19th Meeting of the FAO-CIHEAM Mountain Pastures sub-network
Mountain pastures and livestock farming facing uncertainty: environmental, technical and socio-economic challenges

Expert views about farming practices delivering carbon sequestration in Mediterranean agro-ecosystems

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CENTRO DE INVESTIGACIÓN Y TECNOLOGÍA AGROALIMENTARIA DE ARAGÓN

Introduction

Pasture based livestock systems (*vs.* intensification)

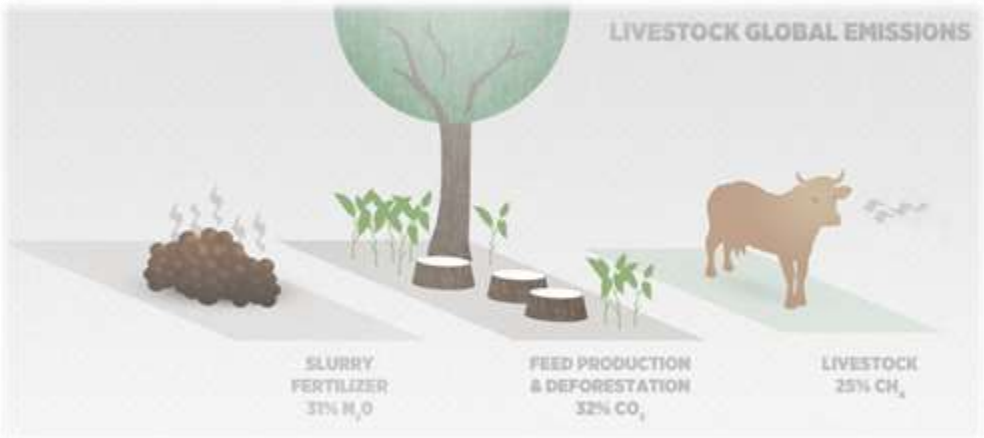
↑ GHG emissions (per product unit)

↑ Ecosystem services

CARBON SEQUESTRATION

↑ global warming (≈ climate change)

↑ Social welfare



Introduction

- Objective: evaluate, according to expert knowledge, the contribution of farming practices to **carbon sequestration** (**CS**) in Mediterranean agro-ecosystems

- Framework:

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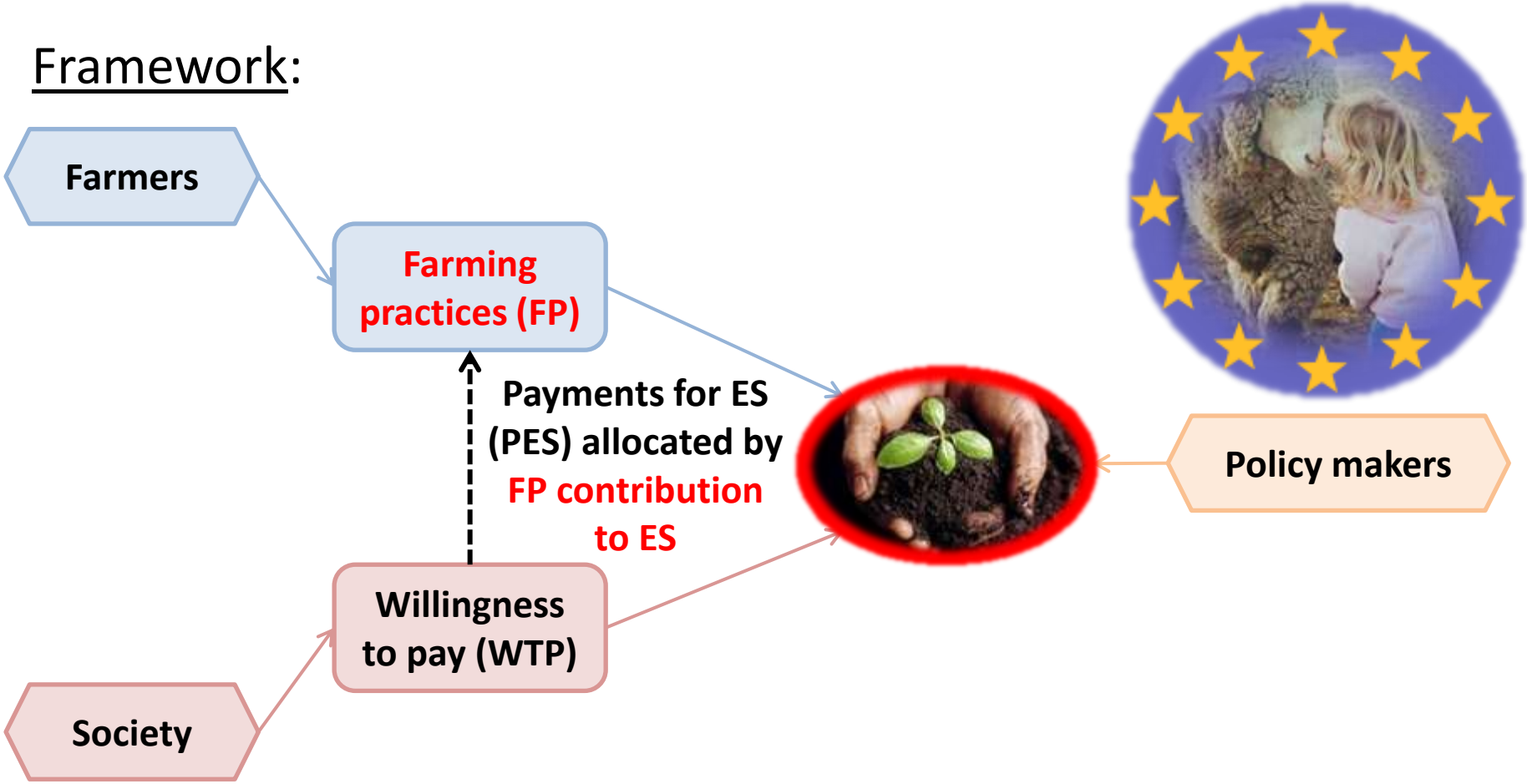
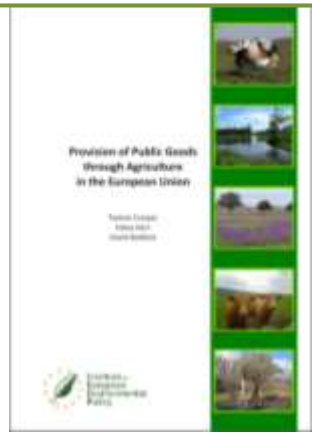


Material and methods

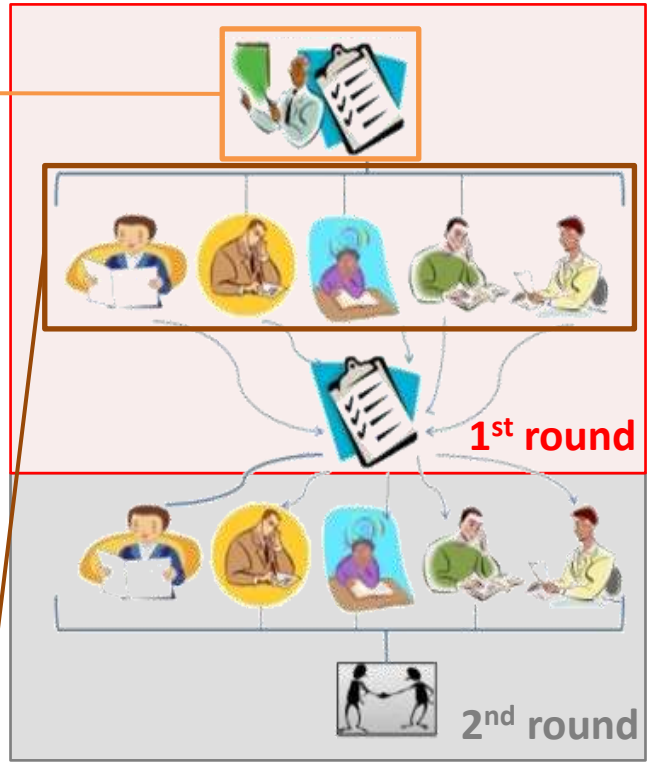
- Starting point
  - 66 farming practices on relevant ES (**CS** and others), EU report →
  - 10 monitored sheep and mixed sheep-crops farms in Aragón (SP)



- Delphi panel
  - Questionnaire:
    - Description of mountain and semiarid lowlands **Mediterranean agro-ecosystems**

    - Personal data and self-appraisal on expert **knowledge** about **CS** (& other ES):
      1: very low – 5: very high
    - Positive **contribution** of 26 farming practices on **CS**:
      0: none, 1: very low – 5: very high; Don't know

  - Experts on agriculture – environment:
    - Researchers (n = 28)
    - Technicians/managers (n = 28)



Material and methods

- Contribution of farming practices on CS:

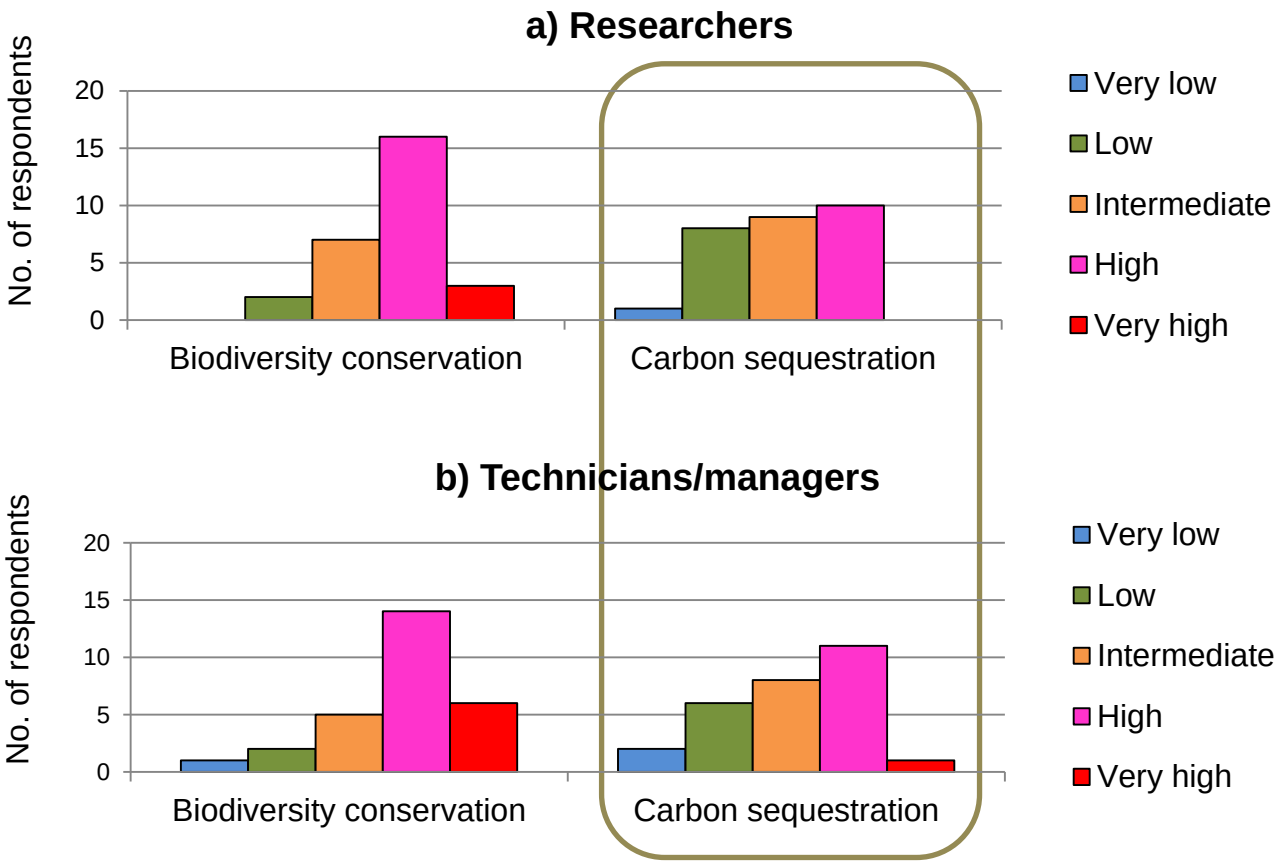
	Contribution on CS	
Farming practices	Scores	**%**
1st	∑ respondents' scores* →	$\frac{\sum \text{respondents' scores}}{\text{Total score}} \cdot 100$
2nd	"	"
…	"	"
nth	"	"
All	Total score	**100 %**

*Scores (Likert scale) with and without **ponderation** by self-appraisal:
x 0.2 (very low), 0.4 (low), 0.6 (intermediate), 0.8 (high) and 1 (very high knowledge)

- Differences between the expert categories' valuations:
  - Kruskal-Wallis test

Results and discussion

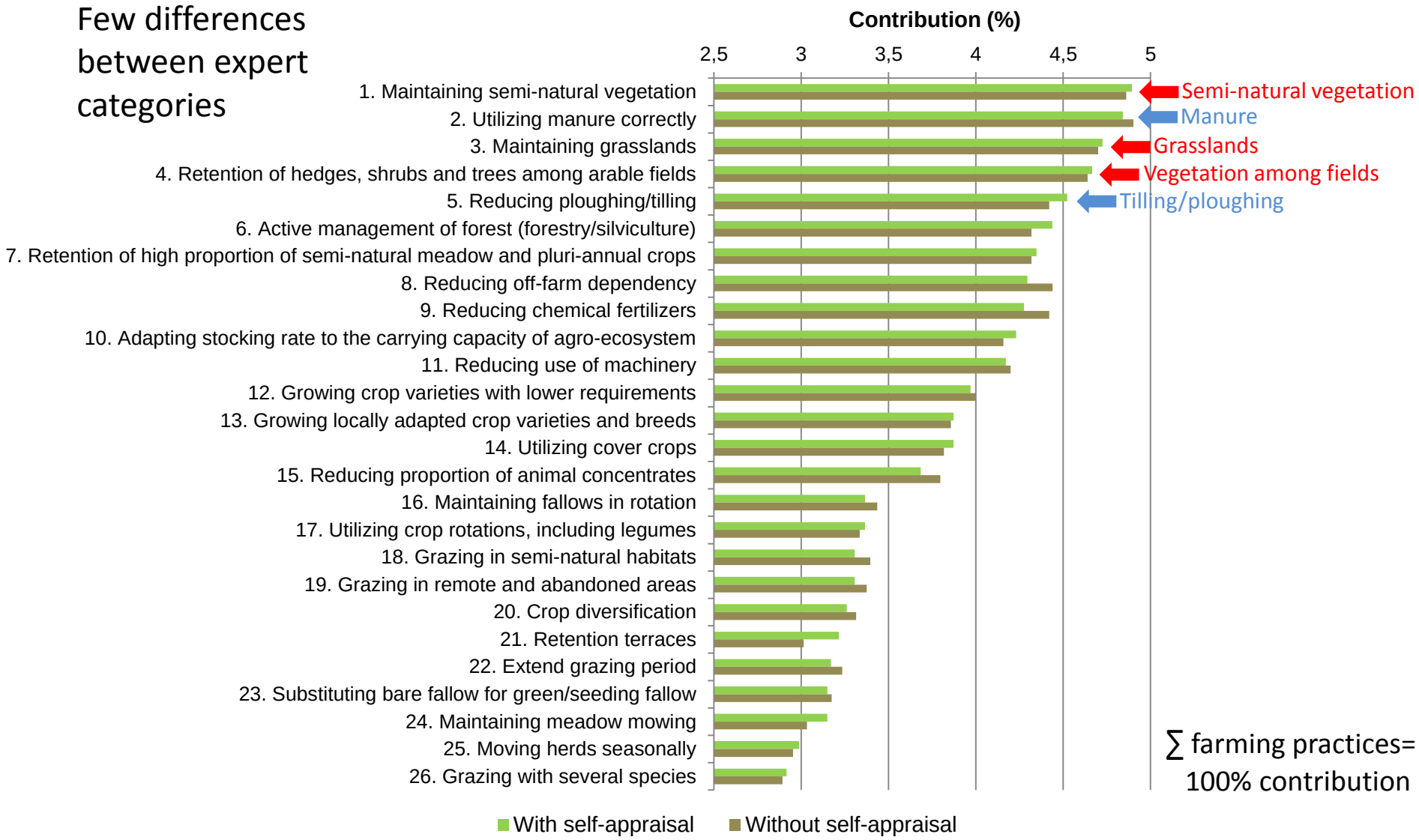
- Expert knowledge about ES (self-appraisal)



Results and discussion

- Contribution of farming practices to CS

Few differences between expert categories



∑ farming practices= 100% contribution

Conclusion

- Carbon sequestration was less known than other ES provided by Mediterranean agro-ecosystems

- Experts rated the highest those farming practices related to management of vegetation (semi-natural vegetation; grasslands; vegetation among arable fields) and soils (manuring; ploughing/tilling)

- Assessment of farming practices and CS, integrated with other important ES, allows comparing their relative contribution, so we could reward different farming practices according to policy priorities and social demands

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