European Joint Programme EJP SOIL
Towards climate-smart sustainable management of agricultural soils

Comments on the recommendations for agroforestry

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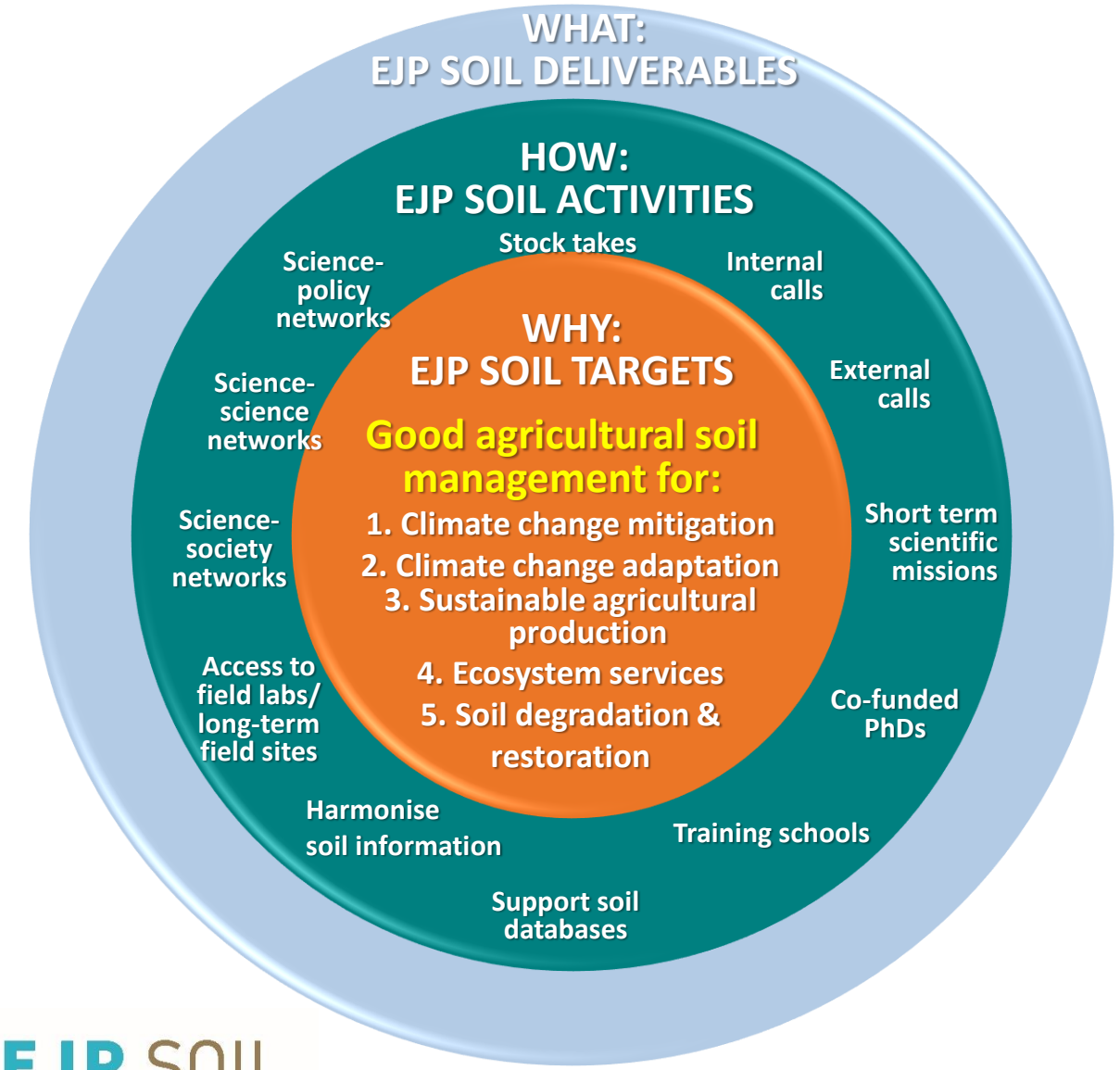
EJP SOIL Aims to: create an enabling research environment to enhance the contribution of agricultural soils in addressing key societal challenges



IMPACTS of EJP SOIL

1. Understand soil management impacts on:
   - Climate adaption and mitigation
   - Sustainable agricultural production
   - Land and soil degradation
2. Understand how soil carbon sequestration contributes to climate change mitigation
3. Establish soil networks and build capacity
4. Harmonize soil information and support international reporting
5. Foster adoption of sustainable soil management
6. Develop region and context-specific fertilization practices

HELPS TO IMPLEMENT & REALIZE

- CAP
- CLIMATE TARGETS
- SDGs (2, 13, 15)

Support farmers in their role as stewards of land and soil resources

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Agroforestry is a climate-smart sustainable soil management option

Mutiple benefits provided by soils in agroforestry systems

Agree with:

A priority : preserve existing (traditional) agroforestry systems that are at threat

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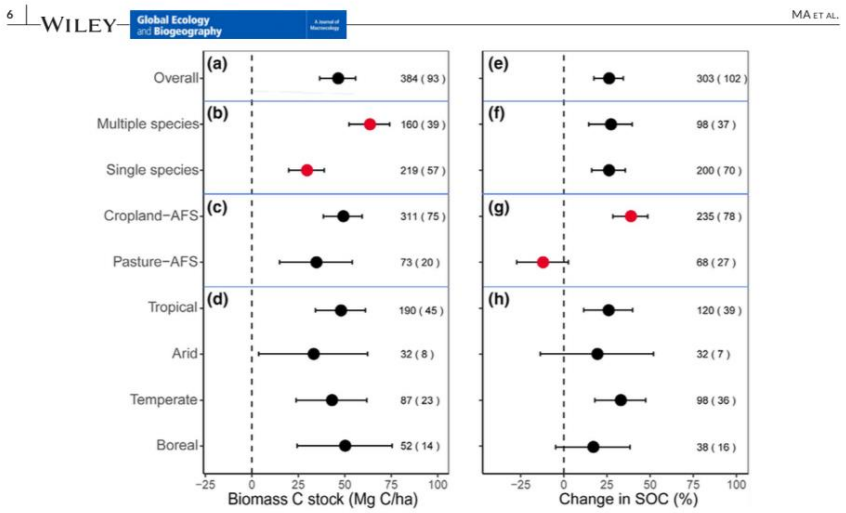
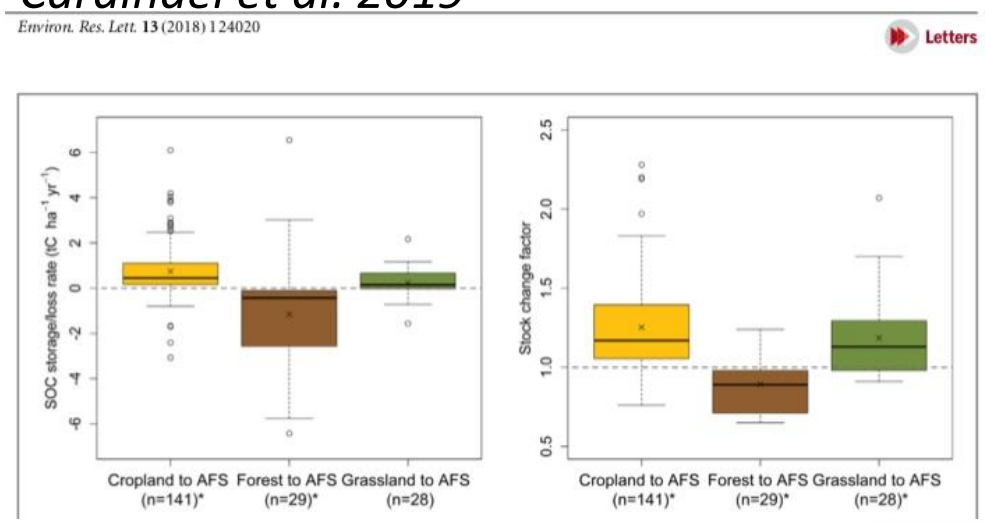
Large mitigation potential of agroforestry systems

Meta-analyses:

Ma et al. 2020



Cardinael et al. 2019



Estimate of C sequestration potential of agroforestry on EU agricultural land priority areas:

8.9% of agricultural land surface area

0.09 – 7.29 Mg C ha^{-1} y^{-1}

EU H2020 AGFORWARD, Kay et al. 2019

Assesssment of potential SOC storage and GHG mitigation needs to be refined and compared to that of other management options

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Monitoring capacity for C sequestration in agroforestry: *specific limits for agroforestry to overcome*

(not fully addressed in the document)

- Activity data:
  - ✓ Agroforestry occurs in combination with multiple land uses
  - ✓ Technical challenges (small land surface areas, variable tree density)
- Measurement:
  - ✓ Heterogeneity of SOC stocks induced by trees
- Modelling:
  - ✓ Still in development (e.g. RothC–Yield SAFE, APSIM…)

→ *Improvements needed for agroforestry on these 3 approaches.*

→ *Towards a hybrid articulated quantification system (Smith et al. 2020)*

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