



UNISECO



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Mitigation of climate change by humus formation and regenerative arable farming in Eastern Austria

Photo: R. Weissshaidinger

Understanding and Improving the Sustainability of Agro-ecological Farming Systems in the EU

ISSUE BRIEF

Agroecological farms achieved the highest ecological and social sustainability performance when having a high diversity of products and alternative marketing channels.

The case study background is climate change, increasing exposure to periods of water scarcity and low or declining organic matter content on arable land in Eastern Austria. The case study analysis addressed barriers and drivers of the transition to regenerative, agroecological farming.

Knowledge barriers

Intensive farming leads to physical, chemical and biological degradation of arable soil. Farmers often refuse the idea of soil regeneration because of economic doubts but also by peer pressure. Barriers to successful carbon sequestration are insufficient knowledge of the soil and humus system among farmers and advisors.

Soil regeneration

Soil regenerating and agroecological practices help to address ecological sustainability: No or reduced tillage (site-specific), year-round green cover of high diversity and compost reduce greenhouse gas emissions, sequester carbon in the soil and improve farmers' resilience against climate change impacts. By implementing these soil regenerating measures, an average of 6 tons of CO₂ per hectare and year is sequestered on 4500 hectares, leading to climate change adaptation and sustaining other ecosystem services.

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Related to UNISECO case study:

[Mitigation of climate change by humus formation in arable farming \(Ökoregion Kaindorf, Austria\)](#)

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Year-round green cover

Year-round green cover of arable soils is an essential soil regenerating and agroecological practice.

Photo: Rainer Weissheidinger

Market mechanisms such as CO2 certificates in the Ökoregion Kaindorf may increase the income of farmers. More knowledge transfer in complex topics of soils and agroecology is needed in farmer's education schemes. Besides, specific and systemic agroecological advice and applied research support farmers challenges. A transformation is possible if alternative market channels for agroecological products are developed and a change in the price policy for food is in place.

POTENTIAL OUTCOMES

Regenerating soils and carbon sequestration is of general need in farming – from a farmer's and a social perspective. Measures targeting regenerative soil management realise synergies such as climate change mitigation and climate change adaptation, reducing soil erosion and promoting biodiversity. Agroecological farmers achieved the highest ecological and social sustainability performance when having a high diversity of products and alternative marketing channels.

FURTHER INFORMATION

Case study description and story map: <https://uniseco-project.eu/case-study/austria>

Ökoregion Kaindorf (in German only): <https://www.oekoregion-kaindorf.at/humusaufbau.95.html>

ABOUT UNISECO:

UNISECO is a European research project aiming to develop innovative approaches to enhance the understanding of socio-economic and policy drivers and barriers for further development and implementation of agro-ecological practices in EU farming systems.

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<https://cordis.europa.eu/project/id/773901>

<https://zenodo.org/communities/uniseco-h2020/>

UNISECO in the EIP-Agri projects database:

<https://ec.europa.eu/eip/agriculture/en/find-connect/projects/understanding-and-improving-sustainability-agro>

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