

How can we make biodiversity conservation an objective for farmers ?

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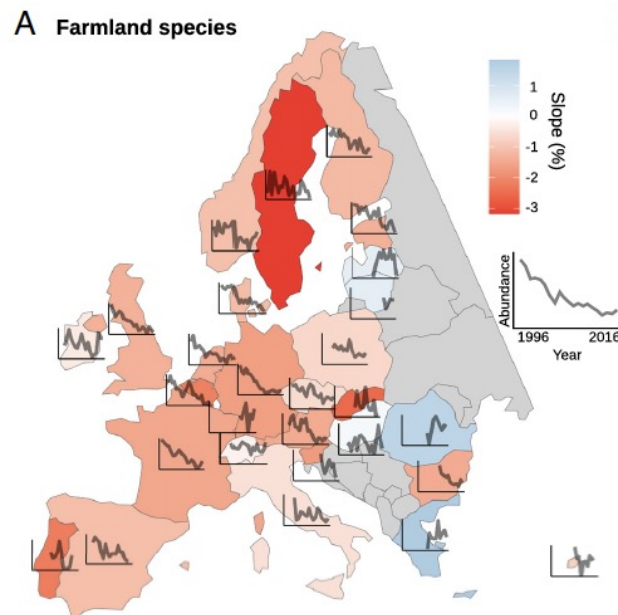
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Biodiversity conservation, a major issue in agricultural landscapes

Agricultural areas are among those where biodiversity loss has been most pronounced over the last fifty years.



Rigal et al., 2023

- Agriculture has a close relationship with biodiversity, which it either uses (cultivated/bred genetic diversity, crop auxiliaries, soil fauna, etc.), helps to preserve or is affected by (crop pests, wildlife damage, etc.).
- The question of the relationship between agriculture and biodiversity is often posed in terms of compromise or cohabitation (*Barbault et al., 2009*).
- Rural stakeholders and farmers are prompting to preserve and manage biodiversity.

How can we encourage farmers to make the conservation and even the promotion of biodiversity an objective on their farms?

Farmers willingness about biodiversity

- Biodiversity is influenced by farmers' management style (Schmitzberger et al., 2005)
- When asked about their interest in biodiversity, the majority of farmers say they are interested (Herzon and Mikk, 2007).
- Farmers' representations of biodiversity vary widely according
 - To the species, the service or disservice they provide (Maljean and Peter, 2001)
 - The farming choice (organic vs. conventional) (Klemens et al., 2013) or the farming style (Klebl et al., 2024a)
- Beyond the different types of farming considered, the perception of biodiversity depends also on the personal background of each farmer and his or her interests outside professional activity (Klebl et al., 2024b).

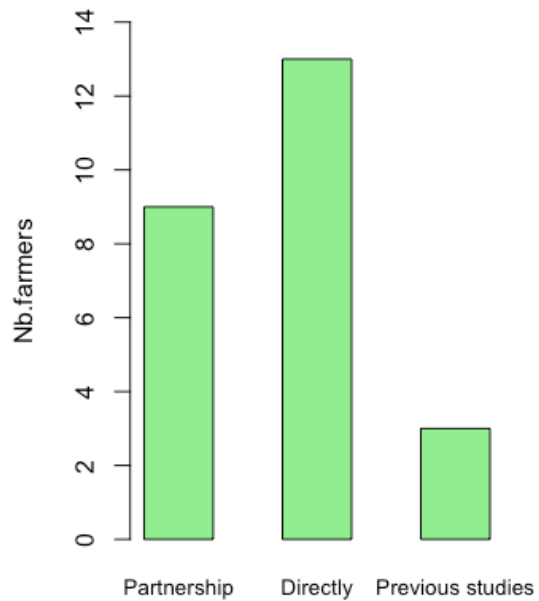
Biodiversity as an objective for farmers?

Adopting a qualitative approach, we have analysed how a diversity of farmers implementing biodiversity actions perceive biodiversity on their farms

- What links exist between their production system and their representation of biodiversity;
- What internal and external factors shape farmers' perceptions.

Farmers sample

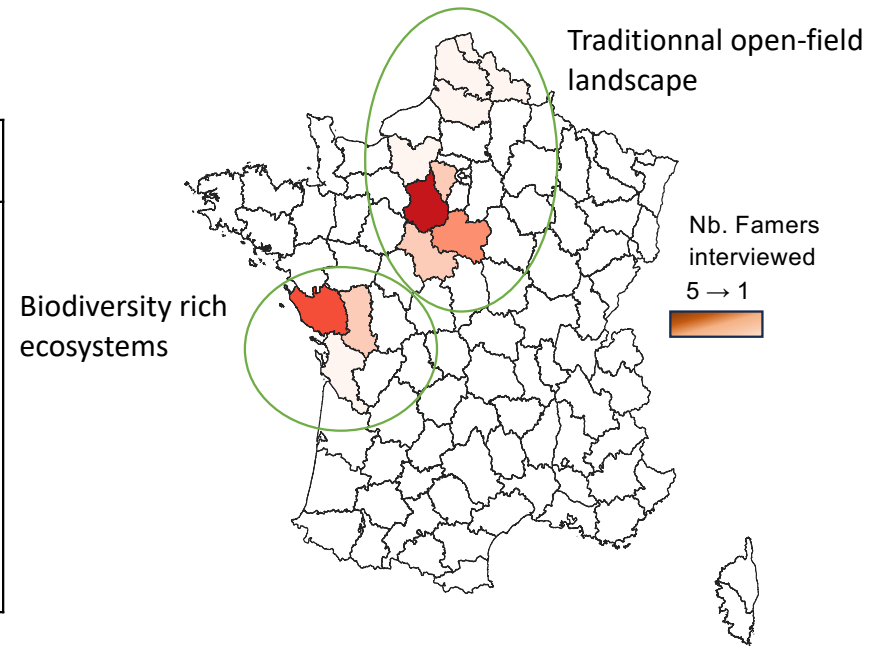
Farmers implementing biodiversity actions in various ways (25)



Farmers were recruited in 2023 using various ways

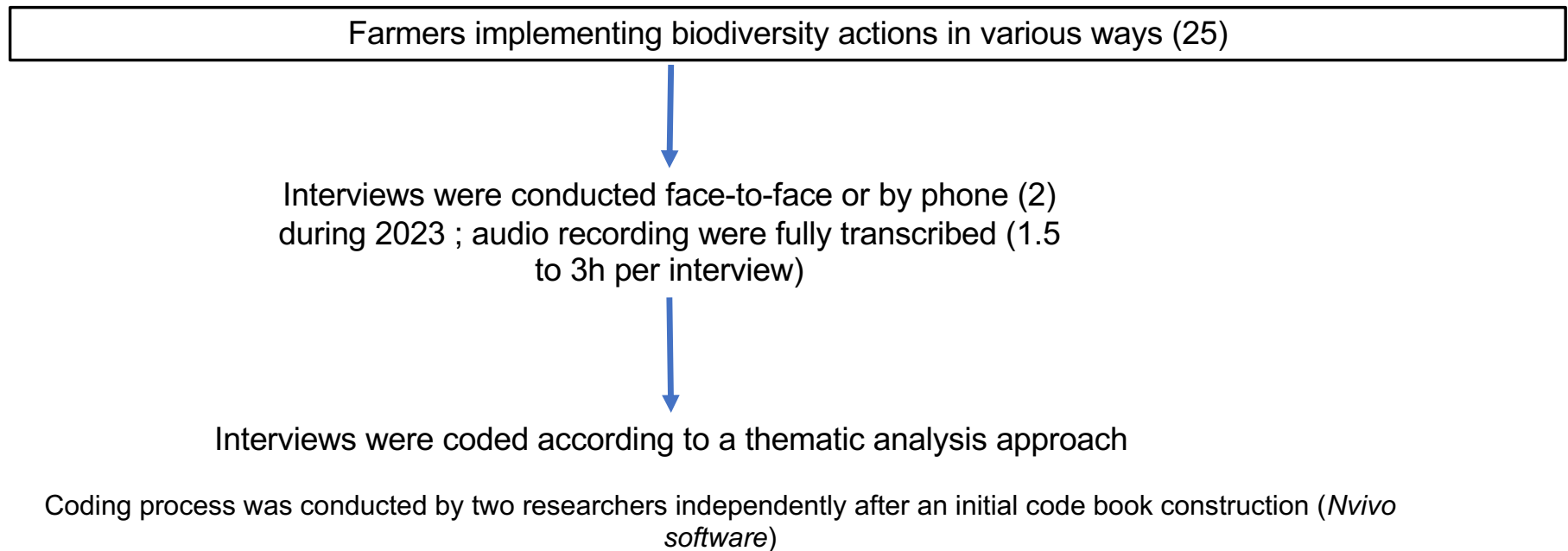
Production	Nb. (organic)
Cash crops	12 (5)
Market gardening (+ orchard)	4 (2)
Wine grower	1 (1)
Livestock	4 (4)
Mixed crop - livestock	4 (3)

They belong to different production systems



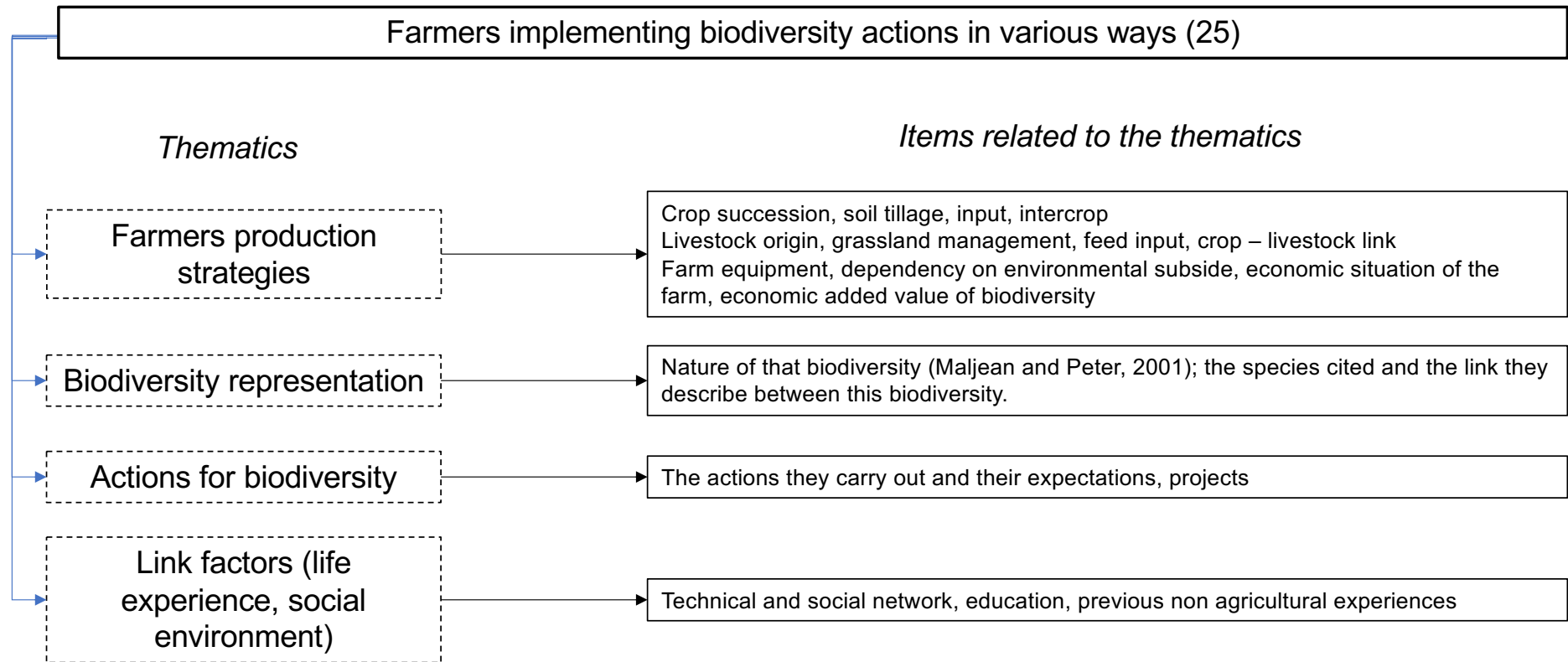
Were situated in contrasting landscapes

Data collection

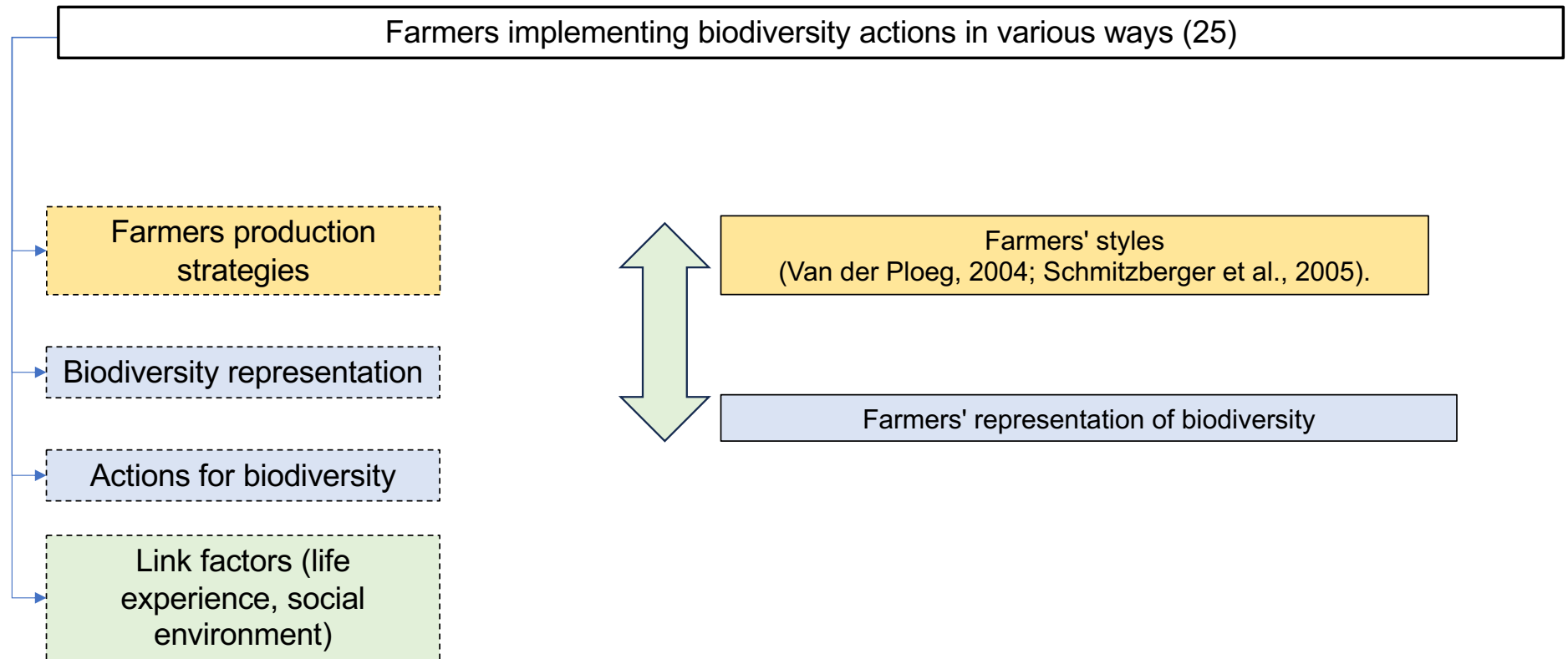


All respondents were informed about data collection and processing procedures and provided their consent

Data collection



Qualitative data analysis



Results – Farmers’ biodiversity representations and management

Low perception of biodiversity (LPB)		Biodiversity providing services (BPS)		Patrimonial Biodiversity (PB)	Biodiversity as a goal (BAG)
Biodiversity mainly perceived as negative	Biodiversity associated with organic farming	Cultivated biodiversity	Wild biodiversity (crop auxiliaries)	Wildlife species	Ecosystems and their biodiversity have to be preserved
Species cited according to damage they occur (mainly game or common bird species). (roe deer, wild boar, pigeons)		Species cited are frequently associated according to their genetics or their contribution to ecosystem services		Biodiversity is perceived as patrimony. Farmers are proud to hold biodiversity on their farms.	Farmers describe the ecosystems they wish to preserve and biodiversity associated. Well understanding of the ecosystem functioning.

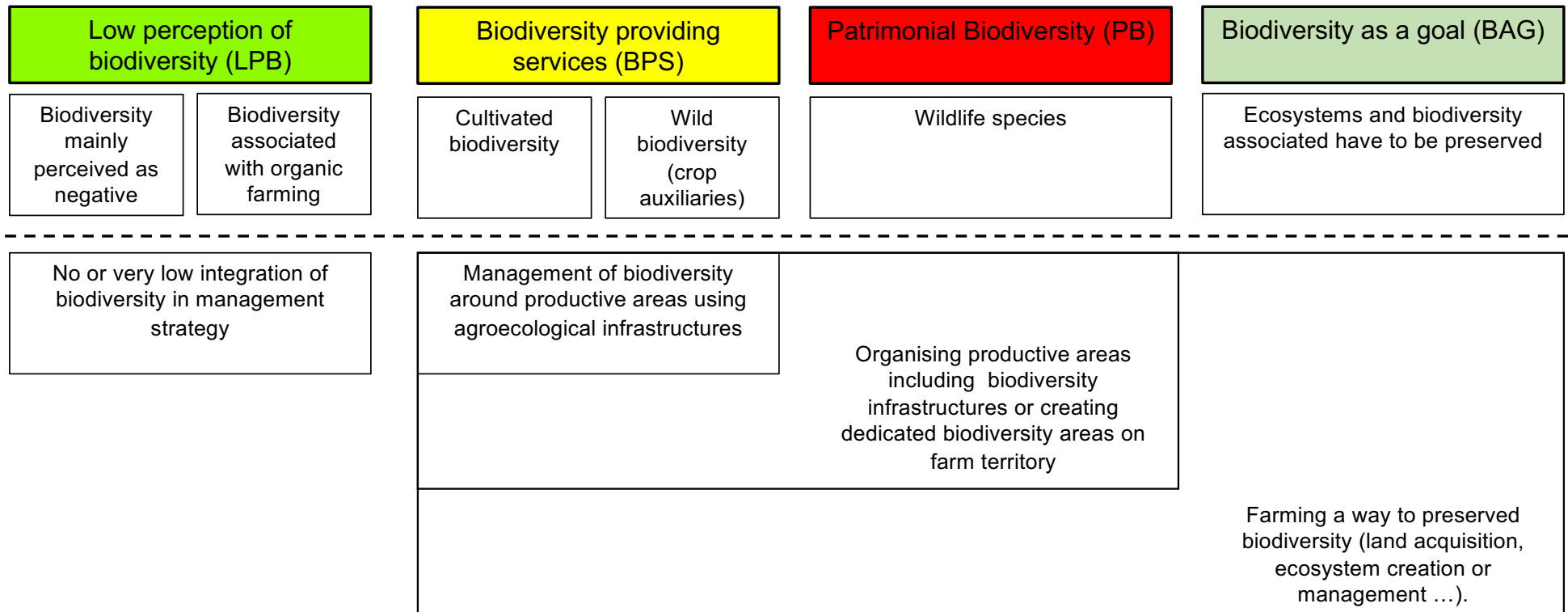
« My first motivation is that I've got a few beehives, so I'm going to make a melliferous hedge so they can go and forage nearby. Secondly, we don't have many grey partridges around here any more, so if it can bring back some partridges and small birds. »

“I try to regulate naturally. Put as many flowers as possible”; “We'd been seeing worms for several days, but we didn't know what they were, and we found them! It's an auxiliary, so we're happy!”; “No, it's just that from the outset I've always emphasized local varieties and biodiversity. Because for me, biodiversity also means genetics.”

“I'm curious, as soon as I see a bug in the ground that I don't know about I say to myself “what is it?”; « So that's the visible biodiversity. So we have the whole range of diurnal birds of prey, kestrel, buzzard, Saint Martin's hawk, sparrowhawk, which came back last year; that's extraordinary... »

« .. this is an extremely important biodiversity issue, because it enables you to achieve biodiversity objectives for late vegetation, i.e. the entire reproduction cycle of insects or lowland birds such as the Gray Partridge, the Skylark, the Montagu's Harrier, the Short-eared Owl and all these species, as well as spiders. »

Results – Farmers’ biodiversity representations and management



Results – Farmers' management styles

	Traditionalist	Optimiser
Nb. Farmers = 25	5	8
Agronomical consideration	Traditional succession and crop / livestock management	Economic optimisation of practices - implementation of substitution with current agroecological practices
Technical advisory	Traditional farm advisor	Traditional farm advisor - autonomous
Market orientation	Global market	Local to Global market
AES subsidies		

All the farmers interviewed indicated that they did not gain any economic value from their involvement for biodiversity.

Results – Farmers’ management styles

	Traditionalist	Optimiser	Installation
Nb. Farmers = 25	5	8	2
Agronomical consideration	Traditional succession and crop / livestock management	Economic optimisation of practices - implementation of substitution with current agroecological practices	Learning – agroecological farming as possible
Technical advisory	Traditional farm advisor	Traditional farm advisor - autonomous	-
Market orientation	Global market	Local to Global market	-
AES subsidies			

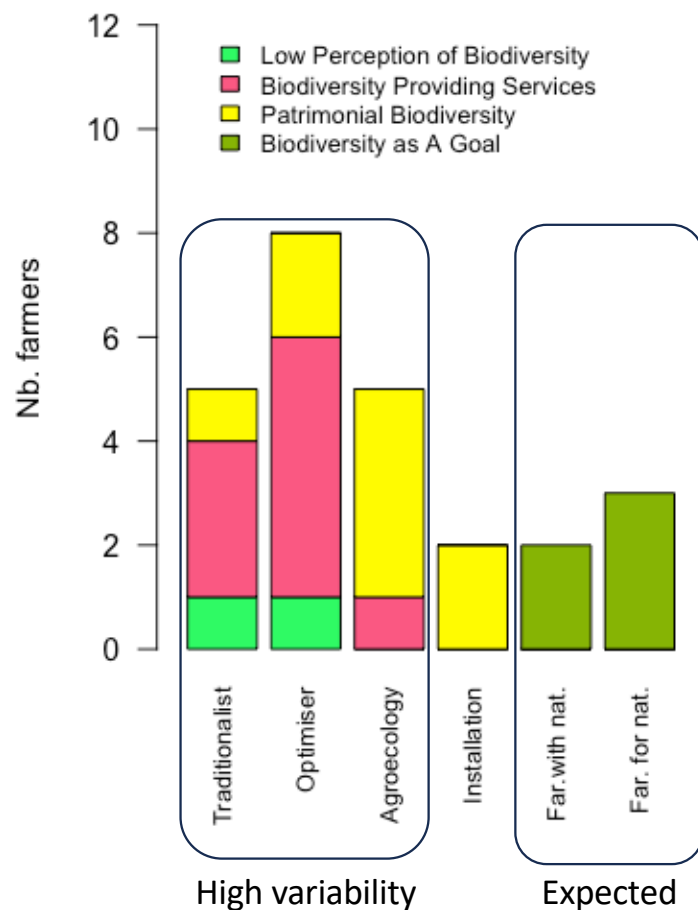
All the farmers interviewed indicated that they did not gain any economic value from their involvement for biodiversity.

Results – Farmers’ management styles

	Traditionalist	Optimiser	Agroecological farming	Installation	Farming with nature	Farming for nature
Nb. Farmers = 25	5	8	5	2	2	3
Agronomical consideration	Traditional succession and crop / livestock management	Economic optimisation of practices - implementation of substitution with current agroecological practices	Develop a systemic approach in their production system - strong link between crops and livestock	Learning – agroecological farming as possible	Strong understanding of the functioning of their agroecosystem - sustainable use of natural resources for production	Extensive management – valorisation of all natural resources – maintaining ecosystem as a goal.
Technical advisory	Traditional farm advisor	Traditional farm advisor - autonomous	-	-	Peer network – technical advice in out-of-the-box thinking	Peer network – technical advice in out-of-the-box thinking
Market orientation	Global market	Local to Global market	Local to Global market	-	High quality products, niches, flexibility - Local and high regional value	High quality products, niches, flexibility - Local and high regional value
AES subsidies			Dependent			Highly dependent

All the farmers interviewed indicated that they did not gain any economic value from their involvement for biodiversity.

Results - How far biodiversity representation and farmers' management styles are linked ?



- Perception of biodiversity is more important when farmers had different professional experiences before setting up (particularly in environmental matters) or when they have followed environmental studies (12/14 PB or BAG).
- All the farmers (-1) interviewed are in contact with / or involved in nature associations or structures
 - Acquire knowledge about biodiversity and benefit from biodiversity monitoring
 - Help with AES administrative formalities
- There are no quantified biodiversity targets, but rather a focus on habitat quality.

Moving forward for biodiversity in farms

- Access to AES or other forms of biodiversity conservation funding initiates a dynamic towards taking biodiversity into account.
 - This process is possible because it is supported by associations
 - Rules of AES when talking about biodiversity – producing high quality habitat rather than a number of individual or species / reglementary date for grassland management
- Participation in environmental networks or groups of farmers enable farmers interviewed to gain recognition for their work for biodiversity.
 - Technical and social isolation are major obstacles in involvement of farmers in biodiversity conservation
 - Need to rethink agricultural formation by integrating an understanding of the functioning of agroecosystems in which biodiversity must have its place
- Reconciling agriculture and biodiversity requires learning = takes time

How can we make biodiversity conservation an objective for farmers ?

*“... in fact we were trying to convince them that these practices would be technically effective without taking the time and care to make them proud of producing biodiversity...”
(Farmer #4)*

We would like to thank all the farmers and associations interviewed in this project.

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