



# European crop diversification experiences pushed by farmers exploring more sustainable agronomic practices

## Problem

Crop diversification experiences (CDE) of actors enhancing the sustainability of farming systems are being developed across Europe. In order to support the development of diversification, there is a need to learn from existing CDE and to better understand their drivers, the barriers they face, and the solutions developed to overcome these.

## Solution

Modelling farming system players' worldviews across a diversity of 11 European CDE mobilising agronomic innovations to highlight drivers and barriers that they face across three main dimensions: agronomy, socio-economy and ecology.

## Benefits

Key drivers, enablers, barriers, potential solutions and their relative importance were identified through the analysis of 1158 relationships existing between the actors and social (see Figure 1), economic and ecological concepts highlighted by 11 European CDE.

## Practical recommendation

- Three main types of farmers implementing agronomic innovations were involved in the CDE and were analysed and characterized. These types are (i) organic farmers, (ii) farmers applying soil conservation practices, and (iii) farmers involved in water protection areas.

## Applicability box

### Theme

Barriers and enablers, cropping system, learning, actors, multiple cropping, intercropping, rotation

### Agronomic conditions

All European cropping systems

### Application time

Any time

### Required time

Continuous learning process

### Period of impact

Duration of the crop diversification initiative

### Equipment

Depends on the crop diversification initiative

### Best in

Planning crop diversification initiatives

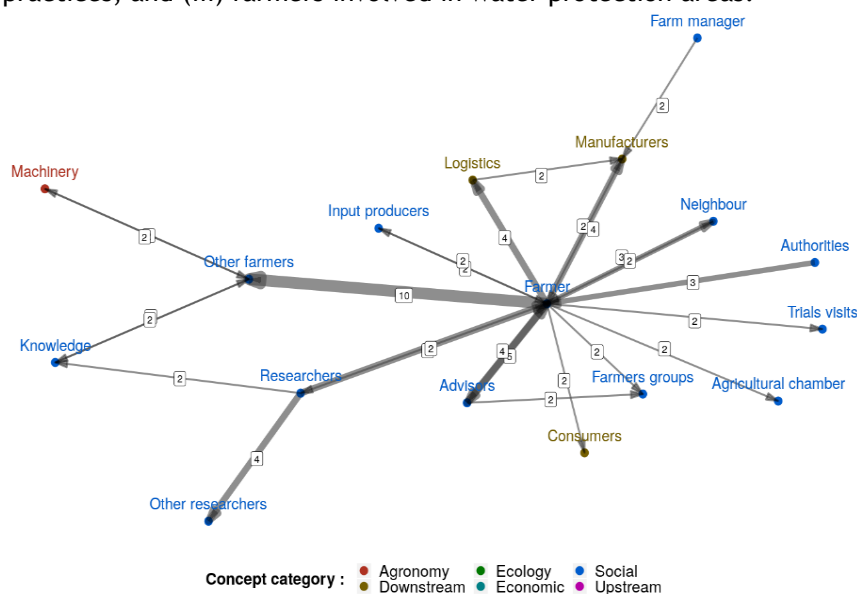


Table 1: Occurrence of the main success factors highlighted by the 29 actors interviewed across the 11 CDE analysed

Concepts	Centrality
Intercropping	62
Crop production	55
Knowledge	43
Cover crops	42
Organic	36
Profit	35
Farmer	34
Grain legumes	31
Rotations	30
Weed	25

Figure 1: Central part of the map highlighting players interactions across 11 crop diversification experiences linked to agronomic innovations. These relationships, linked to both success and failures factors, have been identified through the interviews of 29 actors of these CDEs (Vanwindekens et al., 2019, internal report).

- Farmers are in the centre of the map, with strong knowledge exchanges with other farmers (Figure 1 and Table 1). Knowledge and machinery is shared among others, through this cooperation, allowing farmers to have more influence over downstream players. However, some farmers mentioned that their relationship with their neighbours could be difficult if they are conducting their systems in a more innovative way.
- Farmers are both receivers and sources of knowledge, acquired from experiences, on-farm trials, magazines, or on the internet.
- The cost of machinery is a barrier to crop diversification, a solution to overcoming this lies in exchanging, renting or sharing machinery between farmers.
- Good cooperation with downstream players is needed to valorise innovative crops or cropping practices. For example, a good relationship with collectors is needed for the sorting of intercropped harvests.
- Advisors can play a crucial role in knowledge transfer and in facilitating interactions between various actors (Figure 1).
- Good communication support is sometimes required for highlighting and explaining the innovative aspects of crop diversification practices to society and to other farmers.
- In organic systems, farmers tend to diversify out of necessity: e.g. (i) the production of legumes for fertilization and (ii) extended rotations to prevent weed, pests and diseases.

## Further information

### Further readings

Seminal paper on the methodological approach (<https://doi.org/10.1016/j.ecolmodel.2012.11.023>)

Diversification des systèmes de cultures : les défis (<https://zenodo.org/record/2574549>)

### Weblinks

<https://frdvnw.gitlab.io/cogmapr/>

## About this practice abstract and DiverIMPACTS

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DiverIMPACTS: The project is running from June 2017 to May 2022. The overall goal of DiverIMPACTS - Diversification through Rotation, Intercropping, Multiple Cropping, Promoted with Actors and value-Chains towards Sustainability - is to achieve the full potential of diversification of cropping systems for improved productivity, delivery of ecosystem services and resource-efficient and sustainable value chains.

**Project website:** [www.diverimpacts.net](http://www.diverimpacts.net)

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