Metaprogram
BIOSEFAIR

C-DIVERS

PATHFINDER PROJECT

2024-2026

Contribution of low-input, diversified cropping systems and hedgerows to sustain agroecosystem multifunctionality in crop-livestock production

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Keywords

Diversified cropping system
Hedgerow
Farmer decision
Interdisciplinarity

Thematics involved

Landscape agroecology
Systemic agronomy
Rural economics

Departments involved

ACT
AgroEcoSystem
AQUA
EcoSocio

Units involved

UMR BAGAP
UMR SAS
UMR SMART

Partners

Institut Agro Rennes-Angers, campus de Rennes

Backgrounds and challenges

The shift toward sustainable and resilient farming systems, combining biodiversity conservation and enhanced ecosystem services, is crucial. To achieve the transition toward such multifunctional systems, there is a need to identify at which spatial scales (field, farm, landscape) agroecological management practices should be implemented by farmers to optimise socioeconomic and environmental performances of cropping systems. We also need to identify the conditions which enhance or impede the changes in practices by farmers, in relationships with decisions and available resources of farmers at farm level, and well as with external drivers (market, sectors, public policies).

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Objectives

The project C-DIVERS aims at exploring the contribution of low-input diversified cropping systems and hedgerows at local and landscape scales to sustain agroecosystem multifunctionality, with an interdisciplinary approach combining agroecology, systemic agronomy and rural economics. It also aims at better understanding the decisional, socioeconomic and technical factors involved in the adoption of low-input diversified systems and the maintenance of hedgerows by farmers. The project will address these issues for crop-livestock farming systems in Brittany, Western France, where crop diversification is an important challenge regarding farm autonomy for proteins and crop protection against pests. In particular, the project will answer the following questions:

- Do low-input, diversified cropping systems and hedgerows, in interaction and at different scales, enhance agroecosystem multifunctionality?
- What are the drivers of farmers' decisions regarding the adoption of low-input diversified cropping systems and the maintenance of hedgerows on farms?
- How to foster changes in farmers practices to enhance agroecosystem multifunctionality?

Approaches

The project will combine (i) an in-situ assessment of the environmental and socioeconomic performances underlying agroecosystem multifunctionality, (ii) a comprehensive assessment of decisional factors involved in the changes in practices by farmers, and (iii) a prospective approach of agroecological transitions of farmers in relationships with their socioeconomic and political context. The study will be held in the long-term socio-ecological research site Zone Atelier Armorique. The two first questions will be addressed by combining (i) in-situ surveys and measures to characterize the environmental performances of cropping systems and hedgerows, and (ii) as descriptive and comprehensive interviews with farmers to assess the socioeconomic performances of systems (including productivity and its stability), and identify the technical and economic drivers of farmers decisions. To answer the third question, we will implement prospective scenarios (defined by the Regional agricultural chamber of Brittany), based on mixed methods (individual interviews and focus groups), to address the issue of the diversification of cropping systems and of hedgerow conservations in changing socioeconomic and political contexts. C-DIVERS will contribute to answer to the increasing need for indicators to assess the impacts of agroecological practices on biodiversity and ecological functions, and it will bring new insights regarding the conditions enhancing the agroecological transition of farms.