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

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Drylands: contradictions difficult to understand

à Access to irrigation water for cereal and legume crops

à Incentives for legume and cereal grains production,

à 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

à **Farmers are often poor and vulnerable to climate and market uncertainties**

Objectives

- Understand why these policies failed to
  - Incraese cereal and pulses production

àImprove signeficantly farm income and even food consumption

à Reduce in water use.

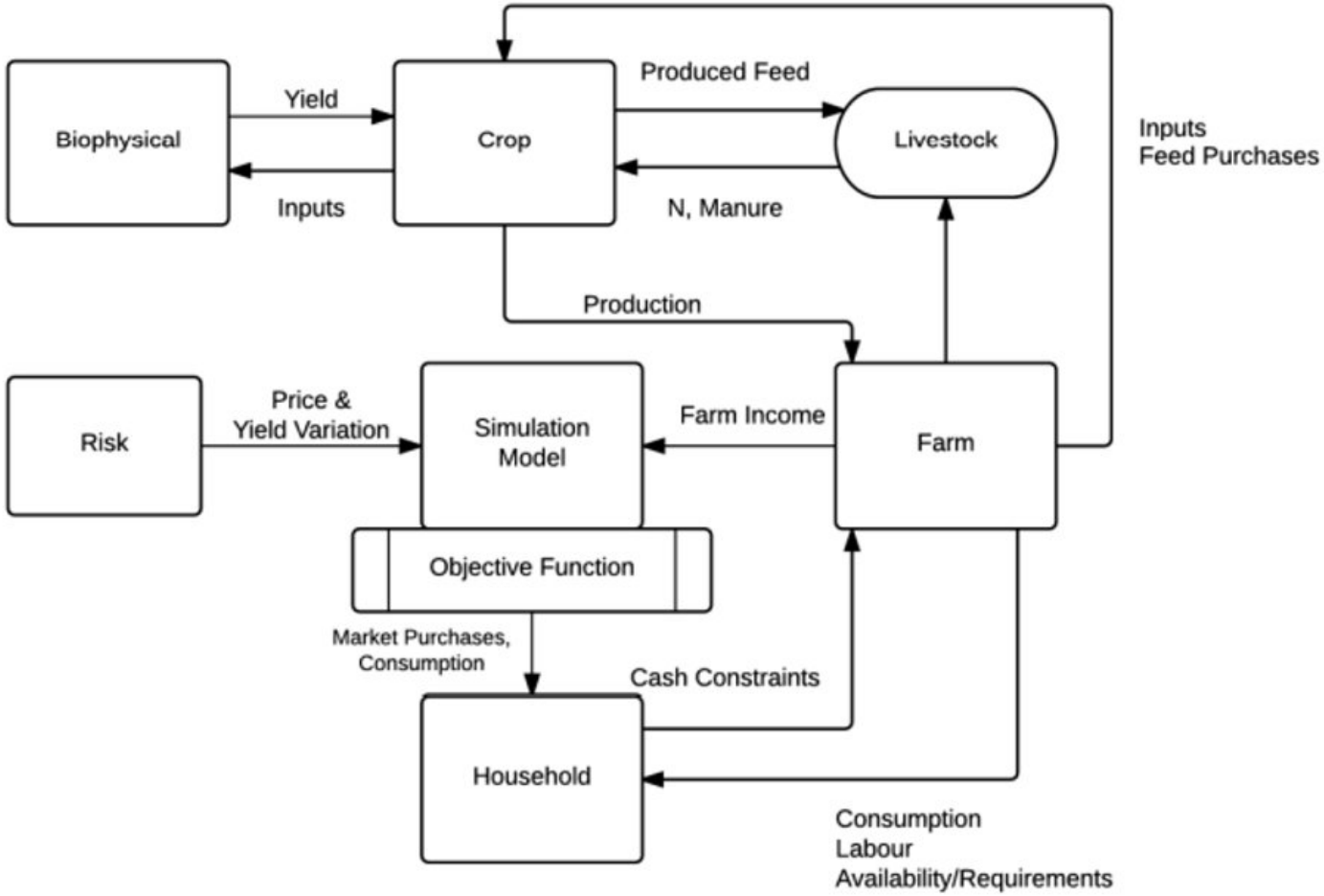
More then 2500 surveyed farms.

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

Lebanon	Morocco	Tunisia	Algeria	Egypt

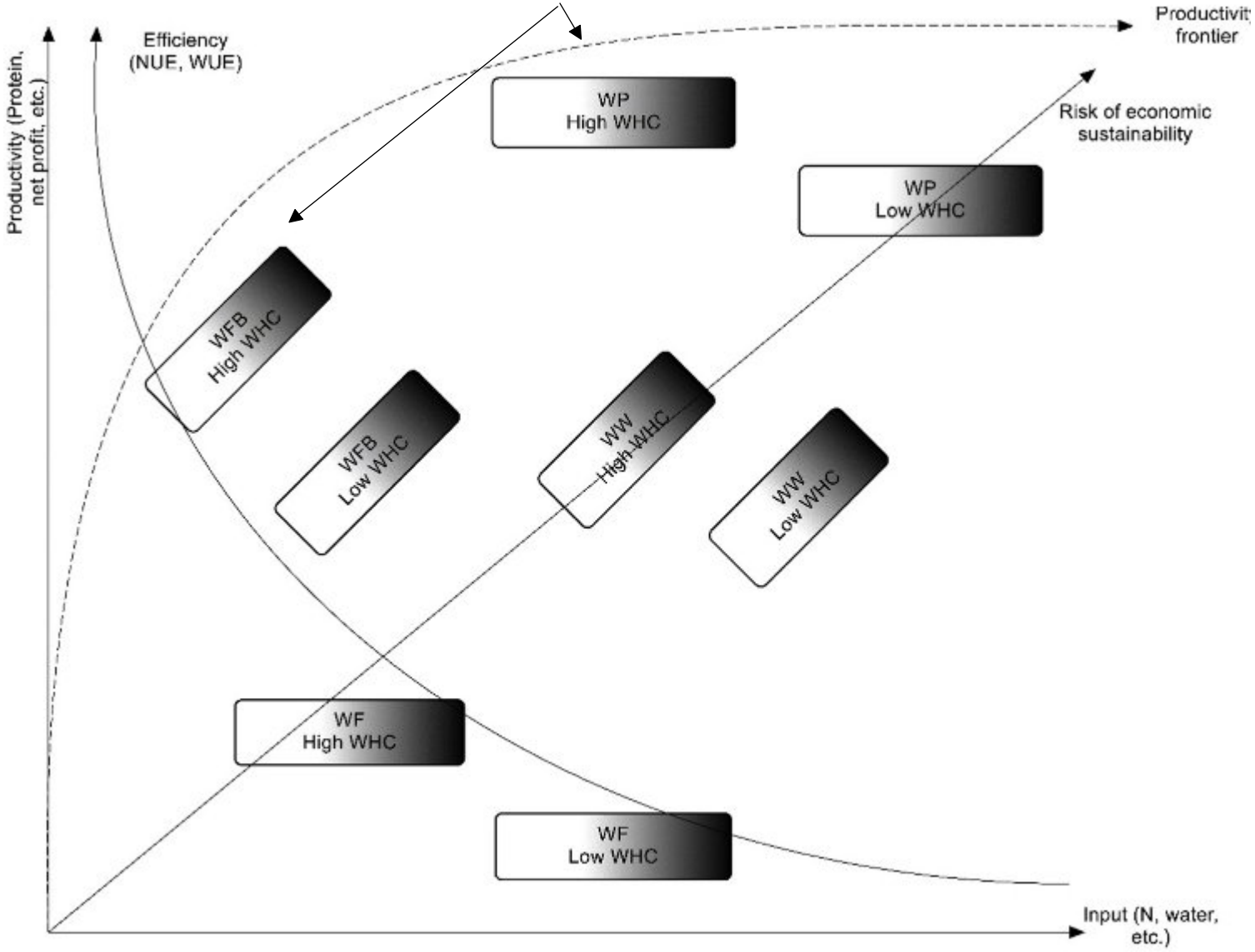
Tested scenarios after a long processes of discussion with stakeholders

1- **Water:** increased ground water 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.



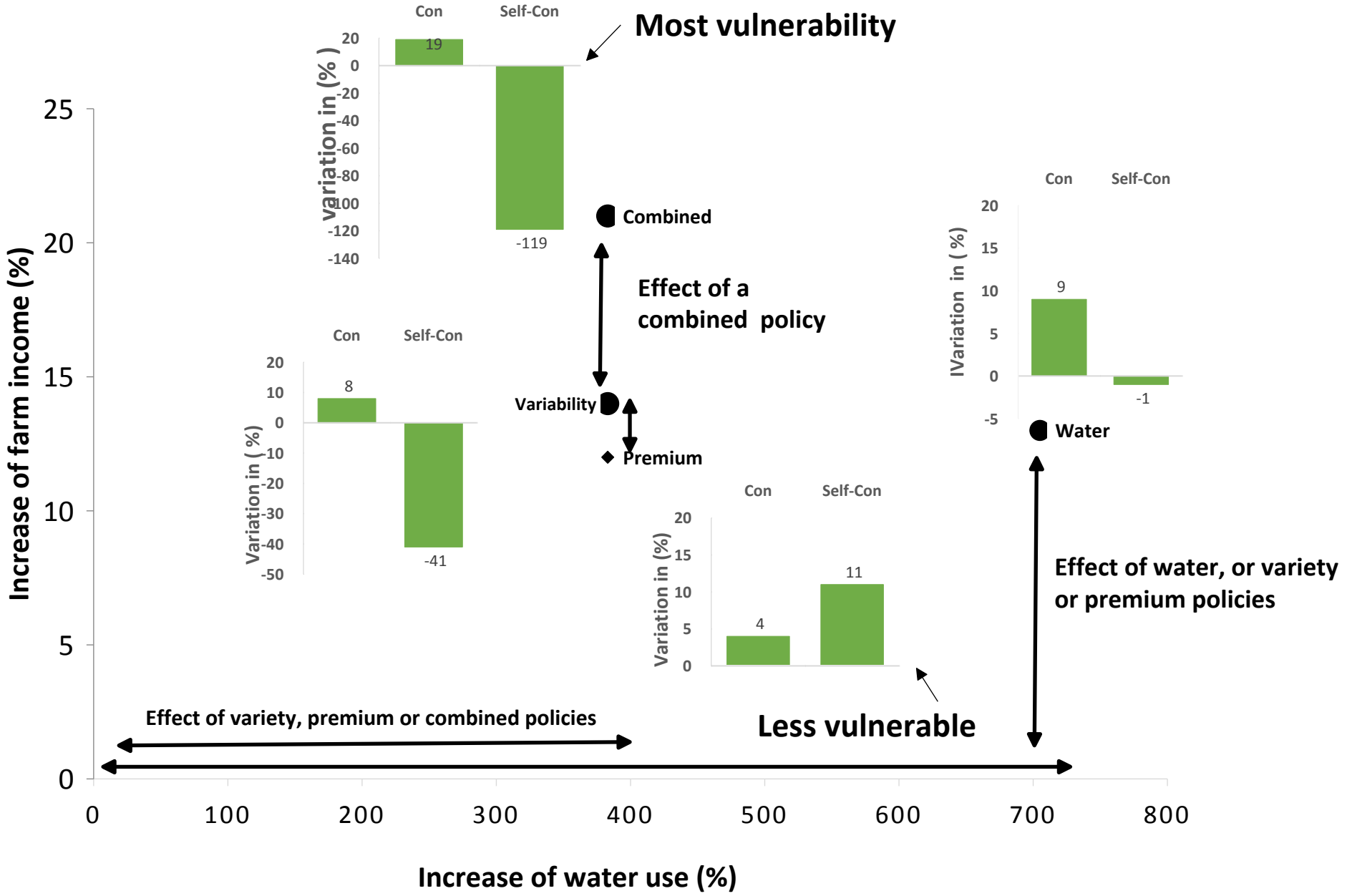
Analysis at field scale

Most profitable, efficient and less risky



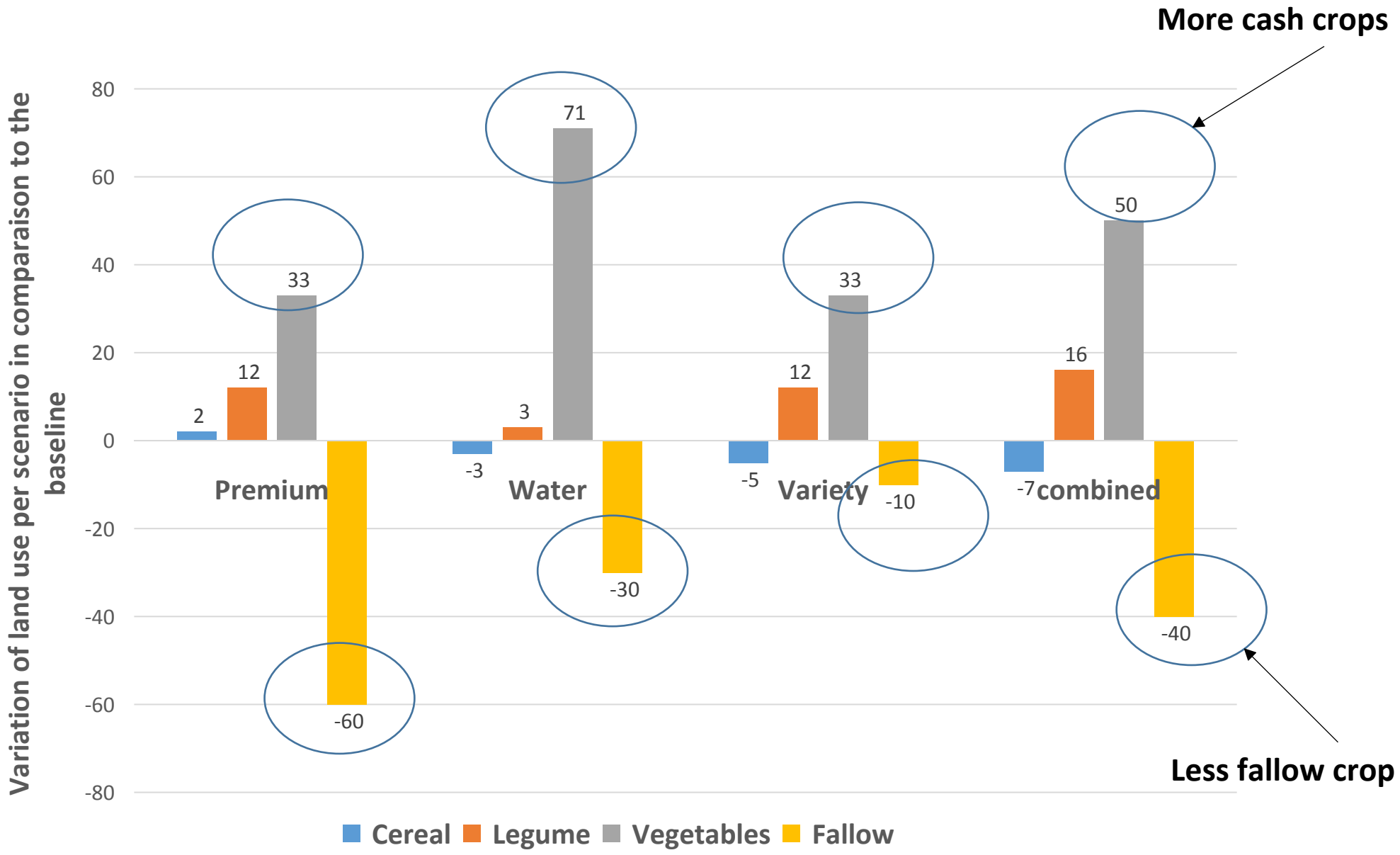
Nasrallah et al., 2020

Unexpected results compared to the policymakers expectations



Belhouchette et al., 2022

Very limited effect on cereal and legume production



Belhouchette et al., 2022