

“Adaptation future 2016: practices and solutions”

Session PR 3.2: Implementing climate resilient water management projects to increase adaptive capacities, food security & avoid conflict over resources: Examples from Thailand, India, the Netherlands and Spain

Rotterdam (Netherland). 10-13 May 2016

Fresh water supply and water use in the Mediterranean: the Spanish approach

José Miguel de Paz

Investigador del Centro de Desarrollo de la Agricultura Sostenible

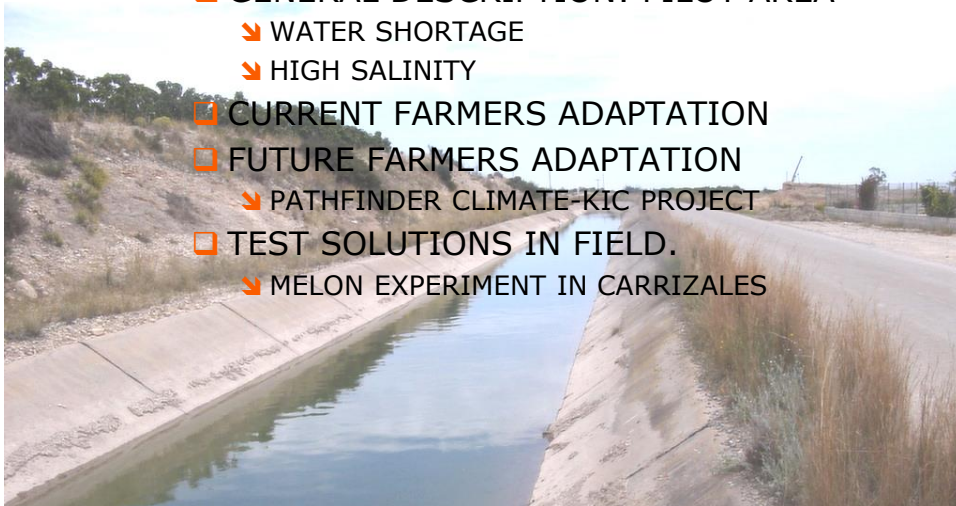
E-mail: depaz_jos@gva.es

<http://www.ivia.gva.es/centro-de-desarrollo-de-agricultura-sostenible>

Instituto Valenciano de Investigaciones Agrarias (IVIA)

OUTLINE

- ❑ GENERAL DESCRIPTION: PILOT AREA
 - WATER SHORTAGE
 - HIGH SALINITY
- ❑ CURRENT FARMERS ADAPTATION
- ❑ FUTURE FARMERS ADAPTATION
 - PATHFINDER CLIMATE-KIC PROJECT
- ❑ TEST SOLUTIONS IN FIELD.
 - MELON EXPERIMENT IN CARRIZALES



GENERAL DESCRIPTION: LOCATION PILOT AREA

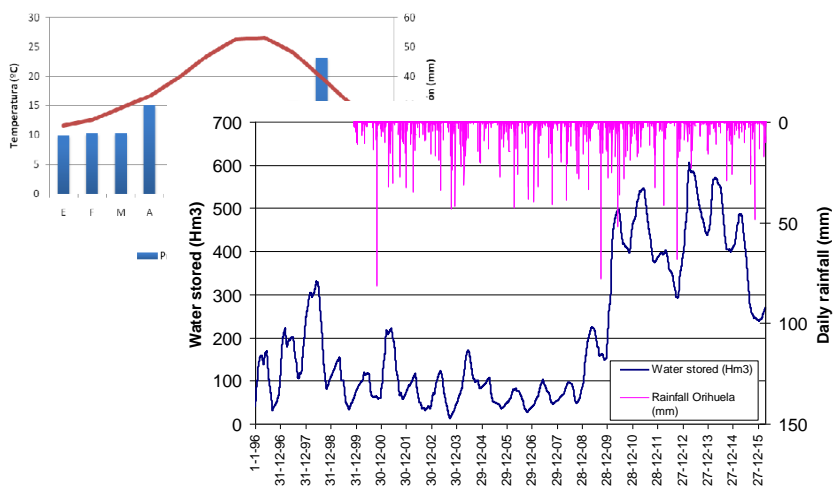


Irrigated area: 74000 has.

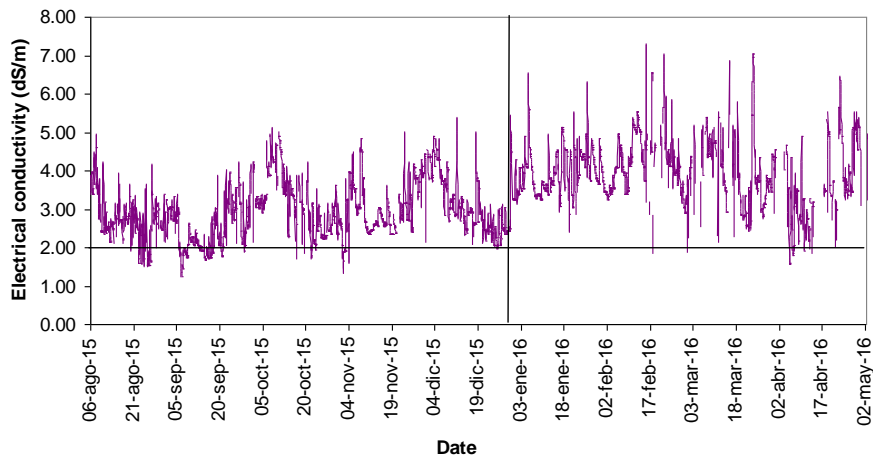


GENERAL DESCRIPTION: CLIMATE AND WATER STORED SOUTHWEST SPAIN

Temperature and rainfall (1951-2010)



GENERAL DESCRIPTION: SALINITY IN IRRIGATION WATER



FARMERS ADAPTATION

□ CULTIVATE TOLERANT CROPS TO SALINITY.



PALM



CITRUS



POMEGRANATE



BROCCOLI



ALFALFA



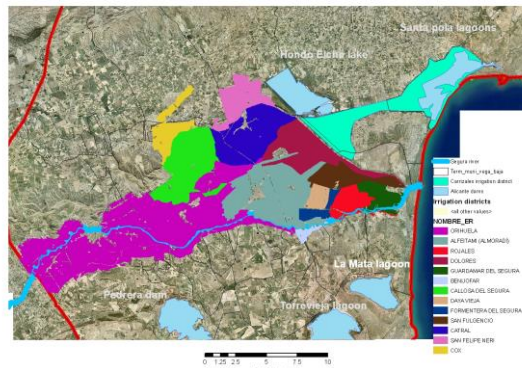
ARTICHOKE



MELON

FARMERS ADAPTATION

- ❑ IRRIGATE WITH EXTRA WATER: High doses, but reuse water up to 5 times.
- ❑ ORGANIZE IN IRRIGATION DISTRICTS: Strict irrigation shifts.



FARMERS ADAPTATION

- ❑ INSTALL DITCHES AND PIPES TO WASH EXTRA SALTS FROM THE FIELDS.



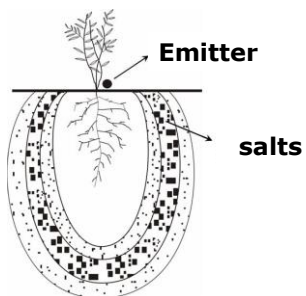
CLIMATE-KIC PROJECT: THINKING NEW SOLUTIONS

□ Fresh Water Options Optimization method–FWOO” Pathfinder, Climate-KIC.

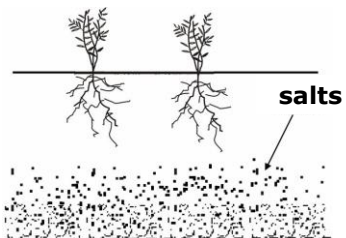
- Joost Delsman (DELTA RES)
- Perry de Louw (DELTA RES)
- Lodewijk Stuyt (Univ. Wageningen)
- Martijn de Klerk (FUTURE WATER)
- Silvano Pecora (ARPA)
- Mauro del Longo (ARPA)
- Fernando Visconti (IVIA)
- Jose Miguel de Paz (IVIA)



SOLUTIONS FOR CARRIZALES AREA



- **Drip Irrigation.**
 - Save water
 - Increase production.
 - Fertirrigation. Increase crop production up to 30%.
 - Lower hydric and saline stress
 - Lower capacity to leach salts.



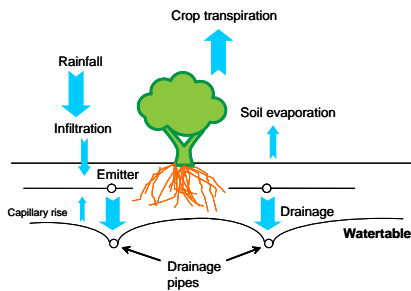
- **Surface irrigation.**
 - Less efficient.
 - Leach salts more efficiently
 - Ensure drainage water for the next irrigation district



SOLUTIONS FOR CARRIZALES AREA

□ Subsurface drip irrigation.

- Reduce evaporation.
- Increase production.
- Leach salts more efficiently
- Problems:

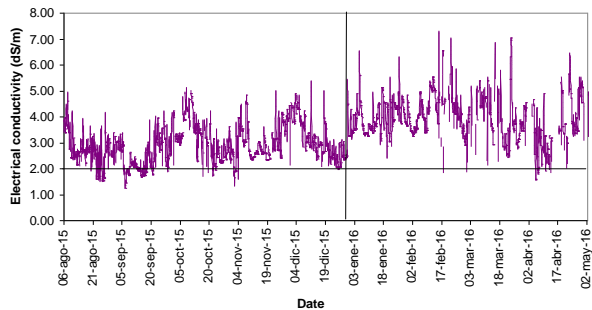


- Drippers should be located close to roots during plantation.
- Water leaks.
- Colapses.



MONITORING WATER SALINITY

- EC-meter to measure water salinity.
- In field measures and online availability.



PORTABLE-DESALINATION PLANT

- New technology to reduce salinity in irrigation water. Use of a prototype of Fource's Salinity Trimmer.



- **Weight: 400 kg**
- **0.26 €/m³**
- **0.4-0.8 kw-h/m³**
- **48 m³/day, 10000 m³/year**
- **For 1-3 has field**
- **5 year to change desalination units.**



Adapt to future conditions: Discussion with farmers



MELON EXPERIMENT- ADAPTATION TO FUTURE CONDITIONS

- **TEST IRRIGATION SYSTEM.**
 - **SURFACE-TRADITIONAL**
 - **DRIP**
 - **SUBSURFACE DRIP**

