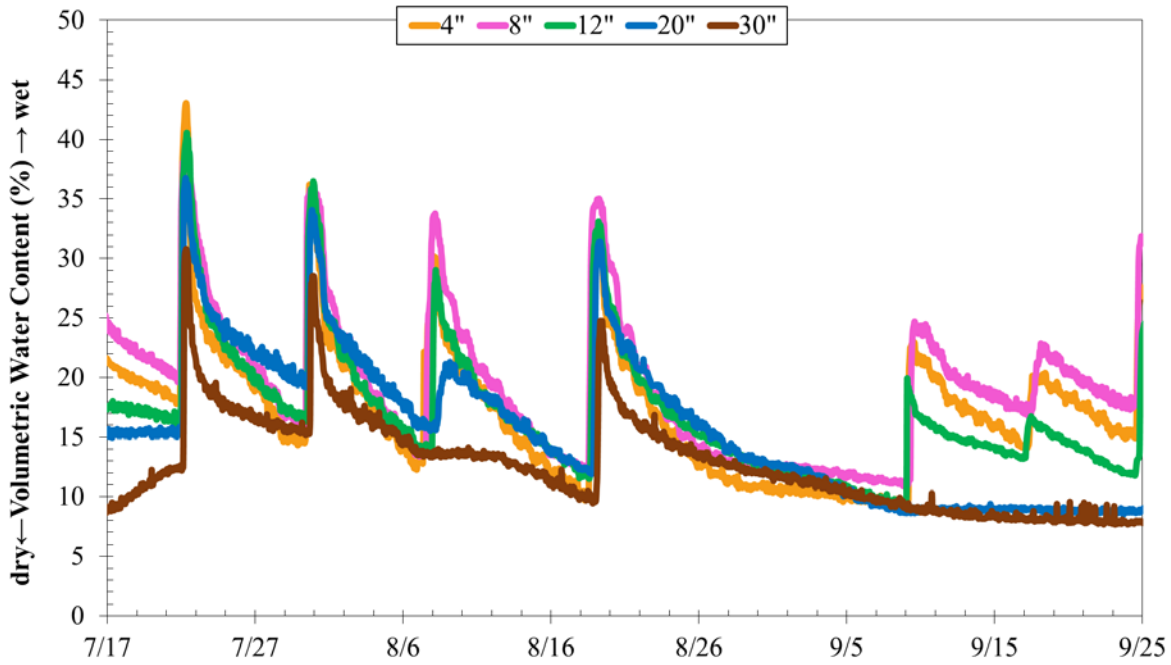






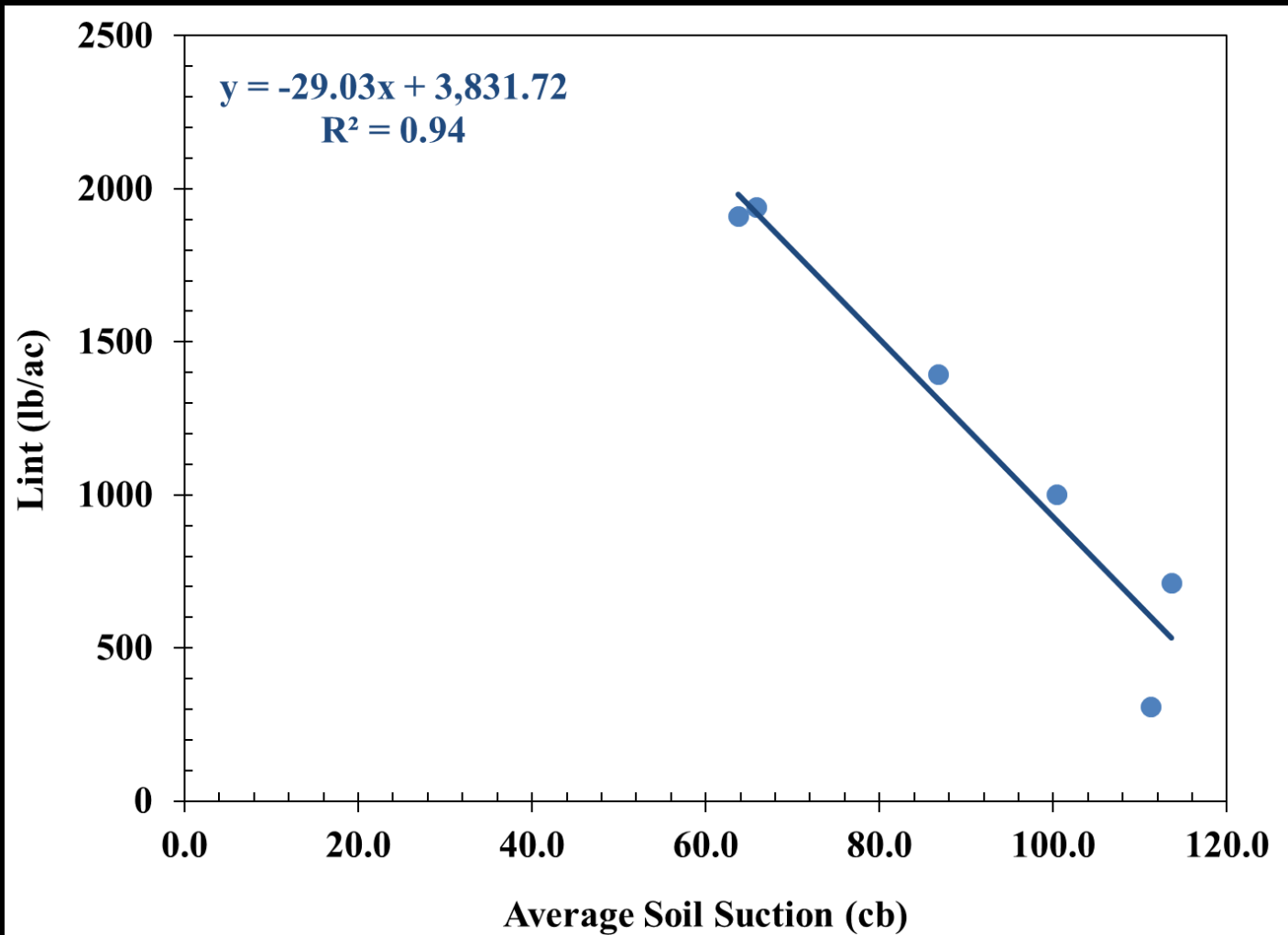
# Sensor Comparison

## Acclima vs. FieldConnect



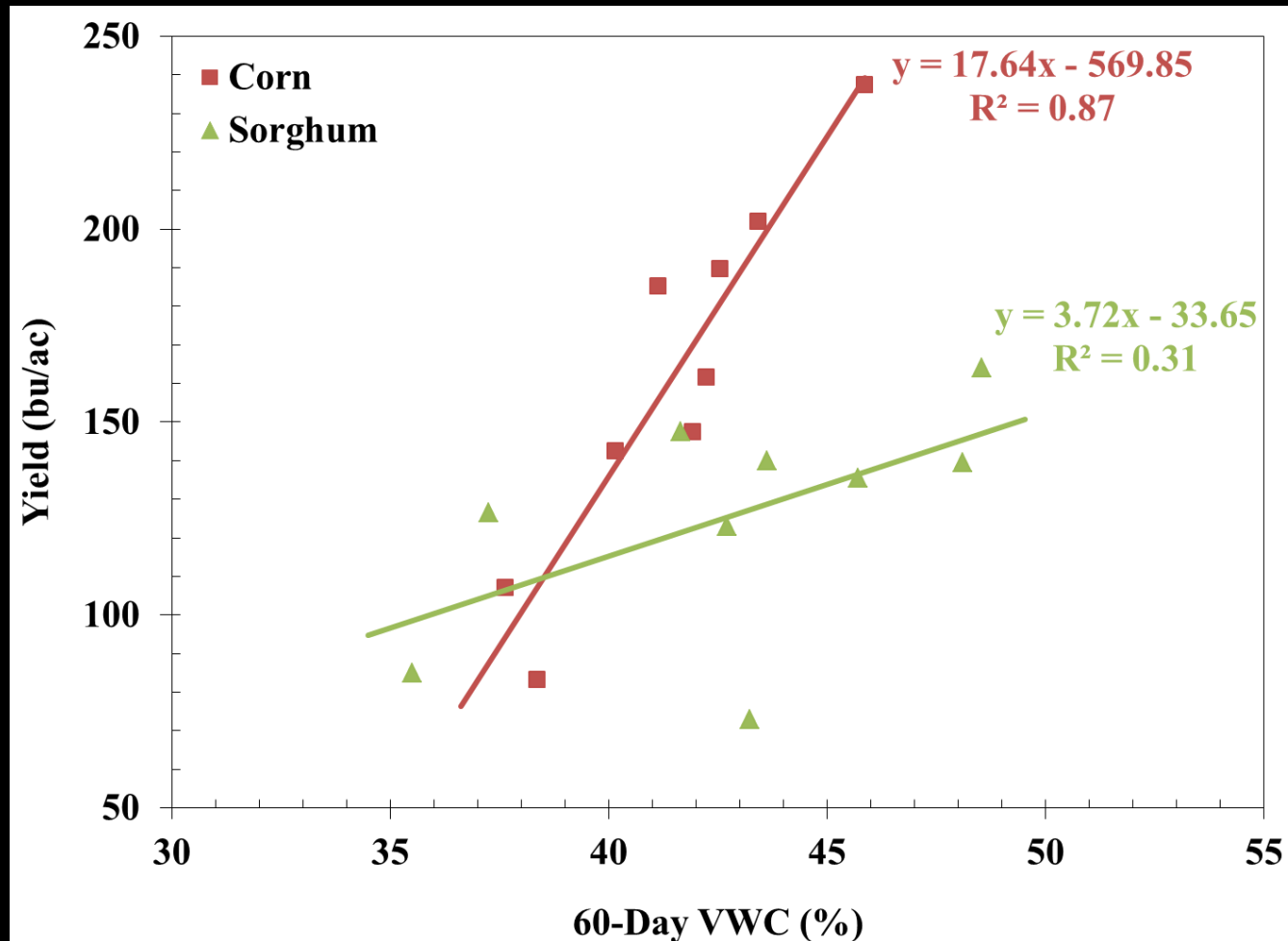
# Example

## Cotton under center pivot irrigation



# Example

## Corn and sorghum under SDI



# Promoting Sensor-based Technologies



- **NRCS Conservation Innovation Grant**
- **Multi-state extension project**



- **Goal: to promote the adoption and implementation of sensor-based technologies in irrigated agriculture to enhance irrigation management and land and water resources conservation (quality and quantity)**



# Soil moisture sensor field day



YouTube

Search

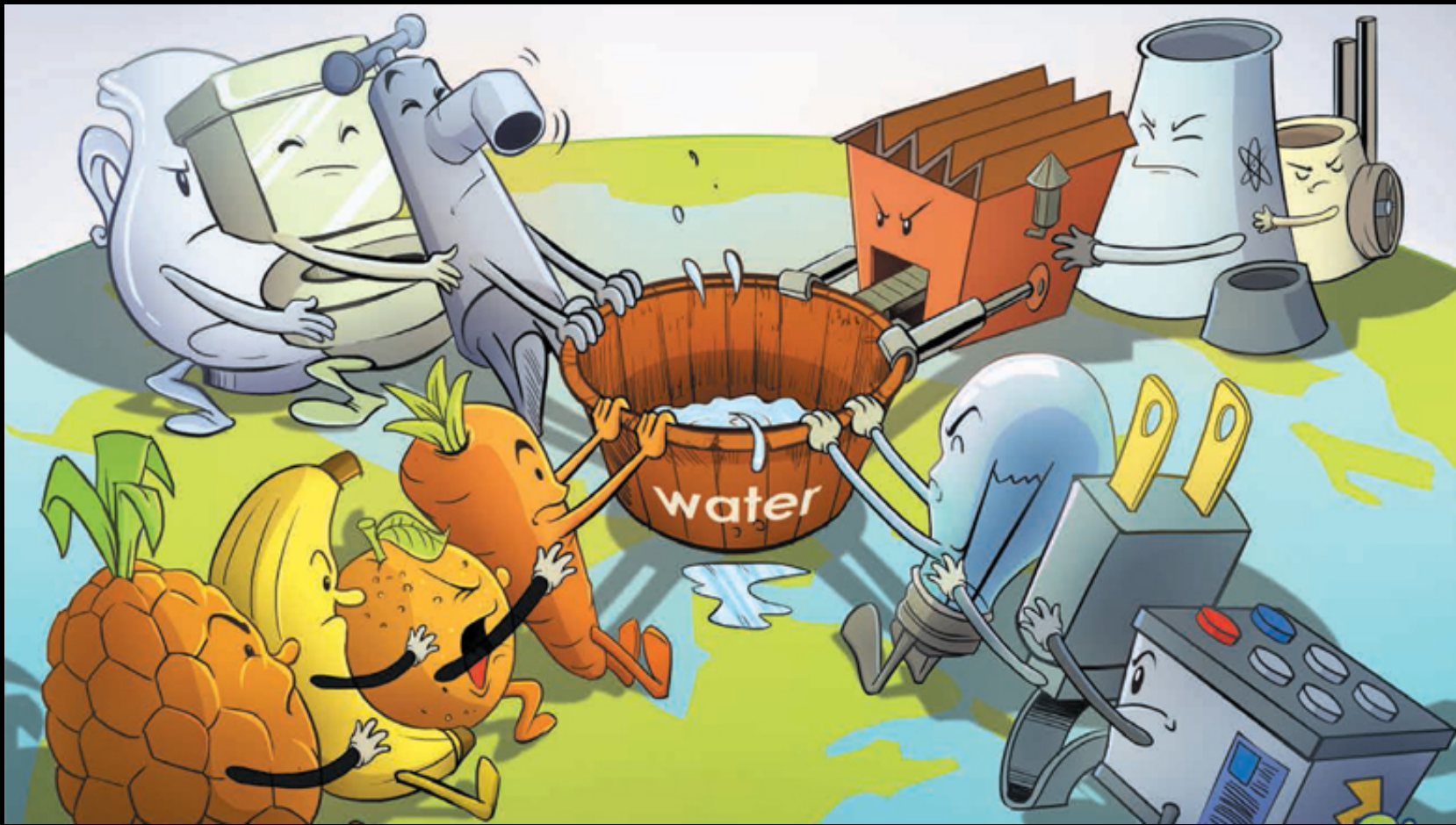
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Oklahoma State University

Soil Moisture Sensor Demonstration

Sensor demonstrations  
OkStateDASNR • 1/8 videos

- 1 Soil Moisture Sensor Demonstration OkStateDASNR
- 2 Acclima and Campbell Scientific Sensors OkStateDASNR
- 3 AquaCheck Sensors OkStateDASNR
- 4 AquaSpy Sensors OkStateDASNR

[https://youtu.be/Dyn3fYRx36Q?list=PLBX\\_xiiFGiPLgKafjQW\\_I2lGIWRpC9gHD](https://youtu.be/Dyn3fYRx36Q?list=PLBX_xiiFGiPLgKafjQW_I2lGIWRpC9gHD)



Source: World Bank

# Questions

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