

IRRIGATION



QUELLES STRATÉGIES POUR ÉCONOMISER L'EAU ? WHAT STRATEGIES FOR WATER SAVINGS ?

REGARDS CROISÉS EUROPÉENS
SHARING EUROPEAN VIEWS



13 - 14

nov. 2019

MONTPELLIER

FRANCE



PROJET COFINANCÉ PAR LE FONDS EUROPÉEN AGRICOLE POUR LE DÉVELOPPEMENT RURAL
L'EUROPE INVESTIT DANS LES ZONES RURALES

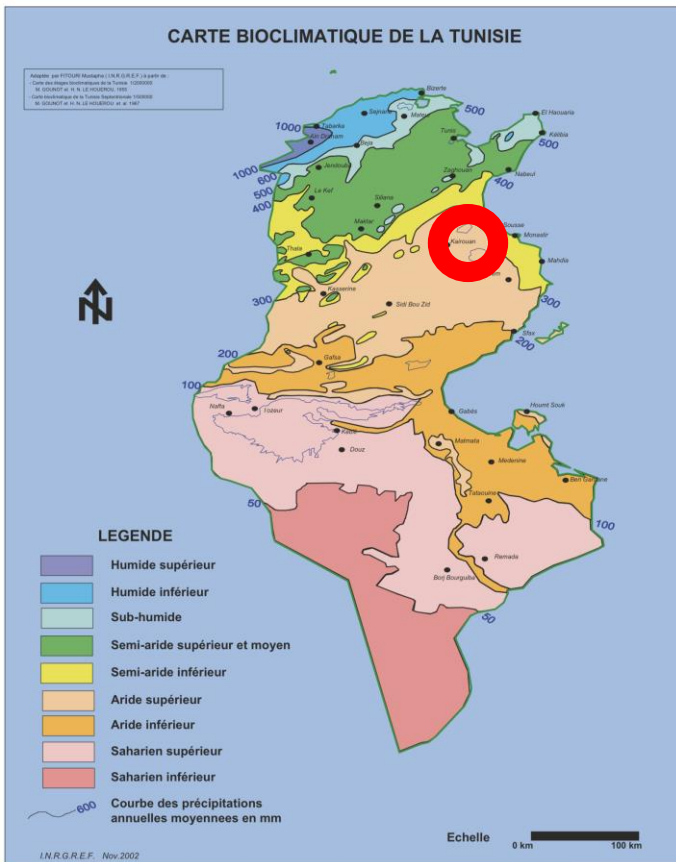


Irrigation and fertigation practices in small-scale family farming systems for water and nutrient efficiency in semi-arid Mediterranean areas

Akakpo K., Leauthaud C., Bouarfa S.
Montpellier - November 13th, 2019.



Introduction



The Merguellil basin
downstream plain in Central
Tunisia

Irrigated area with high
diversity of crops (cereal,
market garden, arboriculture)

Semi-arid area: mean rainfall
200 - 300 mm

Irrigation is highly necessary

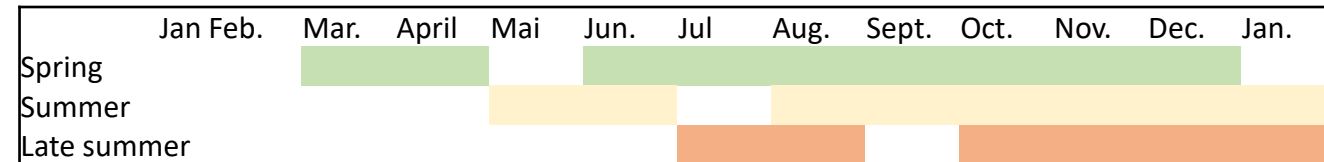


Introduction

- The household agriculture in the Merguellil basin downstream plain

- Small household agriculture : 10ha mean surface
- > 2000 private pumping wells for a total irrigated area of 12,000 ha
- Withdrawals per farm **71 000 m³/year** (Massuel *et al.*, 2017)

- Pepper crop cultivation



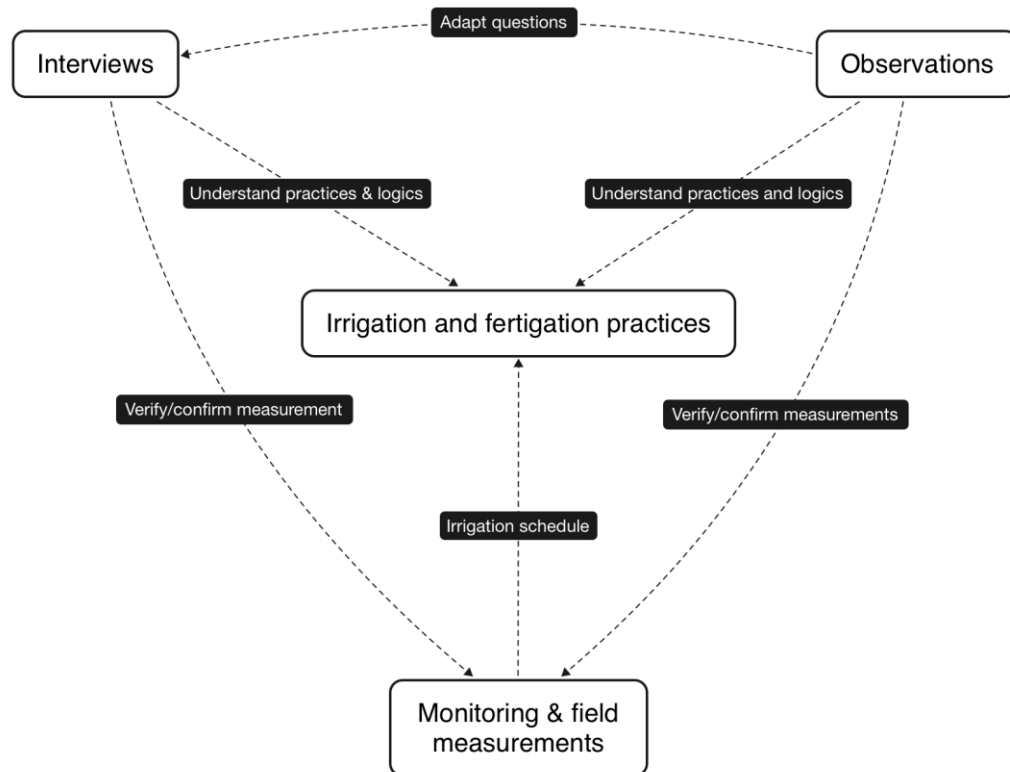
- Widespread culture
- High diversity of practices : from intensive and conventional to organic and moderate TMR
- **Exclusively irrigated by drip irrigation which enables fertigation**

- How are these amounts of water used at plot scale ?
- How do farmers combine irrigation and fertigation ?



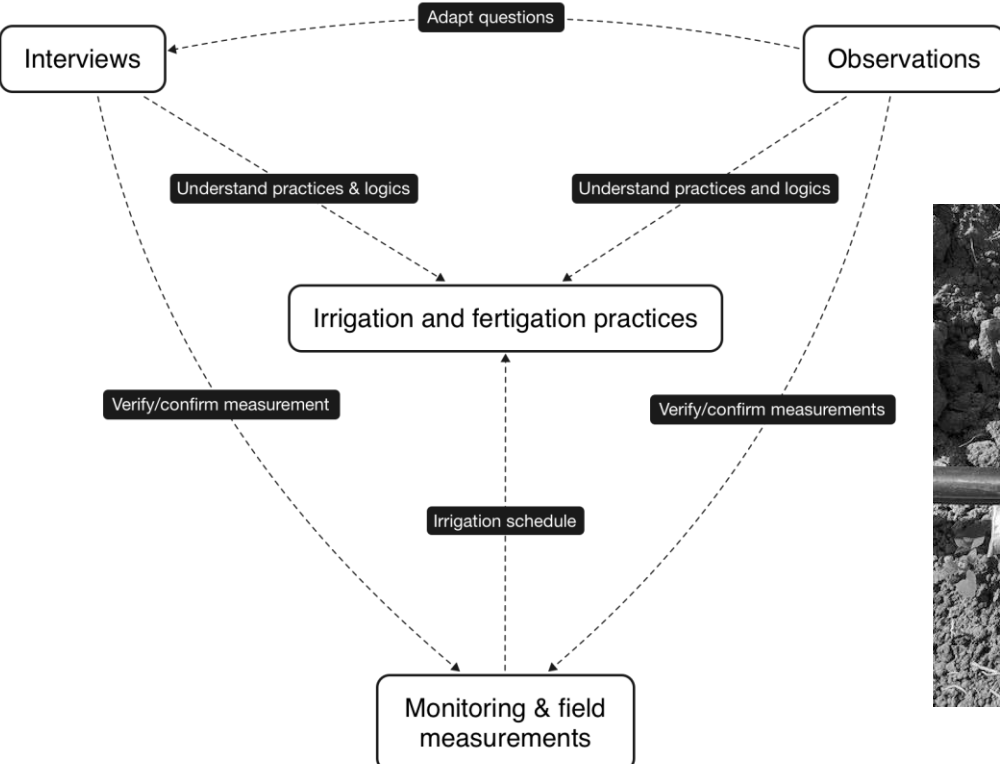
Describe **irrigation and fertigation** practices and identify **potentials of water saving**

Materials and methods

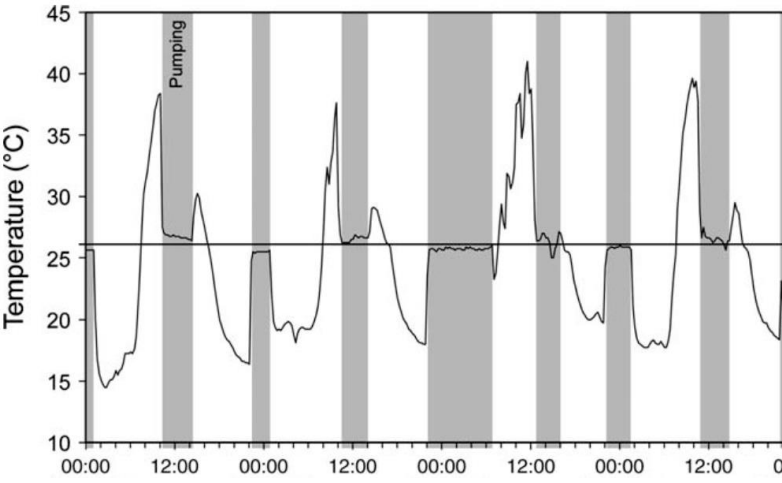


- Interviews & direct observations
 - The study required continuous contact with farmers
 - Regular interviews organized

Materials and methods



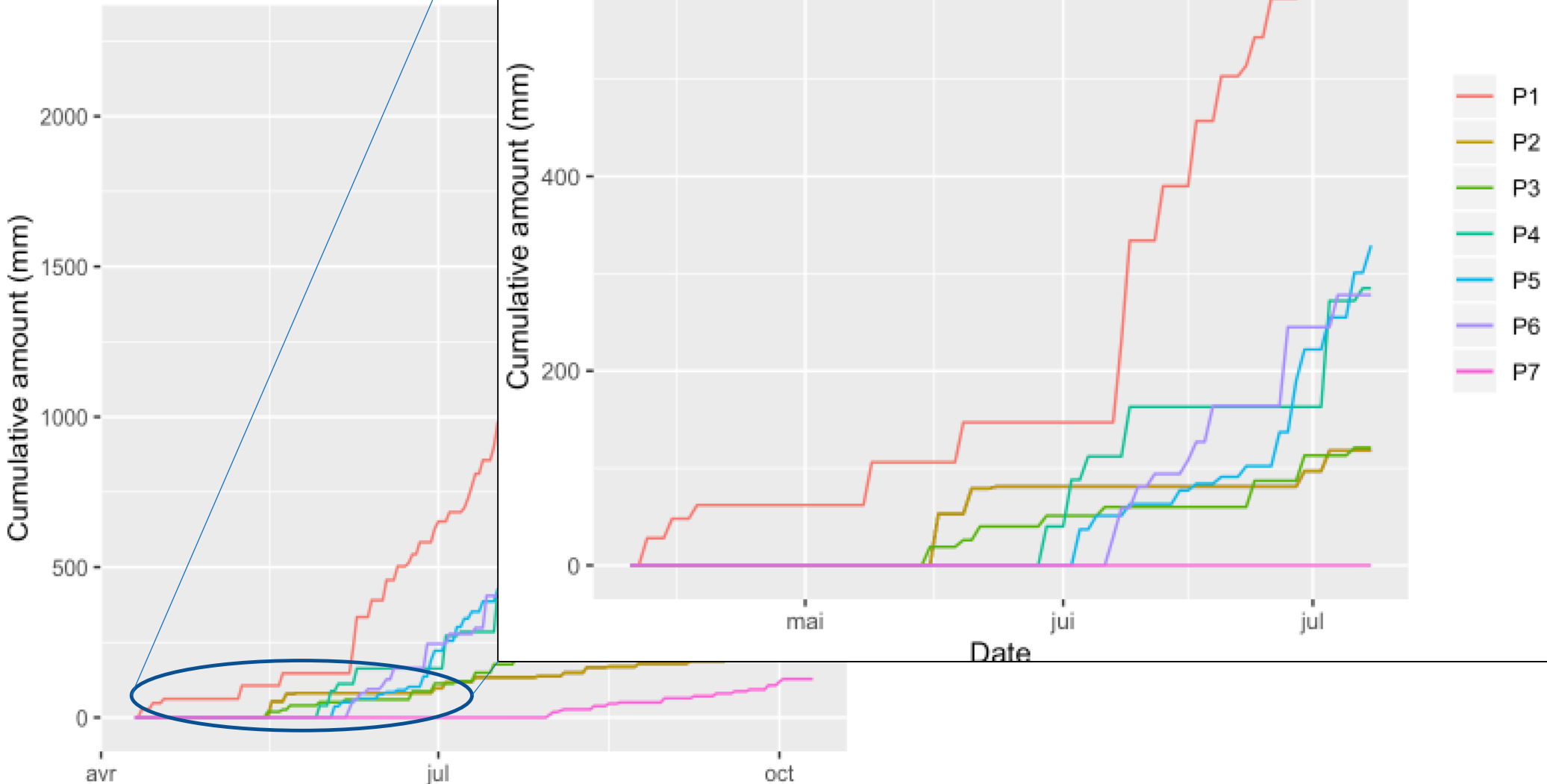
- Monitoring of irrigation using thermochron ibutton data logger



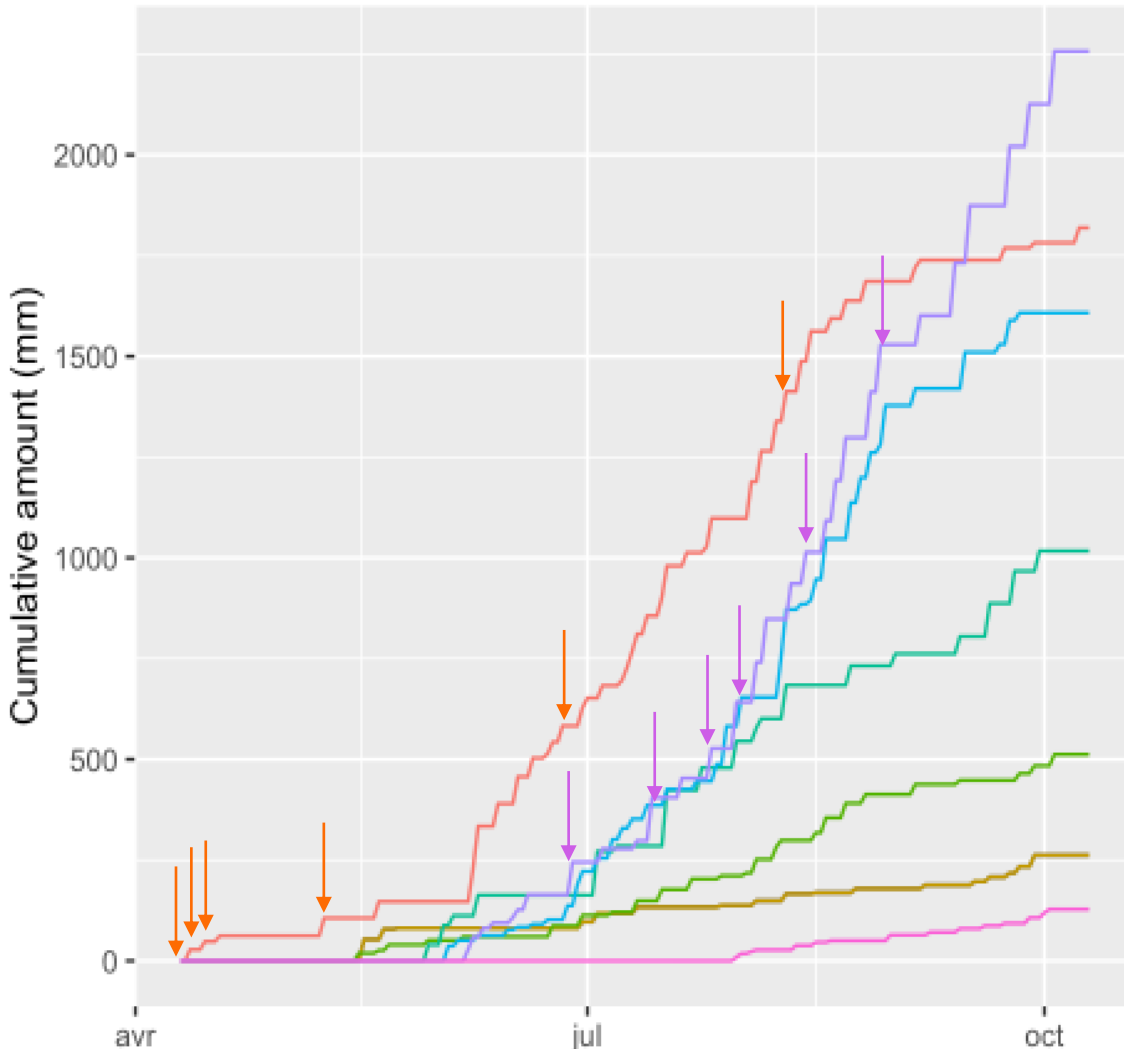
Water consumption: $Q.t$

Results

Irrigation schedule for

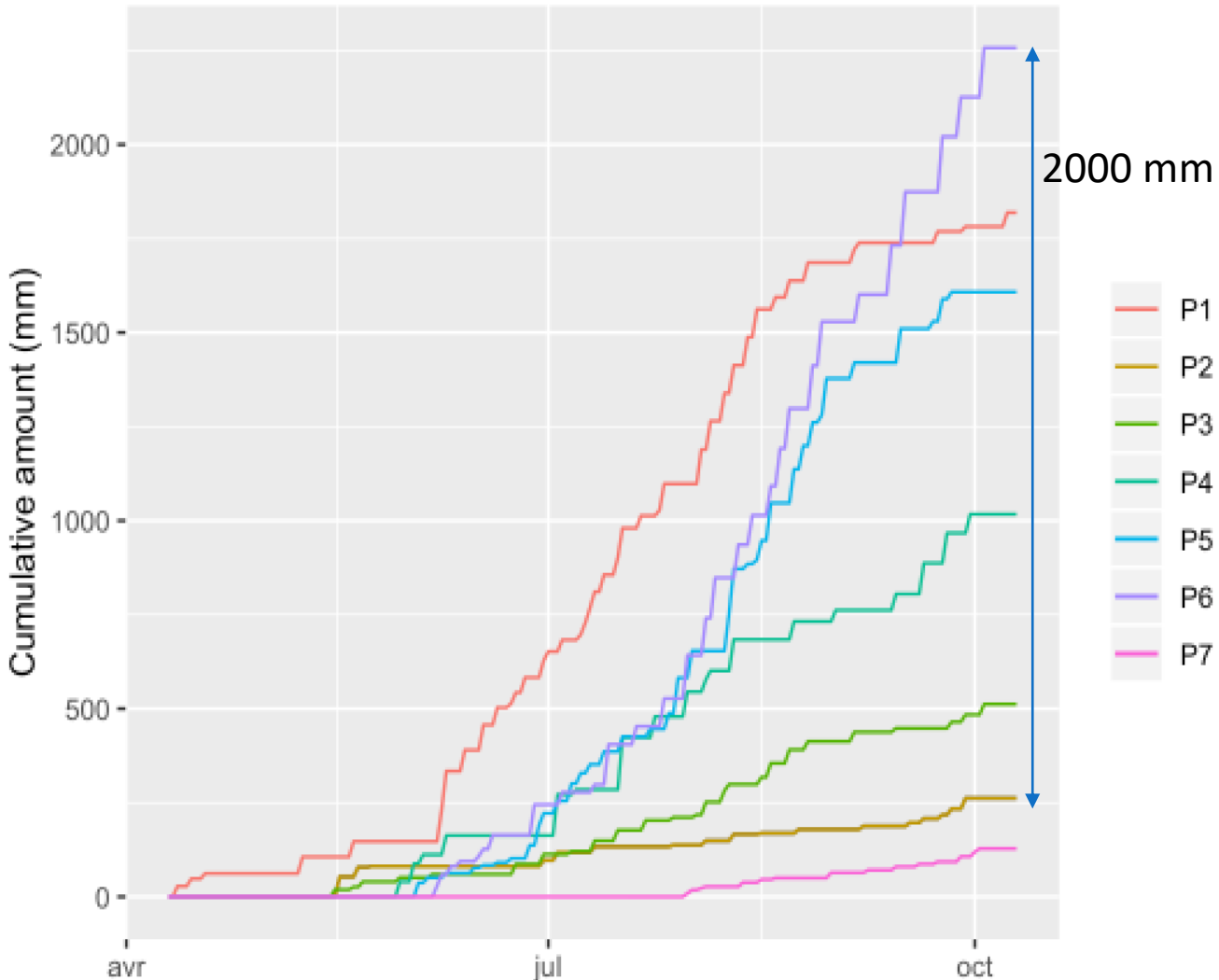


Results



- Fertigation right before stress or right after
- The irrigation frequencies allow split fertilization instead of unique application of fertilizers
- If no water stress, fertigation occurs a couple of days after planting

Results



- An important gap
- Due to soil physical properties and farmers logics
- According to some farmers, low pumping require more irrigation

Conclusion and outlook

- With 71.000m³/year, there is a potential of water economy at plot scale
- A gap of 2000mm for pepper crop, an optimal strategy could exist, mixing the observed strategies
- Efficiencies not taken into account
- Water losses should be estimated