The California State University
Agricultural Research Institute
FRESNO STATE California Water Institute Lyles College of Engineering
CALIFORNIA DEPARTMENT OF WATER RESOURCES
UCLA Samueli School of Engineering
S&A Stringfellow & Associates
Agua DB water to drink
Jordan Agricultural Research Center

Production of Agricultural Water and Nutrients from Saline Water Sources

Overarching Goal: **Sustainable water and nutrient management in the Southwestern US by efficient use and reuse of local water and nutrient resources.**

Objectives:

- Utilize nontraditional water sources (brackish waters) where fresh water sources are limited, non-sustainable, or nonexistent
- Develop a water treatment system that combines advanced membrane and ion exchange processing to:
  - Extract both phytotoxic constituents and nutrients from brackish water, minimizing waste.
  - Produce nutrient products for fertigation systems and water for irrigation and other uses.
  - Reduce dependence on imported nutrients, thereby reducing energy use and greenhouse gas emissions.
  - Reduce salinity in water and soil.

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- Lyles College of Engineering
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Lead Campus and Personnel: Fresno State

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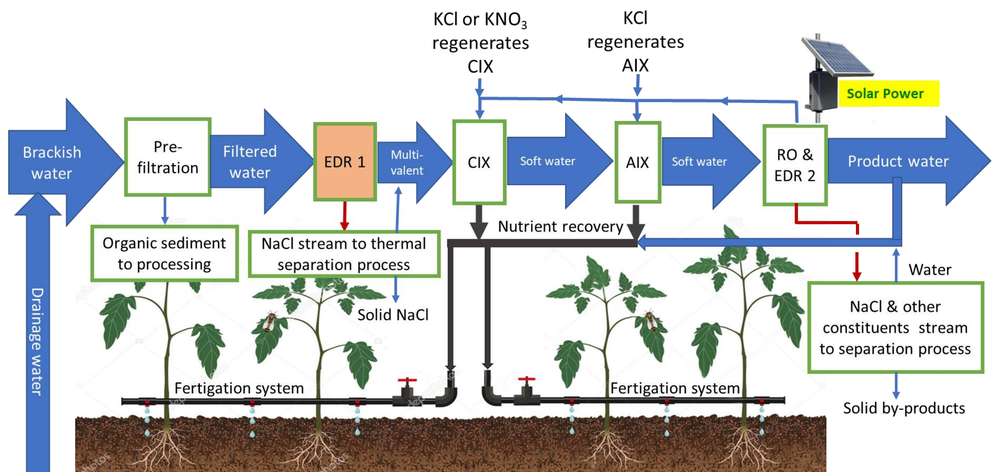
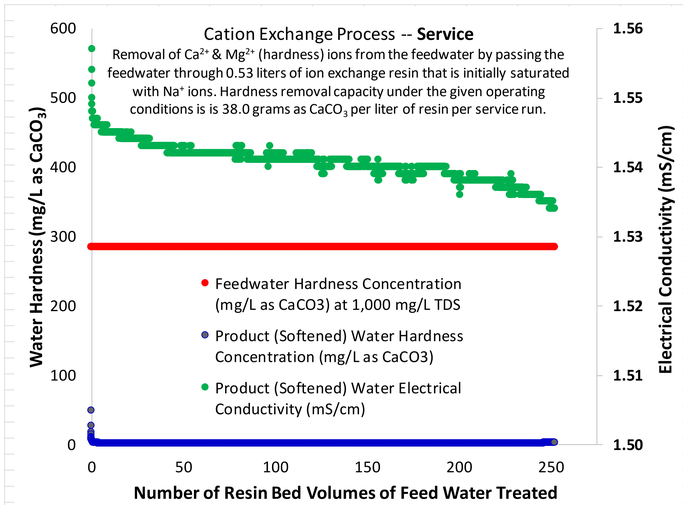
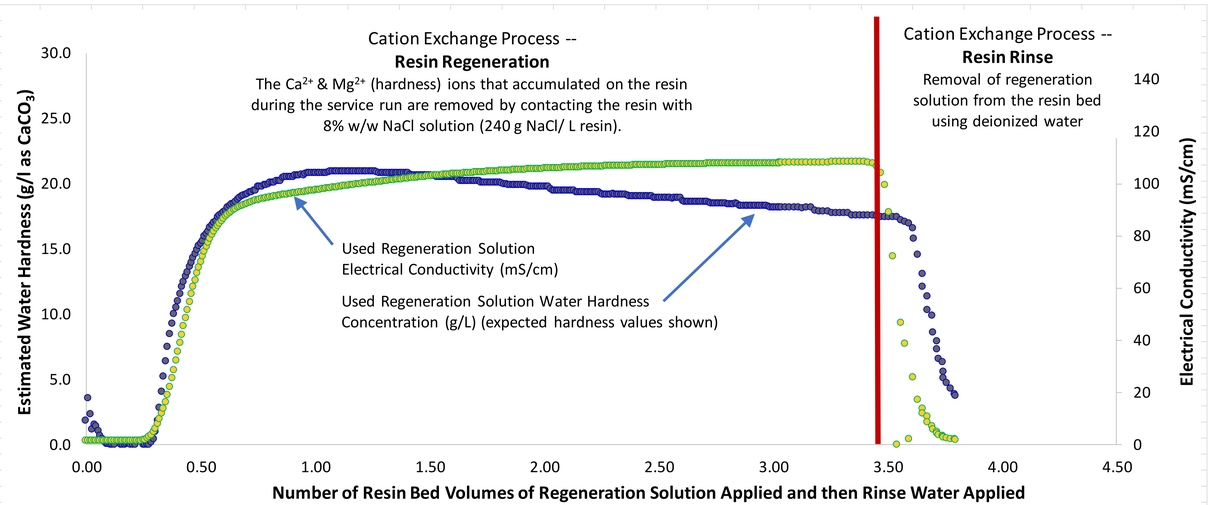
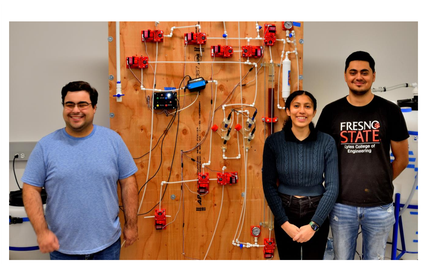


Schematic process flow diagram showing innovative technology for producing irrigation water and nutrients from saline water sources. EDR: Electrodialysis Reversal; CIX: Cation Exchange; Aix: Anion Exchange; RO: Reverse Osmosis.







Student research assistants standing next to a prototype automated cation exchange (CIX) test system.