Co-designing digital tools to foster capacity building for on-farm experimentation: first steps from the Occitanum living labs

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Context, research problem, practical and theoretical background

One of the ten principles of agroecology, as defined by the FAO, is the co-creation and sharing of knowledge. This principle stresses the need to strengthen the capacities of farmers and stakeholders to learn, adapt and innovate together. On-farm experimentation (OFE) provides a promising framework for this purpose, allowing farmers to generate locally relevant knowledge and test new practices in real conditions. However, implementing OFE as a transformative learning process requires methods and tools that support observation, interpretation, sharing and collective reflection.

The Occitanum project, launched in southern France, explores how digitalisation can support agroecological transitions through multi-actor living labs. Within this framework, several labs are investigating how digital tools can help build the capacities necessary for farmer-led experimentation and collective learning.

Purposes and questions

This contribution focuses on the first phase of Occitanum, which aims to:

Explore how co-designed digital tools can contribute to capacity building for OFE;
Identify which capacities—individual, collective or systemic—are strengthened through these processes;
Discuss the main challenges of developing context-appropriate, accessible tools.

Design, methodology, approach

The current phase involves participatory design workshops and exploratory interviews across different production systems (viticulture, arable crops, agroforestry). The approach combines needs assessment, collaborative prototyping, and iterative evaluation of simple digital tools such as mobile applications, low-cost sensors and participatory data platforms.

Findings

Preliminary insights suggest that co-design processes already foster new learning dynamics. Participants develop basic data literacy and experiment-design skills (individual capacity); dialogue among farmers, advisors and researchers helps co-define relevant indicators (collective capacity); and early interactions set the foundations for future innovation networks (systemic capacity).

Practical implications

These results highlight the importance of co-design as a preparatory stage for OFE. Building user-friendly, adaptable and open digital tools facilitates future adoption and supports learning-by-doing processes among diverse actors.

Theoretical implications

This early work contributes to the understanding of capacity development in agroecology. It frames digital co-design not as a technical step but as a learning process that enables actors and systems to engage collectively in systemic change