



Sustainability through diverse farming

- A new direction for Finnish crop production

It is time to diversify Finnish arable crop cultivation. Crop diversity supports all the objectives of sustainable crop production. However, measuring the sustainability of diverse crop production is challenging, as knowledge on the effects of different cropping practices and their combinations is still very limited, especially in boreal conditions. In response, Luke has built together with companies and agricultural interest organizations MTK and SLC a large-scale sustainable crop production project to study crop diversity using extensive database, experimental approaches and life-cycle assessment.

Status of crop rotations

The first part of the project examines the current situation of contractual farms and compares them with other similar farms in the same region. The analyses are grouped into four main themes: crop rotations, pre-crops, cover crops and farmers' yield gap.



Crop rotation experiment and on-farm trials

The second part of the project creates solutions for sustainable plant production. New information will be produced by 5-year-long crop rotation experiment and on-farm trials carried out by contractual farms. Rotations will include spring and winter cereals, oil crops, legumes, and other seed crops. The focus of the different cereal-based crop rotations covers carbon sequestering and maximal use of legumes. Also, gluten free crops in an own rotation as part of diversified food crop production will be studied. Different observations and analyses will be carried out from the soil and crops to produce information on e.g. soil fertility, carbon content, overwintering of the crops, plant pests occurrence, and nitrogen use. Mixed intercropping systems can be one of the issues tested in farmers' fields.



Modelling environmental impacts and profitability

The third part of the project models how crop diversity changes the environmental impacts and profitability of farming. These questions will be approached through combining dynamic agroecological models of farming systems and life cycle assessment and economic analysis of alternative cropping systems. The methodological development will allow the assessment of environmental and economic impacts of diverse farming systems.

Communication and dissemination

The project places a strong emphasis on farmer cooperation. The main goal is to utilize the two-way transfer of knowledge and experience between research and farmers (e.g., annual field days and free webinars). The project also produces recommendations for political decision-makers and publishes research results in peer-reviewed scientific publications. The dissemination and effectiveness of the information will be ensured in cooperation with appropriate partners including company partners.

Funding and timetable

The project is funded by Luke, Viking Malt, Anora, Raisio, Olvi, Sinebrychoff, MTK and SLC. The project started in June 2023 and will be finalized in August 2029.



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