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MULTIFUNK

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Assessment of the multifunctionality of agroecosystems within the context of the spatial expansion of OA

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The development of agroecological cropping systems that optimize ecosystem functions supported by biodiversity appears to be a promising way to reconcile a reduced environmental footprint and viable economic activity. OA is often presented as an agroecological model that promotes biodiversity and certain key ecosystem functions. Nevertheless, the results vary considerably, and the environmental factors (e.g., practices, landscapes, climate) that influence these results remain poorly understood

Based on a common analytical framework for measuring the multifunctionality of cropping systems, the MULTIFUNK consortium began by creating a unique database to characterize the ecological (e.g., carabid communities, pest control), agronomic (e.g., yield, use of plant protection products) and economic (e.g., semi-net margin) performance of 297 cropping systems covering nine different crops, spread across France and over a gradient of OA-managed areas.

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The exploratory analysis of this data then made it possible to highlight:

- the major importance of the quantity of semi-natural habitats in the landscape (alone or in interaction with local management practices) on a majority of individual cropping system performances;
- no difference in the average multifunctionality between OA and conventional systems, but contrasting performance profiles between systems;
- no discernable impact of the proportion of land under organic farming on the local performances of the systems studied. This last point remains to be clarified, as does the effect of cropping practices.

These analyses confirm the importance of combining certain local practices and agroecological infrastructures in the landscape to promote the multifunctionality of cropping systems. Complementary analyses are currently underway to understand the effect of practices and of the landscape on synergies and antagonisms between multiple performances.

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