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Farmers compose with ecosystem services & disservices for managing rural forests

Insights from a French case study

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RURAL FORESTS are key social-ecological components in agricultural landscapes

- Rural forests encompass **farm forests and trees outside forests** managed by farmers — incl. hedgerows, isolated trees and small groves — and play key socio-economic, cultural and ecological roles in agricultural landscapes.
- Rural forests provide various **Ecosystem Services (ES)** that contribute to the resilience of ecosystems and to human well-being. Yet, they also represent a source of **Ecosystem Disservices (EDS)** that undermine farmers' well-being.

Rural forests and the Common Agricultural Policy (CAP)

- Since 2013, green payment schemes require farmers to reserve 5% of their arable land for **Ecological Focus Areas (EFA)** that include agroforestry areas and farm trees.
- Yet, the **effectiveness of this policy in protecting rural forests** in the face of the diversity of local contexts remains open to discussion.

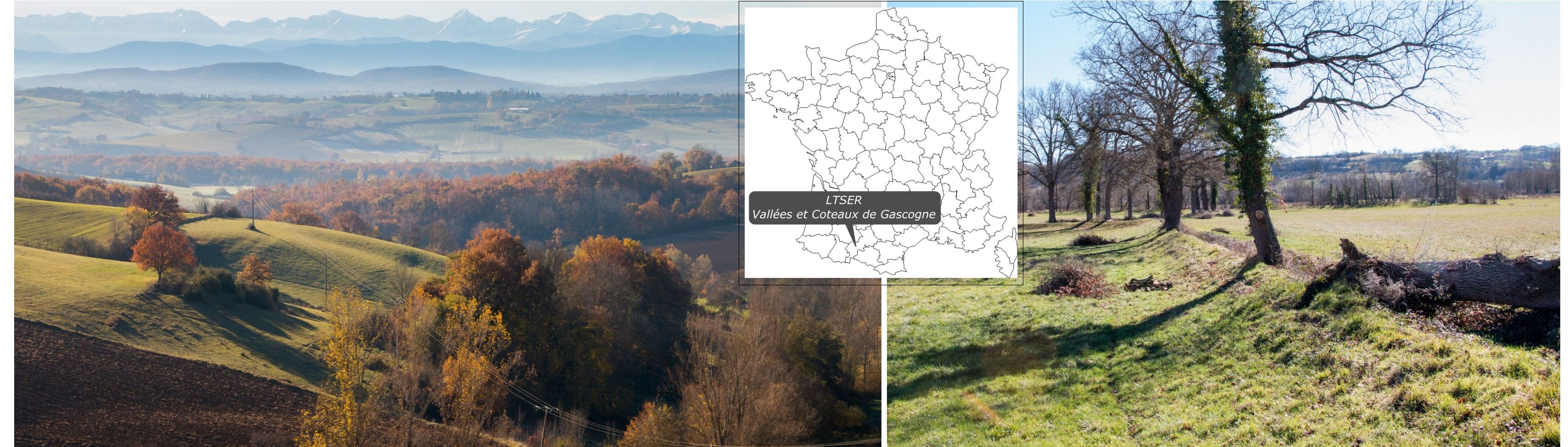


Fig. 1: Location of the study site and sceneries of the studied landscape (Photos: J. Blanco).

How do farmers perceive & manage rural forests in the coteaux de Gascogne, South-Western France? What are their strategies for balancing ES and EDS, and the implications for agri-environmental policies?

Vallées et coteaux de Gascogne

- The Long-Term Social-Ecological Research platform (LTSE) *Vallées et coteaux de Gascogne* is an agricultural landscape near the city of Toulouse (Fig. 1).
- Mixed farming** combining **cereal cultivation** (wheat, maize) and **livestock** rearing (for milk & meat production) is the dominant farming system.
- Over the last decades, along with their decline in number, farms have increased in size and **specialized in crop cultivation**.

Materials & Methods

1. Semi-structured interviews

- Face-to-face **interviews** with 19 farmers in organic or conventional agriculture.
- Topics: **uses and management**, main **advantages & drawbacks** of rural forests, key **stakeholders and policies** influencing management practices.

2. Data analyses

- Classification** of cited advantages & drawbacks as ES and EDS, respectively.
- Multiple Correspondence Analyses (MCA)** to analyze variability in farmers' perceptions.
- Qualitative analysis** to understand management practices & farmers' views and strategies.

Farmers' perceptions and uses of rural forests

- Farmers collect **firewood** as they prune hedgerows and remove fallen trees from their fields. These practices depend on **mutual-aid networks**.

"the wood for heating, we get a lot around the edges, the wood in the streams, things like that. Or we prune back the branches that come up to the tractor cabins..."

- According to farmers, rural forests **contribute positively and negatively to agriculture**.

"Further on there was a bank, and all that's been removed, and now when there's a thunderstorm, it [the earth] starts up there and slides down to here."

"In a field of corn, you'll see a ring around an oak, and that shows you the spread of the roots."

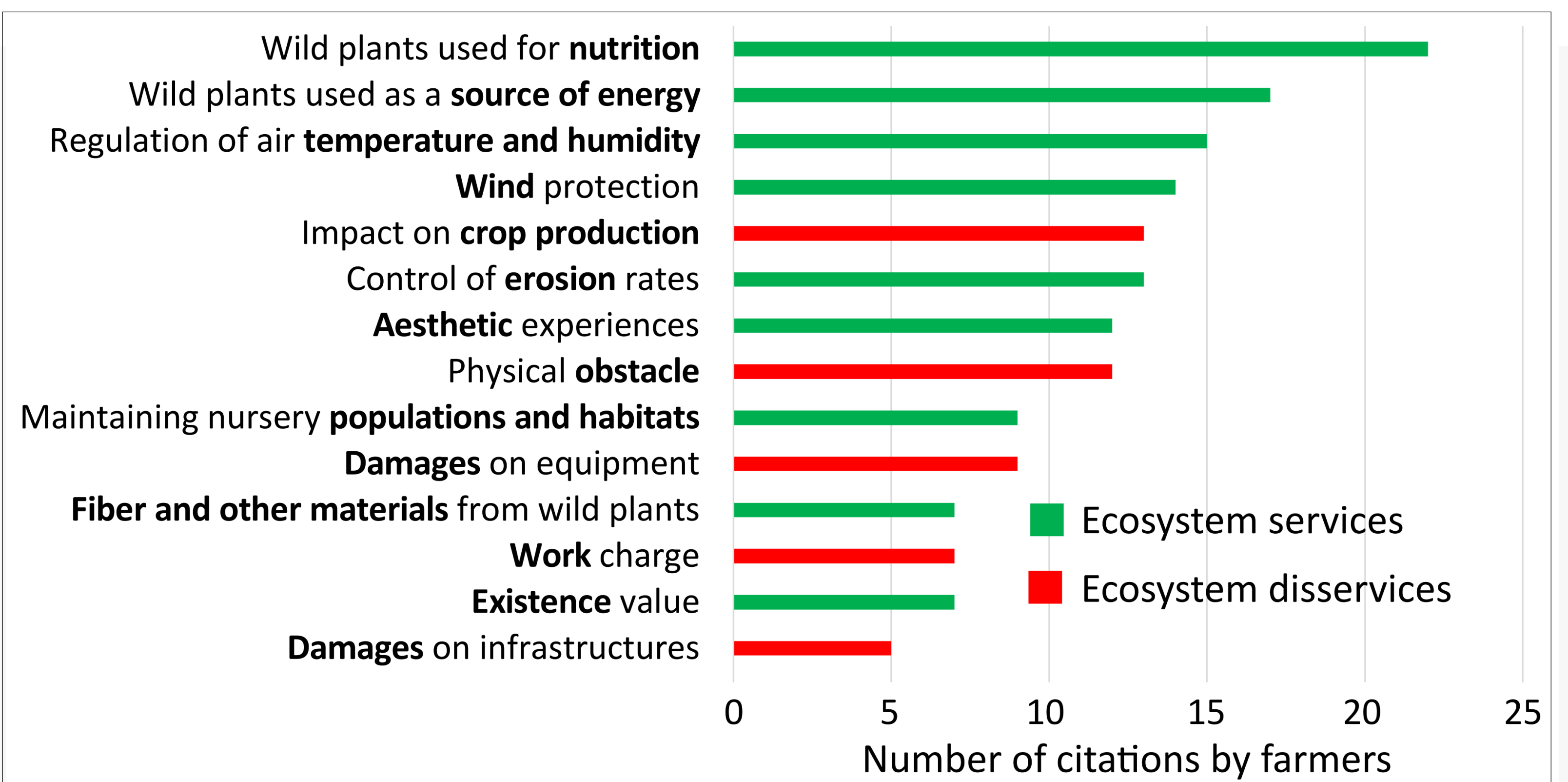


Fig. 2: Number of times each type of rural forest contribution was cited by farmers. Only contributions with a least five citations are represented.

Variability in farmers' perceptions & attitudes towards CAP greening measures

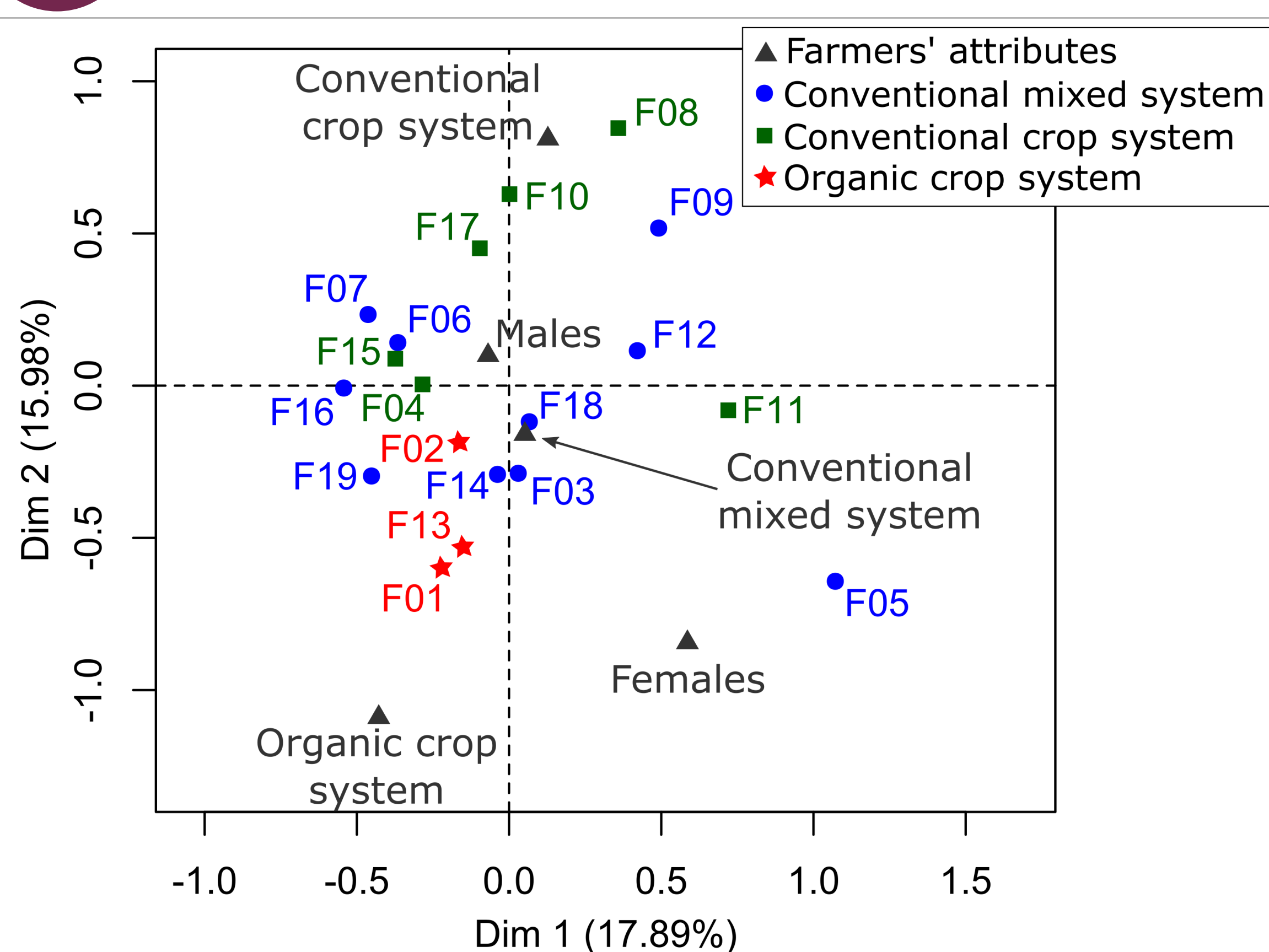


Fig. 3: Projection of the farmers in the first two axis of a MCA performed on the basis of cited ES & EDS.

- Farmers' perceptions varied** according to their farming system (Fig. 3).
- Some farmers promoted a **'land sparing'** model while other promoted a **'land sharing'** model.
- Uncertainties around CAP** evolution make farmers more susceptible to cut hedgerows and isolated trees as they fear additional constraints.

"Some farmers are influenced by the CAP, they're afraid that if there's a yard of hedge which goes into the field, they'll be penalized, [...], the CAP and the interpretation of the CAP has had a very harmful effect on the survival of the hedges."

- ES & EDS are complementary** to assess farmers' valuation of tree contributions.
- Perceived ES can serve as leverages to promote agroforestry practices, yet perceived EDS should not be overlooked.
- CAP greening measures are differently received by farmers**, and should be better communicated and adapted to local contexts.

