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AGRICULTURE & INNOVATION

Cropping for the future: networking for crop rotation and crop diversification

Many different schemes of crop rotation and crop diversification (CR&CD) have been introduced throughout Europe in the past centuries. Nevertheless, during the last decades the diffusion of these practices has been considerably reduced, in favour of an overspecialisation and oversimplification of cropping systems, which in the long run produced several negative environmental and even economic drawbacks.

More recently, CR&CD have regained popularity, following the development of a new agricultural paradigm. This involved a shift in focus, from immediate, single-farm benefits of yield and economic cost of production, to long-term, collective and comprehensive returns. This approach considers yield as only one of the targets, complemented by several other services provided by the agricultural activity.

To address the vast interest in the implementation of this 'agro-ecological' production system, specifically through advances in CR&CD, the European Commission's Directorate-General for Agriculture and Rural Development and the EIP-AGRI Service Point organised a one-and-a-half-day workshop in the Netherlands, June 2019. This event was dedicated to networking and sharing experiences with innovative projects that deal with these two farming practices.

The workshop explored the benefits and impacts of CR&CD on ecosystem services, and looked at challenges that these innovative projects are dealing with, and possible solutions inspired by the exchange of experiences and good practices. The participants also identified several research needs.

Some of the main outcomes from the workshop

Benefits from crop rotation and crop diversification

- ▶ Compared to monocultures, CR&CD produce more stable yields in the long run, both in conventional and in organic farming.
- ▶ CR&CD can help increase nutrient input and soil fertility, by introducing legumes and crops with rooting systems that explore different soil layers. This can reduce nutrient depletion and leaching, and improve soil structure and chemical properties.
- ▶ CR&CD can help manage the control of weeds, pests and diseases, even in situations with reduced application or without the use of pesticides.
- ▶ CR&CD can deliver a wide range of ecosystem services. This includes reduced runoff and soil erosion, improved water conservation, more efficient use of water, enhanced soil carbon sequestration, reduced nitrogen in water, and increased above- and below-ground biodiversity.

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Obstacles for implementing innovation in CR&CD

- ▶ The average levels of technological knowledge and awareness of European farmers are still far from the level that is necessary for a prompt adoption of innovation in CR&CD.
- ▶ The involvement of non-agricultural actors in the process, such as the agro-industry, plant breeders, machinery producers and retailers, is still inadequate.
- ▶ Dissemination of knowledge and innovation on CR&CD to farmers needs to be enhanced.
- ▶ There is still a poor recognition from the market and from public policies for the ecosystem services that CR&CD can provide.

Solutions to boost innovation in CR&CD

- ▶ Improving collaboration between the different stakeholders.
- ▶ Developing simple models and tools for testing scenarios at farm level.
- ▶ Farmers should be aware of the crucial role they play in producing healthy food for the population.
- ▶ Strengthening food certification, ecological labelling, increasing consumers' knowledge of the whole process of food production
- ▶ Involving retailers in awareness campaigns that highlight the ecosystem benefits produced by CR&CD.

More benefits, challenges, opportunities, and research needs can be found in the final report



More information

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| Workshop webpage | Final report |
| Video: AGRI challenge: crop diversification in grass land | Inspirational ideas <ul style="list-style-type: none">• Crop diversification- multiple benefits for dairy farm• A passion for permanent pasture |

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