AGRICULTURAL WATER MANAGEMENT IMPROVEMENT AT RUSSELL RANCH

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Irrigated Agriculture Challenges

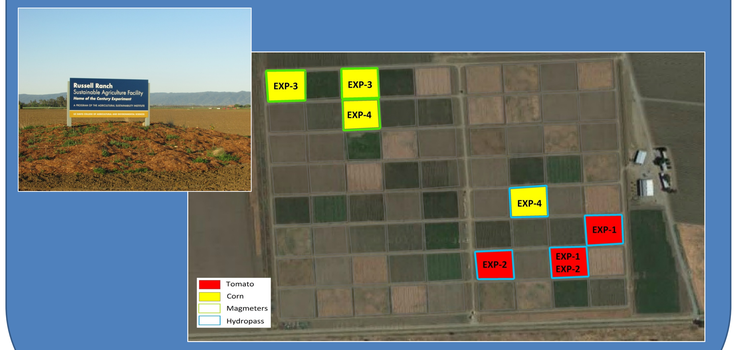
- ✓ Growing world population
  - Increased food demand
  - Shortage of arable land, water resources…
- ✓ Quality and Food Safety
  - Production intensification
  - Sustainability and water management
- ✓ Climate Change
  - Adverse weather conditions which reduce yields
  - The need of reduction on GHG emissions

Objectives

To improve agricultural water management at Russell Ranch Sustainable Agriculture Facility towards more resource-efficient and sustainable practices. This will be pursued through integration of innovative technologies, analytical tools, and information related to soil-plant-water relations and crop water use.

Study area

Russell Ranch Sustainable Agriculture Facility
(Seven 1 acre plots)



Methods

Seven experimental plots with different conditions will be instrumented with a suite of electronic water meters, smart hydraulic valves, soil moisture monitoring devices and equipment for ET measurement that will be used to evaluate in 4 experiment how precision irrigation practices could improve water management and use.

Crops:


Tomato


Corn

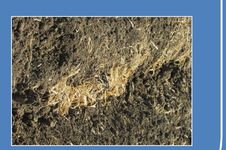
Irrigation Methods:


SDI

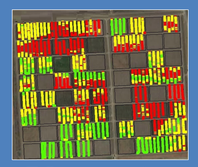

FI

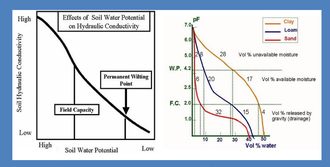
Farming practices:


Conventional


Organic

Soil Study:


EC mapping



Soil Water Charcs.

Flow meters:


Hydropass


Magmeters

Soil Moisture Devises:


Sensor


Gateway

ET Equipment:


Tule Tech.


CIMIS

Expected outcomes

- ✓ What floor management (cover crop vs. no cover crop) with SDI on tomato (Exp. 1) and corn (Exp. 3) provide better water use efficiency under technology-aided irrigation management.
- ✓ What irrigation method (FI vs. SDI) on tomato (Exp. 2) and corn (Exp. 4) provide better water use efficiency under technology-aided irrigation management.
- ✓ A geodatabase integrating historical and new data collection will be developing in order to enable user-friendly and structured data storage, access and retrieval, processing and analysis