Trade-off analysis for promoting cereal and legume production through dedicated technological innovations and incentives for smallholder farmers in the MENA region

H. Belhouchette
CIHEAM Montpellier
Drylands: contradictions difficult to understand

- Access to irrigation water for cereal and legume crops
- Incentives for legume and cereal grains production,
- Access to new cereal and legume varieties that are drought tolerant

**Even that….**

- Insufficient cereal production despite the potential of many cereal plains
- Pulses production is at its lowest despite its food importance and its agronomic virtues
- Overexploitation of ground water, despite the large use of the drip irrigation systems.
- Large yield variability even for irrigated crops

- Farmers are often poor and vulnerable to climate and market uncertainties
Objectives

• Understand why these policies failed to
  − Increase cereal and pulses production
  − Improve significantly farm income and even food consumption
  − Reduce in water use.

More than 2500 surveyed farms.

Farms household data collected over 5 agricultural regions in 5 different Mediterranean countries

Lebanon  Morocco  Tunisia  Algeria  Egypt
Tested scenarios after a long processes of discussion with stakeholders

1- **Water**: increased groundwater extraction,
2- **Premium**: higher incentives for legume and cereal grains production,
3- **Variety**: introduction of new cereal and legume varieties that are drought tolerant
4- **Combined**: a scenario that combines all interventions in the above three scenarios.
Analysis at field scale

Most profitable, efficient and less risky

Nasrallah et al., 2020
Unexpected results compared to the policymakers expectations

Most vulnerability

Combined

Effect of a combined policy

Variability

Premium

Effect of water, or variety or premium policies

Less vulnerable

Effect of variety, premium or combined policies

Belhouchette et al., 2022
Very limited effect on cereal and legume production

More cash crops

Less fallow crop

Belhouchette et al., 2022