

**ORGANIC
LIVING LABS
&
LIGHTHOUSE
FARMS IN
EUROPE**

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Executive Summary

In light of the new [Organic Action Plan for the EU](#), which recognises the importance of research and innovation for organic, knowledge exchange on organic farming, and building organic agricultural knowledge and innovation systems (AKIS), TP Organics' study presents seven organic living labs and five organic lighthouse farms (one of them counting as both) that demonstrate how innovative the organic sector is in improving organic practices and inspiring the transformation of the wider agri-food system. The selected initiatives showcase not only technological but also social, economic and organisational innovation, applying a multiplicity of approaches and methodologies across Europe to find local organic solutions and improve the sharing of knowledge and innovation in the organic sector. The results indicate actions that should be taken to enable organic living labs and lighthouse farms to reach their full potential:

- Support peer-to-peer learning events and activities such as workshops, seminars, field visits, on-farm demonstrations, roundtables, or webinars providing space for informal exchanges and networking. Rural peer-to-peer hubs should be developed that focus on local problems.
- Allocate funds to develop trainings or modules that target farmers and organic initiatives to improve their engagement through online platforms and their social media presence.
- Build a communication and dissemination network specialised in science communication.
- Create space to bring organic and conventional farmers together, both in-person and online.
- Raise awareness about the concepts of living labs and lighthouse farms in the organic sector.

- Develop projects that focus on the building, strengthening or maintenance of organic, real-life experimentation or demonstration networks (national or international).
- Invest in the development of courses, training, or projects to educate organic researchers and farmers about ideation methods and imaginative thinking techniques, including co-creation or co-innovation methods.
- Develop a sub-network for organics in the Soil Mission network of living labs and lighthouse farms to create a network of soil health-focused living labs and lighthouses across Europe.
- Enable organic living labs, lighthouse farms and their networks to integrate their results and experiences into the national system, so that organics would be equally represented.
- Raise awareness about AKIS and the services they offer.
- Set up an EU network of organic advisory services that will connect farmers, advisors, and other actors from across the EU to help address the problem of disconnect from and underrepresentation of organics in national AKIS.

The study points out that the needs of organic farmers and other actors are currently not sufficiently met through existing AKIS. The national advisory services rarely include and communicate about organic solutions, let alone the latest innovation. To organise a better flow and exchange of information, a European organic advisory network should be developed, to solve the problem of disconnect from and underrepresentation of organics in national AKIS. It would also have the potential to function as a platform that supports participatory, farmer-led research and innovation.



Introduction

TP Organics is one of the 40 European Technology Platforms recognised by the European Commission. **Our mission is to strengthen research and innovation (R&I) for organic and other agroecological approaches** that contribute to sustainable food and farming systems. R&I is crucial for the development of the organic sector and the design of more sustainable, ecological food systems. That is why TP Organics has been shaping R&I agendas to advocate for more sustainable food and farming systems in Europe based on organic and agroecological principles since 2007. Furthermore, we promote research participation and knowledge exchange between the organic actors.

To make our food and farming systems resilient, climate-neutral, circular, diverse, and fair, as well as prepared for the rapid digitalisation of our economies, all actors need to change the way we produce and consume our food. Policymakers have a crucial role to play in this transformation. It is welcome that recent policy initiatives highlighting the importance of sustainable agriculture call for greater cooperation between researchers and the farming sector. In its new R&I instruments such as the Mission 'A Soil Deal for Europe' and the European R&I Partnership on agroecology living labs and research infrastructures, the European Commission puts open innovation arrangements, in particular living labs and lighthouse farms **in the limelight**. In this context, **TP Organics' study shows cases concrete, real examples that demonstrate how innovative the organic sector is, both with regards to improving organic practices, and inspiring and leading the transformation of the wider agri-food system.**

Organic – innovative by default

The innovation potential of a sector is determined by many factors – from its stakeholders' education level and proportion of age to risk-taking appetite. Organics excels in this regard: **As a knowledge-intensive agroecosystems approach, organic is innovative by default and has the potential to trigger a profound transformation of the European agri-food system**, starting from bottom-up innovation – from organic living labs and lighthouses. Organics encompasses local, traditional and scientific knowledge and methods of production. At the same time,

it is very modern. The sector continuously experiments with and adopts new digital technologies such as sensor techniques, while excluding high-risk technologies (e.g., GMOs). It maintains a close relationship with consumers and other value chain stakeholder to shorten the supply chain. Organic innovation – from novel technologies to new forms of organisation and knowledge-based innovations – are often place-based and adapted to the local context while open to be used in the conventional agri-food sector.

Managers of organic farm holdings tend to be younger than managers of non-organic holdings. The share of farm managers under 40 years was twice as large for organic farms (21.0 %) in 2020 as for non-organic farms (10.5 %) ¹, showing the sector's attractiveness for the younger generation. Organic farms are typically more multifunctional, with organic farmers not only enhancing ecosystem services or public goods such as soil fertility, clean air and water, climate change mitigation and adaptation, thriving wildlife, landscapes and biodiversity but also frequently diversifying their sources of income to include agri-tourism, education, on-farm processing, direct marketing, as well as recreational and social activities. The sustainable use of resources, diversification of production systems and the capacity for self-organisation and innovation are essential for socio-economic resilience ².

Yet, despite the huge opportunities for accelerating innovation, the sector faces a wide array of challenges – from finding the right information or organic solution to a specific problem and accessing suitable training, equipment and advice to finding apt platforms or communities for sharing knowledge and experience.

1 Eurostat (2022): Organic farming statistics. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Organic_farming_statistics#Organic_production

2 IFOAM Organics Europe (2022): Organic agriculture and its benefits for climate and biodiversity. https://www.organicseurope.bio/content/uploads/2022/04/IFOAMEU_advocacy_organic-benefits-for-climate-and-biodiversity_2022.pdf?dd

Defining living labs and lighthouses

The European network of living labs (ENoLL) defines living labs (LLs) “as user-centred, open innovation ecosystems based on systematic user co-creation approach, integrating research and innovation processes in real-life communities and settings. Living labs are both practice-driven organisations that facilitate and foster open, collaborative innovation, as well as real-life environments or arenas where both open innovation and user innovation processes can be studied and subject to experiments and where new solutions or products are developed.”³

The EU Mission “A Soil Deal for Europe”⁴ and the European Partnership on agroecology living labs and research infrastructures⁵ draw on ENoLL’s definition of LLs, highlighting that innovation and adoption of more sustainable agricultural practices can be accelerated in these structures by engaging farmers and other stakeholders in developing tailor-made solutions to local or regional problems. **In the case of organic living labs, the improvement of and experimentation with organic farming practices is in the centre of R&I**, with the aim of finding solutions to build better linkages with the food system by looking at social and behavioural aspects. **Organic living labs are mainly farmer-led initiatives**; therefore, they are developed to address farmers’ needs on a very practical level using co-creative methods to plan and conduct real-life experimentations such as on-farm trials, experimental fields set up on working organic farms, or product development. Since these living labs are simultaneously looking for solutions to address problems on the scale of the larger food system, they actively involve and integrate other stakeholders of the organic value chain, from consumers to companies, into their research process as equal partners to propose ideas, test them, and promote them further. This helps to increase the impact of innovative organic solutions and facilitates better exchange and learning between stakeholders, knowledge creation and finding the most appropriate organic solutions to specific local problems from which all stakeholders who participated in the research process can benefit.

Next to living labs, the EU Mission “A Soil Deal for Europe” puts a great emphasis on **lighthouses**. These are single sites, like a farm or a park, for demonstration, education and peer-to-peer learning where good practices are

tested or are in place and can be shown to inspire other practitioners to move towards sustainable land management. In addition, in lighthouse sites, researchers work together with land managers to ensure that their research responds to concrete needs encountered in the field.⁶ According to the Global Network of Lighthouse Farms, lighthouse farms are existing, commercially viable farms in the real world; they are positive deviants and are ‘already in 2050’ in terms of providing sustainably produced food and ecosystem services. In this sense, **organic lighthouses are single farm sites or network of farms where organic practices are demonstrated for educational purposes or to showcase site-specific inspiring examples and to increase the adoption of innovative solutions among farmers**. These lighthouses often work together with research institutions or companies to conduct experiments and tests to improve organic practices.

Study approach

This study builds on the knowledge and definitions already developed in two EU-funded research projects: (1) ALL-Ready project specified the concept and criteria of agroecological living labs (Mambrini-Doudet et al., 2021); and (2) Soil Mission Support, which jointly developed the definitions for soil living labs and lighthouses (Maring et al., 2022). For defining their living labs, both projects relied on the five main components of living labs determined by ENoLL, i.e., co-creation, user-centeredness, multi-stakeholder approach, multi-method approach, and real-life circumstances. Therefore, these components were all considered in the selection of the organic cases.

During the mapping of organic cases, several networks built under EU-funded projects, such as ALL-Ready’s pilot network of agroecological living labs and research infrastructures, Agroecology-TRANSECT Innovation Hub network, the DESIRA living lab network, and the Soil Mission Support’s soil living lab and lighthouse network provided the pool to select the most inspiring examples for this study. Further networks such as the Global Lighthouse Network, IFOAM Organics Europe’s network and the BIOEAST Initiative network were used as sources to find potential cases. In total, 7 living labs and 21 similar initiatives, including Italian Bio-District Cilento, were included in the inventory, as were 9 lighthouse farms and 8 initiatives that identify as living labs but could be seen as lighthouses, including Agrolab.

³ <https://enoll.org/>

⁴ https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/eu-missions-horizon-europe/soil-health-and-food_en

⁵ https://ec.europa.eu/info/research-and-innovation/research-area/agriculture-forestry-and-rural-areas/partnership-agroecology_en

⁶ https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/eu-missions-horizon-europe/soil-health-and-food_en

The screening of the identified organic living labs and lighthouse farms was based on the following criteria: (1) Selected initiatives should be in line with or approach the definitions provided for living labs and lighthouses in the ALL-Ready and Soil Mission Support projects (following ENoLL); and (2) the selected initiatives should cover the diversity of the main four European regions (North, South, West, and East), marketing channels (on-farm, short supply chain, retail etc.), sizes/scales (small, medium-sized, large), structures and forms of organisation (family farm, co-op, association etc.), innovation activities (farm trials, education, farmer field schools etc.), and type of innovation pursued (technological, know-how, organisational, social, economic, governance, political).

However, it is important to note that, while some selected cases can be officially defined as living labs based on ENoLL standards, there are cases that are only similar open innovation structures or demonstration sites that do not refer to themselves as living labs or lighthouses.

A bio-district is a geographical area where farmers, citizens, tourist operators, associations and public authorities enter into an agreement for the sustainable management of local resources, based on organic production and consumption as well as alternative distribution channels such as short supply chains, organic public procurement etc. The promotion of organic produce is inextricably linked to the promotion of the land and its special characteristics so that it can fully realise its economic, social, and

cultural potential. Bio-districts can promote a veritable “agricultural renaissance”, using the organic model as a reference point for agriculture as a whole, contributing to a form of economic development and fair trade that benefits rural development and tourism (Associazione Italiana per l'Agricoltura Biologica & Associazione Bio-Distretto Cilento, n.d.). However, as a report on “Organic Districts (or Eco-Regions or Bio-Districts) in Europe” was already published in the framework of the EducEcoRegions Project⁷, this initiative was not selected for in-depth analysis.

As a result, **7 organic living labs** and **5 lighthouses** were selected for this study to demonstrate at the example of real-life, inspiring initiatives how innovative the organic sector is. In-depth interviews (online conference calls) were conducted with the representatives of the selected initiatives, mainly focusing on their living lab and lighthouse characteristics, innovative activities developed and improved in real-life circumstances, and their promotional activities through knowledge sharing. One of the initiatives, INAGRO, however, falls into the category of both living lab and lighthouse as their operation, applied method and real-life on-farm co-testing with farmers and stakeholder engagement very much resembles to living lab. At the same time, they operate a demonstration network with the farms where the co-testings are taking place.

⁷ https://www.ecoregion.info/wp-content/uploads/2021/11/O1-A1_Organic_Districts_in_Europe.pdf



| Organic living labs | Organic lighthouse farms |
|------------------------|--------------------------|
| Agrolab Madrid | INAGRO |
| Bio Danubius | EKOOFARMA PROBIO |
| Carbon Action Platform | GRAND FARM |
| InnoForum | La Junquera |
| LLAEBIO | Mustiala |
| ÖMKi | |
| INAGRO | |

01



Agrolab – inviting citizens to cultivate peri-urban fields while teaching them agroecological practices and entrepreneurial skills

Agrolab offers one-year theoretical-practical training in two phases to support the planning and management of an annual crop cycle in an organic manner: In the first phase, basic concepts such as collective decision-making, land preparation, irrigation installation, planting, pest control, harvesting, etc. are taught and then put into practice. The second phase is aimed at students who want to continue with a more professional training to dedicate themselves to the agricultural sector. Their training method focuses on practical, long-term mentoring.

Agrolab (Laboratorio de Agricultura Abierta) - Spain

Since 2015, Agrolab's projects in 4 sites have attracted over 200 participants and many of whom have joined the agrarian sector professionally. Each site develops its own market access strategies. A Community Support Agriculture (CSA) system is complemented by open market days. Participants are assisted in developing commercially resilient, agroecological production. Agrolab is committed to involve more vulnerable groups, as well as local producers and citizens in general through workshops that focus on food processing and the development of sales channels.

INFO BOX

- Agrolab Madrid, established in 2015 by Madrid Institute for Rural, Agrarian and Food Research and Development, consists of community farm projects at peri-urban fields surrounding 4 smaller municipalities in the Community of Madrid.

- Production is fully organic (not yet certified) at all sites, with a focus on vegetables, fruits, herbs, and berries.
- Stakeholders involved: research institutes and university departments, local authorities providing space for the projects, citizens, local associations, mentors providing technical assistance, and lately local restaurants or social canteens
- Workshop themes: production of spirulina algae, project marketing, beekeeping, seed management, grafting, solar cookers, drip irrigation, composting, etc.

Innovative ways of improving organic practices

Agrolab functions as a participatory research action group that builds on the living lab approach. Assisted by a mentor, they study the processes and collaborative agricultural practices through which they reconnect urban and rural environments and related ecosystem services, as well as participants' priorities. The participants organise themselves in working groups that focus on the activities they previously identified as essential for their site and project, e.g., freshwater availability, soil conservation, habitat for species, etc. They are actively involved in finding solutions to the issues they encounter during their training or on the field. To manage the groups and deal with their internal dynamics, each site has an observer assigned to it who supports participatory decision-making and problem-solving.

The sites participate in the efforts of IMIDRA's seed bank to maintain traditional varieties. They reproduce the seeds they get from them in the project, which makes the participants "seed custodians", and host a study that compares the yields, quality, and climate adaptation potential of these traditional varieties to commercially available seeds. The project sites moreover provide space to test innovative agricultural practices, products, and business ideas. As a research centre, IMIDRA can propose field trials to be set up at these sites (e.g., to see how certain varieties adapt to local climatic conditions) and supply scientific evaluation.

Collective actions taken at the Agrolab project sites to enhance ecosystem services

Providing ecosystem services:

- Obtaining quality food products and short food supply chains following agroecological principles
- Conserving local varieties: traditional seed custody, *in situ* conservation, data collection

Regulating ecosystem services:

- Soil fertility (deep-root plants, growing green manure, green waste composting)
- Pollination (nest sites, annual and perennial plants with melliferous flowers)
- Air quality (improved by the cultivation of underutilised, abandoned land)
- Healthy outdoor spaces
- Habitats for species (soil biodiversity, field margins, crop diversification and wild biodiversity)
- Water flow regulation (drip irrigation, maintenance of irrigation channels, soil mulching)

Cultural ecosystem services

- Knowledge exchange (trainings, collective plots)
- Agrarian landscape preservation
- Sense of belonging/community, self-esteem
- Maintaining traditional and cultural knowledge and practices

(Source: García-Llorente et al., 2019)

Accelerating innovation through field visits, knowledge sharing and workshops

While not organising on-farm demonstrations, Agrolab is open to group visits from schools and associations interested in the project. The same methodology and similar activities are applied at the different project sites, inviting the participants from ongoing projects to the new sites for knowledge exchange. On a monthly basis, they also organise workshops open to the general public at their sites. The workshop topics are often proposed by the project participants.

Networking experience

Agrolab collaborates with social groups and other entities such as local municipalities, universities and other research centres, social innovation centres, other CSA groups, etc., following a participatory approach. Besides building new networks between producers and consumers, this brings new perspectives into their projects. They actively collaborate with Medialab Prado, a cultural space for citizen innovation, and lately engaged the gastronomy sector, supplying local social canteens and restaurants. This motivates them to explore organic certification processes, as all their production is organic since the beginning.

Conclusions

The case of Agrolab Madrid shows the significance of including non-traditional agricultural stakeholders such as non-professional farmers and citizens into the research and innovation on peri-urban fields owned by local municipalities to produce for self-sufficiency and local markets or restaurants committed to local sourcing, thereby supporting the uptake of organic practices.



More information

- [Agrolab Madrid](#)
- Participatory research done at Agrolab:
- “Participatory collective farming as a leverage point for fostering human-nature connectedness” by Irene Pérez-Ramírez, Marina García-Llorente, Clara Sabán de la Portillac, Alejandro Benitoc and Antonio J. Castro (2021) in *Ecosystems and People*
- “Agroecological Strategies for Reactivating the Agrarian Sector: The Case of Agrolab in Madrid” by Marina García-Llorente, Irene Pérez-Ramírez, Clara Sabán de la Portilla, Carmen Haro and Alejandro Benito (2019) in *Sustainability*
- A participatory action research based on Agrolab project: “Towards an agroecological transition in periurban agrarian systems in Madrid (Spain)” by Marina García-Llorente, Carmen Haro, José Luis Cruz and Alejandro Benito (2015) at the Second International Conference on Agriculture in an Urbanizing Society



02



Bio Danubius – a capacity-builder living lab in an ecologically sensitive area

Bio Danubius is a living lab that focuses on capacity building to secure the sustainable development of the ecologically sensitive and economically vulnerable area within the Danube Delta region in Romania. They provide an interactive space for their members to participate in the development of various forms of cooperation and to engage in the processes of co-creation to develop innovative solutions responding to their needs.

Bio Danubius – Romania

INFO BOX

- **BIO DANUBIUS, established in 2015,** is a living lab with a diverse range of stakeholders active in the Danube Delta region and the wetlands along the Danube.
- **Type of actors engaged:** USH Pro Business centre of Spiru Haret University, Danube Delta Biosphere Reserve and National Institute for Research and Development Danube Delta, representatives of the organic farming sectors' value chain (farmers, associations, SMEs), representatives of other relevant industries (logistics, tourism, fishing, and renewable energy), academics and researchers, innovation and technological transfer centres, and NGOs dedicated to environmental conservation
- **Services offered to their members:** supporting the competitiveness of companies within the cluster, joint development of products and ser-

vices and their marketing, organising meetings and activities to establish collaborations within the cluster, benchmarking, providing information on programmes and opportunities, fundraising, joint project implementation, participation in training and life-long learning programmes, supporting innovation, research and development as well as participation in national and European networks

- Specific achievements include improvement of local value chains (through certification and labelling), developing synergies between value chains of different sectors (agri-food, ecological tourism, fishery), establishment of an industrial eco-park for processing, research, storage, logistics, and export activities
- **Organic farming techniques promoted within the cluster:** crop rotations, no tillage, cover crops, IT solutions for farm management and crop monitoring

Accelerating innovative solutions

Bio Danubius is highly invested in identifying members' needs. As a member of international organisations, like **IFOAM – Organics International**, the cluster managers are up to date regarding the trends in organic farming and actively search for solutions that are relevant for their members. They convey the information to their members and make efforts to make these solutions work in their own context. Through informative events and on-farm demonstrations, targeted efforts, meetings and

workshops, they provide a structured space where members can discuss the solutions and relevant practicalities, such as any financing schemes or funding options. Coordinators within Bio Danubius help the actors to disseminate and reflect on their experiences.

One of the main challenges they face is improving cohesion, since farmers are individualistic in nature. They need to be able to develop trust and keep it alive for many years. Furthermore, they need to keep their members' interest high. The farmers are mainly looking to improve their capacities in order to reduce their costs and be more profitable. They are interested in market development, how to find new customers, and how to enter new, even international markets.

Example of an ongoing co-creation process: a label for organic wetland production

Bio Danubius introduced the idea of developing a private label for the farmers, a private voluntary standard going beyond the basic organic certification requirements, by developing indicators reflecting on the area they operate in. Being in the wetlands area allows them to add new criteria and selling propositions, since they belong to a highly protected area and their products have exceptional microbiological content.

Steps of the co-creation process:

- Informing farmers about such labels and their benefits
- Identifying the capacity of the farmers to cooperate
- Increasing the cohesion of the group step by step through regular, at least biannual meetings
- Setting up knowledge events and stakeholder meetings to develop the requirements of the standard
- Further stakeholder meetings to decide how to translate this standard into a certification process
- Introducing branding strategies

Networking

Bio Danubius is aware that collaboration is essential for regional competitiveness. Aiming for strategic partnerships, they collaborate with other Romanian, foreign and international clusters and networks and participate in several transnational collaborations that focus on the Danube Region. Through their networks, they moreover get engaged in national, interregional, and EU programmes with funds. Romanian Cluster Association (CLUSTERO) is their main platform for cooperation, information exchange and support for regional development in Romania. Inter-Bio, a communication platform that includes four clusters from different regions of Romania (Bio Danubius, BioNEst, BioConcept, and Bio Oltenia), is their umbrella association, holding annual/biannual meetings and encouraging members with shared thematic interest to participate in events from different clusters. These clusters are seen as regional living labs. Their managers jointly organise events on themes relevant to all the clusters to enable knowledge transfer among different regions.

Conclusions

Bio Danubius is a space for developing pathways for co-creation where different stakeholders from the region are combining their knowledge and transforming it into common knowledge of the group, based on which they can innovate new products and processes and develop a value chain in the Danube Delta area to keep the landscape and biodiversity of the region intact.



More information

- [Bio Danubius](#)
- [Inter-Bio webpage on membership](#)
- [European Cluster Collaboration Platform](#)
- [Clustero](#)
- [Danubius-RI](#)



03



CAP – a platform that promotes regenerative farming practices towards both organic and conventional farmers

At Carbon Action Platform (CAP), farmers and scientists work together to learn about and improve soil carbon sequestration and general soil quality through regenerative farming practices. The farmers host multidisciplinary research projects and experiment with regenerative cultivation practices. They increase their expertise through these experiences and by participating in the knowledge-sharing activities the platform provides. Through these efforts, collaboration with the business sector and advocacy work, the platform aims to spread the adoption of regenerative agriculture.

Carbon Action Platform – Finland

Solutions need to be farm-specific because each farm, field and type of soil is different. Likewise, climatic conditions and the management style must be considered. In the living lab, they “produce science that is implementable in practice, so farmers and businesses are interested in the results” (Carbon Action Platform, 2022).

“It is important that we have both conventional and organic farms. We are treating them equally because it is important that we get everyone on board... When we consider these management practices..., obviously many are maybe more known traditionally from organic farming, but in this sense, we try to make this more widespread and we try to make this more mainstream. Every farmer – no matter their farming style – can do some small improvements on their own farm, no matter if it's a conventional farm or an organic farm”.

Currently, the platform hosts 21 different research projects. There is one major project in which all the member farms participate. It includes a set of initial soil sampling for different analyses at all the farms, which will be repeated after five years. Comparing the results will show the

changes in the soil after adopting regenerative farming practices. There are many study sites that host research projects.

Corporate partners regularly meet with the platform's researchers and other experts to exchange knowledge and skills and advance innovation. Together with the platform representatives and the Baltic Sea Action Group, the “companies can develop their purchase criteria, improve sustainability communications, train farmers and their staff, and explore different ways of utilising the practices developed by Carbon Action Platform... The businesses can implement their sustainability strategies by decreasing their emissions, introduce more sustainable products to the market, and influence consumers' attitudes and consumption behaviour” (Carbon Action Platform, 2022).

INFO BOX

- Carbon Action Platform (CAP) was established in 2017 by the Baltic Sea Action Group and the Finnish Meteorological Institute responsible for the research cooperation.
- It aims at multiple benefits: improved yield, biodiversity and resilience, climate change mitigation, and reduction of emissions to water bodies such as the Baltic Sea.
- About 100 farms with a size from 2 to over 400 hectares participate in the platform, half of them organic, the rest conventional.



- CAP has national outreach; members organise local groups to share information.
- The participating CA farms are organised in smaller groups, based on the practices they are testing, where they can exchange experiences. Furthermore, farmers are sharing their experiences with other farmers in general, thereby spreading the ideas and information.
- Most organic members focus on crop production, somewhat less on animal husbandry; the rest combines the two.
- Stakeholders involved: farmers, researchers both from public and private research institutes, educators and representatives of educational institutions, companies (currently 14), policymakers

Innovative ways of improving organic practices

Most of the practices promoted are not new, but the solutions for improving soil health and structure as well as below-ground biodiversity and for increasing the soil's carbon sequestration potential need to be site-specific and tailor-made for each farm. Before the farmers can start carbon farming, they most likely have to solve water management issues and remove the compactions in their fields first.

Most relevant regenerative farming practices promoted by the platform (based on its [website](#))

- Increasing photosynthesis by increasing vegetation cover, lengthening the period of growth, and selecting crops and strains that increase yields
- Management of soil structure and health
- Reduced tillage
- Increasing soil organic matter content by addition of manure, recycled fertilisers, and soil amendments
- Diversified crop rotation and crop diversification

It is the network that they have developed within the platform that makes this initiative innovative: "Bringing this network to work together is the achievement, an innovation... It is quite unique that we have one hundred farms involved – so many companies, researchers from

different universities and governmental research institutes working on this together. They all belong to this platform, which has been quite impressive viewed from abroad, from a decision-making point of view. So, they listen to us. We feel that we are doing something important here because there are so many of us and because we bring these different stakeholders together to work on this. It's not like one group is teaching another group, but they are learning together how to achieve their goals."

Company collaboration can be challenging, especially the process of deciding what it should entail. CAP expects corporate partners to do high-quality environmental work; greenwashing efforts are not tolerated.

Accelerating innovation through on-farm demonstrations, peer-to-peer learning and knowledge sharing

The CAP's website contains information about their research projects, both peer-reviewed and other publications based on research conducted through the platform. The living lab aims to easily make available information to farmers, alongside trainings and peer-to-peer community support: CAP organises several open farm days annually, as well as some bigger events linked to specific research projects to present regenerative farming practices to farmers. These events provide space to discuss the practices and share experiences, based on the farmers' interests. Besides the field demos, CAP organises and participates in seminars/webinars, and also invites farmers to take part and provides summaries of these events to farmers in Finnish. Special CA science webinars are organised for farmers and non-scientific audiences. By being part of the farming community, researchers "listen in the field" to learn what is expected from them on these farm days, thus they discuss what is truly valuable for the participants. A study site farm, Ovidia, which belongs to the founders of the Baltic Sea Action Group, hosts a wide range of intensive research projects and is regularly visited by decision-makers, other researchers, potential collaborators, representatives of different stakeholder groups, and the media. Visitors learn what carbon farming means, how is it studied, and what type of practices the platform promotes. **With their well-established demo practices, many farms within the network, including Ovidia, would qualify as a lighthouse farm.**

The Carbon Action Club established for non-members and a digital learning platform scale up the platform's outreach among the farming community. Both provide access to well-organised information and space for knowledge exchange and are open to all Finnish and Swedish

speaking farmers. In addition, the platform is training agricultural advisors on regenerative farming practices and engages its business partners in the efforts to increase public understanding and a more widespread adoption of regenerative farming practices.

Networking experience

The Baltic Sea Action Group is essentially about networking. Through the establishment CAP, they collaborate with many different networks, groups, and institutes. They aim to be as inclusive as possible, defining the conditions of collaboration together with the institutes and companies. At EU level, networking is mostly done through collaboration with project partners, but they would be interested in sharing their experiences with similar platforms: **“Our mission is to bring different people together to work together. We are a matchmaker; we connect the right people so that they can achieve change together.”**

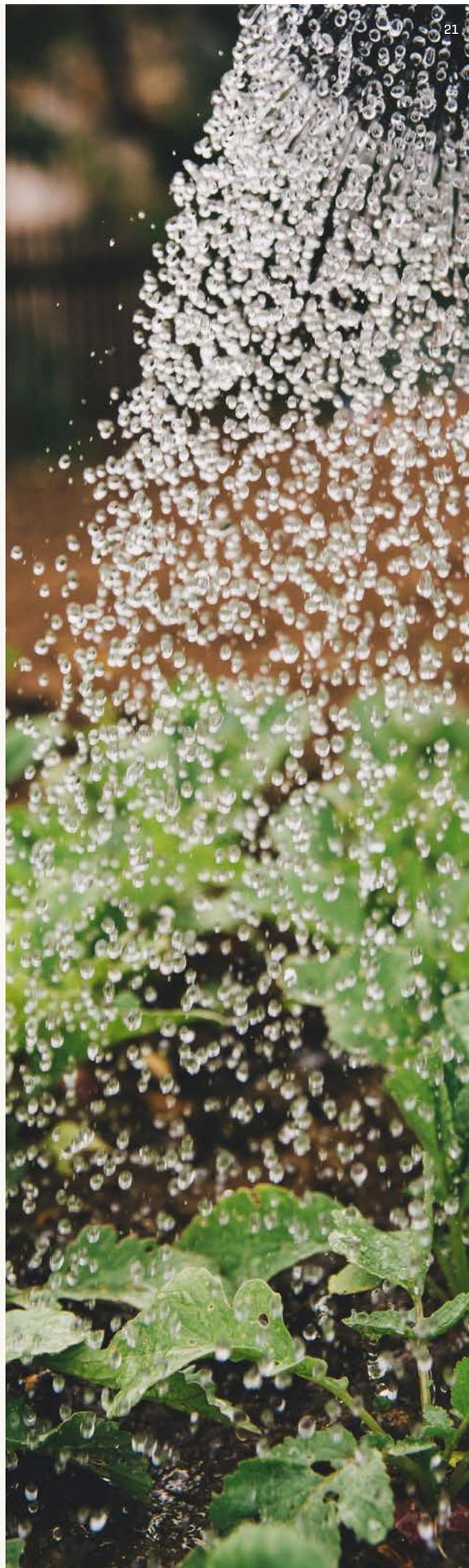
Conclusions

The CAP living lab is a network of farms where different production practices are being tested together by different stakeholders. The network allows farmers to share their experiences regarding the experiments and practices they are assisted in adapting. However, the platform format might not be permanent but take another form in the future. The farmers and researchers might want to continue in different projects, and there is still a lot to do regarding the upscaling of regenerative agriculture in Finland and globally.



More information

- [Carbon Action Platform](#)
- [E-college offered by Carbon Action Platform](#) (currently available in Finnish and Swedish)



04



Co-creation of innovation at InnoForum

“InnoForum is an open research and education platform designed for companies and academics to share ideas, to find and test new organic solutions. The only way a productive basis for sharing ideas and experiences and constructive cooperation can emerge is by working together. And only together can the right environment be created to enable innovation to flourish in organic farming in Brandenburg along the entire value chain. This is how we understand diversity in practice.”

Innovation Forum for Organic Farming in Brandenburg (InnoForum Ökolandbau Brandenburg) – Germany

InnoForum provides a social infrastructure and platform for engaging people in teaching, research and innovation, identifying and responding to stakeholders' innovation needs and contributing to the development of the organic food and farming sector in the region.

and transdisciplinary research projects where they can also meet qualified potential employees. Currently there are fora on grassland and animal feed production, landscape conservation with animals, crop and plant production, vegetable production, and a practical experience forum.

- **As a research centre, they focus on transdisciplinary collaborations.**
- **As an educational centre, they apply innovative teaching concepts,** re-search-based learning with access to on-farm research, assigning students to work with practical, real-life challenges in their projects, which can assist companies in the early phase of decision-making.
- They are also involved in policy development and contributed to the multistakeholder process of developing the Organic Action Plan for the region of Brandenburg.

INFO BOX

- InnoForum, established in 2004 following a co-creation process together with the local organic businesses, organic farmers, and interest organisations, is affiliated with the [Eberswalde University for Sustainable Development](#).
- They work with ca. 50 associated practice partners along the organic value chain.
- As a network for the diverse actors within the region's organic food and farming sector, InnoForum allows local companies to search for innovative solutions with these actors, and to participate in studies

Innovative ways of improving organic practices

Groups of students work on solutions to small business challenges the farmers do not have time nor means to address in an interactive process. With an experienced project coordinator, they evaluate the solutions. All research projects at InnoForum follow a co-creative process and a multi-method approach by design. InnoForum has access to a large pool of researchers and academics and cooperates with several organic advisors in the region. They try to bring together the right people for the specific needs identified in each project and contribute with their methodological and coordination competences.

As a university, InnoForum is not part of any organic interest organisation, nor part of any producer organisation. This means that when they drive innovation, it is not linked to the interests of a specific market segment or company. Stakeholders working with InnoForum appreciate this neutrality.

InnoForum has invested a lot of expertise in how to drive innovative processes forward and has specifically trained people in agricultural advisory methodologies and systemic approaches. They have the capacity to provide access to specific experts and high-quality process management as well as experience in value chain development, having received funds from EU rural development funds (LEADER, EIP-AGRI Operational Groups). They only work with stakeholders applying sustainable food and farming practices.

Accelerating innovation through knowledge sharing

InnoForum has their own demonstration fields for agroforestry, a demo farm with organic arable fields, and an organic mobile poultry demonstration unit. The focus of their demo activities largely depends on the focus of their projects and funding. They actively link the demonstration units to their teaching efforts and networking activities. They organise field days to demonstrate organic arable practices as well as open days for the poultry unit.

Within their practical experiments sub-forum, they offer targeted on-farm trials “where the farmers can test new production processes and thus open up new markets and products. Together with other farmers, consultants or scientists, new solutions can be developed, and own ideas can be passed on”¹.

In terms of knowledge sharing activities, InnoForum writes practice abstracts, a type of communication tool in a **common format** about new legislations and their implementation, as well as policy briefs and scientific publications. They also publish press releases and podcasts, contribute to other projects as external experts, are engaged in **EIP-AGRI Operational Groups**, organise workshops, small regional conferences, larger conferences linked to their specialised fora, and a summer academy.

¹ <http://innoforum-brandenburg.de/en/home-en/>



Conclusions

The success of InnoForum depends on its co-creation efforts and the diversity of the actors involved in the multi-stakeholder co-creation process. These actors need to be coordinated, and the input needs to be well organised. Being a neutral entity, InnoForum is also a mediator, helping actors to learn about each other's perspectives, considering new aspects and perspectives, and providing space for developing opinions and interests. They are moreover dedicated to bringing in the sustainability perspective, raising awareness, introducing options, providing room for discussion and providing input, while always catering to the expressed needs of the businesses. What is innovative about InnoForum is the way they drive processes forward, with a focus not so much on new technology as on interactive innovation, providing high-quality processes to pursue innovation – which can eventually result in a technological, a social, a systemic and/or an organisational innovation.



More information

- [innoForum](#)
- [InnoForum's forum on practical experiments](#)



05



LLAEBIO – a facilitator living lab supporting agroecology transition

LLAEBIO is one of six living labs coordinated by the Institute for Agricultural, Fisheries and Food Research (ILVO), with the overarching goal of connecting all types of actors from the agri-food system (authorities, research organisations, and farmers) and facilitating collaboration and knowledge exchange among them. Thereby, it indirectly contributes to the development of new organic and agroecological initiatives and research activities in Flanders.

LLAEBIO (Living Lab Agro-ecology and Organic Agriculture) – Flanders, Belgium

LLAEBIO uses the living lab structure based on the [ENoLL](#) principles, which allow to create solutions to context-specific problems, as well as systems thinking to support the transition towards agroecology through innovation.

The living lab operates through a participatory decision-making process. The partners (farmers, advisors, researchers at ILVO) are actively involved in an interactive workshop, pitching ideas and deciding together about the activities, experiments, and range of themes for their learning network for the next year. They set up voluntary working groups for each selected theme. Representatives of farmers' organisations are part of the preparation of certain activities. Besides the annual planning, the living lab is open to receive end-user requests to address ad-hoc issues, mostly specific questions related to organic farming or agroecology. LLAEBIO tries to support end users' search for information and organises meetings or workshops to solve specific questions. They update on their activities at quarterly meetings where they invite all members and everyone interested, giving them the opportunity to present a specific project and to explore potential for collaboration.

LLEABIO is connected to the Experimental Platform Agroecology in Hansbeke, likewise coordinated by ILVO and which can be considered as a lighthouse, through supporting its communication and dissemination activities. The platform provides a real-life farm context for testing innovative techniques and solutions for improving soil quality, crop performance or crop diversification.

INFO BOX LLAEBIO

- Officially launched in 2020 by ILVO, the network with regional outreach in Flanders (Belgium) focuses on spreading information, knowledge and expertise, connecting people, and facilitating and supporting research.
 - **Stakeholders involved:** regional public bodies/authorities, researchers/research institutes, universities, advisors, farmers, NGOs
 - **Targeted end users:** farmers, researchers/educators, advisory services, farmers' organisations, NGOs
 - LLAEBIO supports, as a service, the Experimental Platform Agroecology in Hansbeke by communicating new and existing knowledge on agroecological applications on the farm and its general activities.
-

INFO BOX Experimental Platform Agroecology in Hansbeke

- Collaboration between ILVO, a 54-ha organic farm and an advisor to generate and share expertise on the application of agroecological principles in a farm context, with focus on soil improvement
- Optimisation of agroecological techniques based on scientific observations in practical situations and monitoring the effect of these techniques without losing sight of the revenue model
- Arable farming with crop rotation strongly anchored on leguminous crops, temporary grassland, cereals, fodder beans, multiple-cropping systems, and pseudo cereals

Innovative ways of improving organic practices

LLAEBIO defines itself as a facilitator that brings together the right people, facilitates meetings, disseminates knowledge, and may assist in writing up projects. When bringing together different kinds of actors, it is important to create a language that everyone understands, a shared terminology, and to make sure that the stakeholders' different needs are being addressed. **Co-creation** takes time and requires facilitators to keep the stakeholders actively involved. Hence, LLAEBIO's innovation efforts emphasise the **processes**: They are constantly looking for new input on how to interact with people and improve the involvement of the stakeholders. When creating activities within the working groups, they try to be innovative and experiment with methodologies tailored to the group dynamics. The living lab moreover plays a crucial role in bringing the knowledge created by the initiatives they assisted back to end users and into organic or agroecological production, fostering knowledge exchange among the representatives of the organic and the conventional agri-food systems.

All supported projects address actual stakeholder needs identified during the co-creation process. Stakeholders should stay involved throughout the project according

to their own capacities: by doing on-farm experiments, testing, using the results of the experiments, and actively participating in the dissemination of their experiences.

Awareness raising regarding the potential of agroecology is one of the main priorities. For example, LLAEBIO contributes to courses on agroecology in higher or post-school education and brings together agri-food system actors to facilitate innovative research and coordinate knowledge sharing and exchange of expertise about agroecology and organic farming.

Accelerating innovation through knowledge sharing

Many projects LLAEBIO facilitates potentially include some form of on-farm demonstration. **"Farmers learn from farmers; when a farmer can explain why something is important and how he worked with a crop or some techniques the willingness to adopt is larger... Peer-to-peer learning is very important... If you do something on a farm, it proves that the farmers are interested in it."**

LLAEBIO engages in different knowledge sharing activities, such as webinars, inspiration evenings, demo days on the experimental platform and farm visits for different stakeholder groups. Quarterly events informing members about the latest activities of their living lab offer the opportunity to share knowledge and experiences or present projects. The members appreciate this regular opportunity where they can meet and learn from partners. A successful demo day should foresee sufficient time for networking and spontaneous discussions.

Networking

The coordinating institute, ILVO, has an interdisciplinary network of living labs that work closely together. They also have ad-hoc contacts with other living labs in Belgium and Europe and positive, active networking experience with other living labs through the [ALL-Ready pilot network](#) and present their living lab approach at events, building many new connections and gaining important insights into the living lab dynamic. Organised networking helps living labs to meet their development needs and allows them to share their experience, identify their common challenges, and work on solutions together. These challenges include general coordination of living labs, facilitation and communication techniques, stakeholder and target group mobilisation, budgeting and prioritising with limited resources, as well as practical implementation of systems thinking.



▲ LLAEBIO members visiting a farm during an interactive workshop day. © ILVO

◀ The LLAEBIO coordinator explaining the principles of agroecology and the business model of the organic farm of the Experimental Platform for Agroecology Hansbeke during a demonstration day in Hansbeke. ©ILVO

Conclusions

As a facilitation-focused living lab, LLAEBIO ensures active participation of a diverse range of end users in the co-creation processes through a multiple methods approach and in a real-life context through the Experimental Platform. While they argue that being a living lab at an organisational macro level (Alonso Raposo et al., 2021) would not necessarily require having their own set-up, as their work is linked more closely to the multi-stakeholder component, collaboration with partners who have access to a real-life context is a plus.



More information

- [LLAEBIO](#)
- [ILVO on their living labs](#)
- [Project Hansbeke Agroecology pilot platform](#)
- Video [Farmer testimony on the importance of living labs](#)

06



ÖMKi On-Farm Living Lab – grounded in a well-established on-farm research network

ÖMKi On-Farm Living Lab, operated by the Hungarian Research Institute of Organic Agriculture (ÖMKi), aims to promote and improve the competitiveness of organic agriculture and agroecology by conducting a variety of field trials, product, and technology tests co-designed and co-implemented with farmers in the frame of a nationwide on-farm research network to accelerate the transition toward sustainable agri-food systems in Hungary.

ÖMKi On-Farm Living Lab – Hungary

ÖMKi On-Farm Living Lab considers itself a living lab ecosystem where several living lab projects with different levels of maturity run simultaneously, focused around three main themes: **(1) crop diversification for food system stability** with ancient cereal, soy bean, and landrace tomato variety testing and related product and technology development; **(2) adaptation of precision farming tools to organic agriculture**: testing remote sensing technologies for plant protection and sensors for developing customised feed and disease prevention system; and **(3) soil-building cultivation technologies**: developing a species-rich cover crop mixture for vineyards and orchards and experimentation with herbicide-free, reduced tillage cultivation methods and organic nutrient management techniques.

INFO BOX

- ÖMKi's on-farm research network was established in 2012 and gained ENOLL living-lab certification by 2020.
- The network operates at a national scale, with over 100 engaged farmers.

- Production sectors: arable farming, horticulture (vegetable, ornamental, fruit), animal husbandry
- Stakeholders involved: farmers, advisors, researchers, plant breeders, universities, seed traders, processors, retailers, traders, SMEs, citizens through NGOs, consumers
- Targeted end users: farmers, consumers
- Marketing channels for living lab products: ÖMKi's channels, supermarkets, short supply chains

Innovative ways of improving organic practices

By systematically applying the on-farm methodology for the improvement of organic and agroecological practices ÖMKi On-Farm Living Lab contributes to the development of the Hungarian organic production sector.

Setting up an organic living lab in 5 steps

- **Practical problem definition** together with the farmers, advisors, and other stakeholders (e.g., other researchers and research institutions, SMEs, machinery providers, companies specialised in soil microbiome products, seed distributors, policymakers, NGOs, citizens) through personal discussions and workshops to identify challenges, goals, and expected benefits
- **Set up of field trials and experiments** adjusted to the real-life production scenarios of commercially active farms. Setting up the same trials at different farms simultaneously

allows the living lab to see how different contexts influence the results.

- **Data collection**, often together with the farmers
- **Data evaluation** with the stakeholders involved, through individual and group discussion. The on-farm research system is part of a larger product and service co-development process that starts from ideation, market analysis and situation assessment through the on-farm trials, and evaluation of the results, which eventually leads to piloting and product launching. At this stage, the living lab decides how to proceed, following a circular process that starts all over again after some calibration.
- **Communication of the results** to a broader audience through field visits, on-farm demonstrations, conferences, other knowledge sharing events, and publications.

On the one hand, this inclusive methodology allows research to be performed under everyday farming conditions, creating space for open innovation, dynamic knowledge co-creation and sharing of experiences between the value chain actors. The participating farmers gain feedback directly from their own production experiences, land, and technology. This makes the results being perceived more adaptable and accelerates the adaptation process, since it is based on the needs of the end users. At the same time, the results broaden the picture of Hungarian organic and agroecological production practices and locally applicable solutions.

“It is unique in Hungary to engage farmers in a participatory manner in agrarian research.”

On the other hand, lack of motivation can lead to farmer dropouts. Cooperation only works well if the farmer is genuinely interested in the results and willing to devote the necessary time to setting up the experiment, while also having reliable technology. Communication and facilitation skills are essential in participatory research to reach the stakeholders and ensure regular contact.

Inspiring research example from ÖMKi On-Farm Living Lab:

Combatting climate change in orchards through species- rich seed mixture

Climate change increases extreme weather events, such as hot, droughty summer days and heavy rainfall in a short period of time, which expose the soil of fruit plantations with already steep slopes to the risk of water and wind erosion, which results in soil deterioration, nutrient and carbon loss, and decrease in soil microbiological life. To solve this problem, ÖMKi tests cover crop management with diverse seed mixtures in vineyards and orchards and works closely with farmers, while also involving researchers, botanists, farmer advisors, entomologists, and a private seed trading company to develop new, species-rich seed mixtures with well-chosen, native perennial plants. The aim is to cover the vineyard and orchard apple inter-rows. More sustainable cover crop management using well-chosen species increases resilience against extreme climatic events as well as the nature conservation value of the area. It moreover improves local adaptation to climate change, soil structure, and nutrient replenishment (leguminous species) to prevent soil erosion, increase soil carbon sequestration and provide habitat for beneficial living organisms (e.g., pollinators, predatory mites, spiders), thereby contributing to the enhancement of local agrobiodiversity. In return, the improved cover crop practice boosts the competitiveness of farmers in the long run.

Accelerating innovation through knowledge sharing

ÖMKi On-Farm Living Lab organises on-farm demos and farm visits that provide space for peer-to-peer learning, as a part of wider living lab events and conferences organised by ÖMKi and hosted by farmers. Invitees range from other farmers, supply chain actors, SMEs, and advisors to representatives of the agricultural chamber, the ministry, authorities, the press, and policymakers.

“The field visits, seeing the practices, are invaluable for the farmers... It is important for them to see what another farmer is doing; they won't believe the researcher anyway, but they'll believe another farmer... Visitors can see the fields and ask questions there; this is where the most exciting peer-to-peer knowledge exchange and networking takes place.”

There are also lectures, round table talks, and workshops. ÖMKi engages intensively in the dissemination of their results to a broader audience and in knowledge sharing activities, organising and participating in conferences, workshops, webinars, and other sectoral events. They advocate for a better integration of organic agriculture into the national agricultural policies, as well as into national and EU-level development of strategic action plans.

Networking

Besides managing their on-farm network in Hungary in collaboration with 100 farmers yearly, ÖMKi On-Farm Living Lab from the beginning had the opportunity to tap into the lively international organic research community through scientific events, conferences, presentations, scientific publications, and EU project proposals. The ENoLL living-lab certification in 2020 gave a boost to their networking and outreach, providing access to professional living lab circles and thereby helping to refine and improve their methodology and to learn from fellow agricultural living labs across Europe.

- **ALL-Ready project:** ÖMKi coordinates a pilot network within ALL-Ready to experiment and give feedback on the tools and recommendations developed in the project, to build cooperation between the different agroecology-focused living labs and research infrastructures across Europe.
- **BIOEAST Initiative:** ÖMKi co-coordinates the Agroecology thematic working group that aims to build a dialogue between researchers and decision-makers from 11 Central and Eastern European countries, to develop common, macro-regional agroecology research priorities.

Conclusions

ÖMKi's On-farm Living Lab is the only research network in Hungary that conducts real-life participatory testing focused on organic agriculture and agroecology, channeling all the relevant stakeholders of selected value chains in one platform. Moreover, it is the only open innovation space where agroecology research is also directed toward product development and scalable new practices. The living lab is at the forefront of studying issues related to more sustainable crop and animal management that simultaneously benefit farmers directly, having an impact on production practices, efficiency, and local adaptation of agriculture to climate change and, therefore, contributing to the sustainability and resilience of farming systems.



More information

- ÖMKi
- Video ÖMKi's On-farm Living Lab - YouTube

07



INAGRO – a living lab and a demonstration network of organic farmers

INAGRO's main activity focuses on co-testing organic solutions with farmers and knowledge transfer to the stakeholders within the agri-food chain through demonstration and consultancy to improve the sustainability of local food production systems and to find new opportunities for farming businesses.

INAGRO's organic department – Flanders, Belgium

INFO BOX

- INAGRO is a privatised agency that receives support from the Province of West Flanders, the Flemish government, and the EU through research funds.
- INAGRO's organic farming department was established in 1998. 14 hectares are assigned to organic research since 2001.
- They set up long-term, intensive crop rotations that consist of outdoor vegetables and potatoes, arable crops, and fodder crops.
- They operate a network of organic farmers. Membership is free and members receive a personalised weekly newsletter and are invited to events, training sessions, field trial visits, and on-farm demonstrations.

Type of research done at INAGRO

The research hosted by INAGRO reflects on the available project calls reflecting the current research agendas, but it also aims to address the local farmers' needs. They have a long-term partnership with a wide network of local farmers whose fields are equally used for trials. They have intensive crop rotations and long-term trials that secure continuity on their fields. Over five years ago, they decided to apply controlled traffic farming and no-tillage management guidelines. The trials they set up must fit into their rotations. Instead of having an experimental farm on their own, they invite farmers to engage in the trials they host and share their experiences from testing certain practices on their own farms.

Being set up as a commercial farm, they inevitably face tasks and situations that strictly experimental farms don't and they tend to gain practical experience on issues that haven't been identified as research factors previously (e.g., weed control). They share these experiences with local farmers. In their fix rotation schedule, they always plant the whole parcel to keep up the rotation, even if they only need half of it for research. The produce not needed for research is usually sold, which allows them to diversify their income, making them less dependent on research funds. They use the same local sales channels as their neighbouring farmers do, often in cooperation with them.

The network has an annual council board meeting where they invite the representatives of local farmers' organisations and some local farmers. They are urged to articulate their needs and provide suggestions about what to include in their agenda. Later they check for the feasibility of the suggested topics. Instead of developing solutions on their own, they facilitate the adaptation process of a wide range of specific solutions. INAGRO works with farmers who are early adopters, testing new tools and solutions. This co-testing process makes the farmers more confident in investing in such tools when they are advised to do so.

Accelerating innovation through knowledge sharing

Twice a year, INAGRO offers an open day on their farm, where they do a tour of their fields, explain what they do and how they manage the fields (e.g., weed control, fertilisation), present their ongoing experiments and their results. They discuss what is going well, what seems to be promising and what does not work, present innovations they are testing (e.g., the precision harrow), provide space for the farmers to exchange their own experiences. They target both organic and conventional farmers. Some suppliers are invited to set up small stands presenting their products. They usually invite other actors of the organic food value chain as well, besides the representatives of the local administration and the government. Usually about 100-200 people attend these events. The participants know that they will meet a competent, well-prepared team showing them real-life solutions in a setting like their own.

Networking

INAGRO cooperates with BioForum¹, the Flemish organic farmers' organisation that provides advisory services for organic farmers and does advocacy work. With BioForum, regular 'farmers' network meetings' are organised where farmers meet each other on their farms to exchange experiences and discuss actual topics. Being practice-oriented and having years of experience in project coordination, INAGRO is a preferred research partner in several local and European-level, practical research projects. They work together with ILVO², Flemish research institute for agriculture, fishery and food and other research centres, universities, farmers associations, etc. In an international context, they are, e.g., a partner in the Interreg SYMBIOSE project³, which focuses on cultivation techniques of legumes and their place within organic crop rotation. INAGRO also participates in several EU-projects, the ALL-Ready⁴ network, and the former CORE Organic⁵ network (now 'CORE Organic Pleiades network').

INAGRO's advisors cooperate with the organic farmers in their network, inviting them to informal meetings where they can exchange information and share their practical experiences. In turn, the farmers often invite the advisors to their farms to show their own experiences. Their networks with the farmers surrounding them have developed

1 <https://www.bioforum.be/>

2 <https://ilvo.vlaanderen.be/nl/>

3 <https://symbiose-interreg.eu/>

4 <https://www.all-ready-project.eu/>

5 <https://www.coreorganic.org/>





naturally during time and are recognised as a vital source of knowledge: “Farmers give us a meaning. Without them, we don’t make any sense. They also inspire us; they challenge us. We (also) need suppliers to develop new solutions. They develop new techniques, new varieties. We can influence them by telling them what is a good idea, what’s working, why certain things don’t get adopted in the fields. We also influence the markets by telling what is possible or and what is not possible in organic, what are the important points in organic.”

Conclusions

Through INAGRO’s cooperation with local farmers and other stakeholders, they have established a supportive environment where they can experiment together with farmers and can demonstrate the adaptation of a wide range of specific organic solutions. At the same time, this is also a shared environment where they go through similar experiences and face similar challenges.



More information

- INAGRO
- BioForum
- SYMBIOSE project in which INAGO and BioForum work together

08



EKOFARMA PROBIO – a lighthouse hub to support the Czech organic sector

EKOFARMA PROBIO is an organic demonstration farm, research and education being an integral part of their activities. The farm also hosts several other organisations and many farm trials and demonstration events. They are a proactive farm with potential to coordinate community efforts to improve the organic sector's position.

Ekofarma Probio – Czech Republic

INFO BOX

- EKOFARMA PROBIO is 355-ha, fully organic arable farm, with a pig feed lot and an annual production of 400–500 pigs.
- PROBIO is one of the biggest organic food processors in the Czech Republic (since 1992). They brought the farm and set up EKOFARMA PROBIO in 2007 to secure raw materials for their organic production. The by-products of the mill are fed to the pigs on the farm, producing organic pork. The manure is used as fertilizer on their fields. The farm also produces seeds for PROBIO.
- Their cash crops are winter wheat, spring wheat, spelt, buckwheat, crimson clover, peas, field peas, naked oats, sometimes rye, einkorn, emmer wheat and sorghum. They also have forage crops for pig feed, alfalfa, and winter forage mixtures. The farm uses cover crops extensively. The mixtures usually include mustard, peas, flax, lupins, oats, camelina, buckwheat, oilseed radish, mallow, vetch, rye, setaria, sorghum, and various clover species.

- The farm selects crops that respond well to the landscape with erosion hazards and practices in line with their climate change mitigation efforts: contour sowing, direct drilling for the summer crops, intercropping with clover, intensive use of cover crops (also to provide green manure), and planting orchards of old fruit tree varieties as windbreaks. They also split their fields into smaller sections (below 20 ha) to make the farm less homogeneous.
 - They convert their problematic and non-productive areas into “bio-belts” that serve as a habitat for wildlife and provide other non-productive functions.
-

Type of research on the farm

ECOBREED

PROBIO is a partner in the ECOBREED project, and EKOFARMA is one of the farms involved in the participatory field trials. They educate farmers about how to grow buckwheat (a niche crop, with only 1000 ha grown organically in the Czech Republic). It is a perfect fit for organic, low-input crop production. Buckwheat has generally low yields, which can be compensated for when it is grown as a second crop. They provide modern varieties of buckwheat to the farmers. In participatory field trials, they identify varieties that are more compact and shorter, more homogenous, have a shorter vegetation period and a higher yield potential, and mature evenly.

INTERCROPPING

EKOFARMA PROBIO is a partner in a project on intercropping coordinated by the National Agricultural Research Agency. They aim to design and verify a technology of growing winter wheat in mixed cropping through on-farm field trials. Aiming to improve soil nutrients, water infiltration, erosion control and yield quality.

Accelerating innovation through knowledge sharing

EKOFARMA PROBIO is among the 19 officially recognised demonstration farms in the Czech Ministry of Agriculture's subsidy programme. The programme aims to "strengthen the system of knowledge transfer in agriculture, focused on practical demonstrations and presentation of sustainable farming systems and soil conservation in practice. The program is focused on the field of soil care, with an emphasis on supporting the presentation of procedures and technologies reducing water and wind erosion, excessive soil compaction and procedures contributing to water retention in the landscape."¹

EKOFARMA PROBIO organises six events for the programme annually, focused on various topics, including plant nutrition, soil fraction analysis, cover crops and tillage practices. Both organic and conventional farmers come from all over the country. The most important part of these events are the practical demonstrations. They keep the theoretical part relatively short and aim to engage the participants in the discussions.

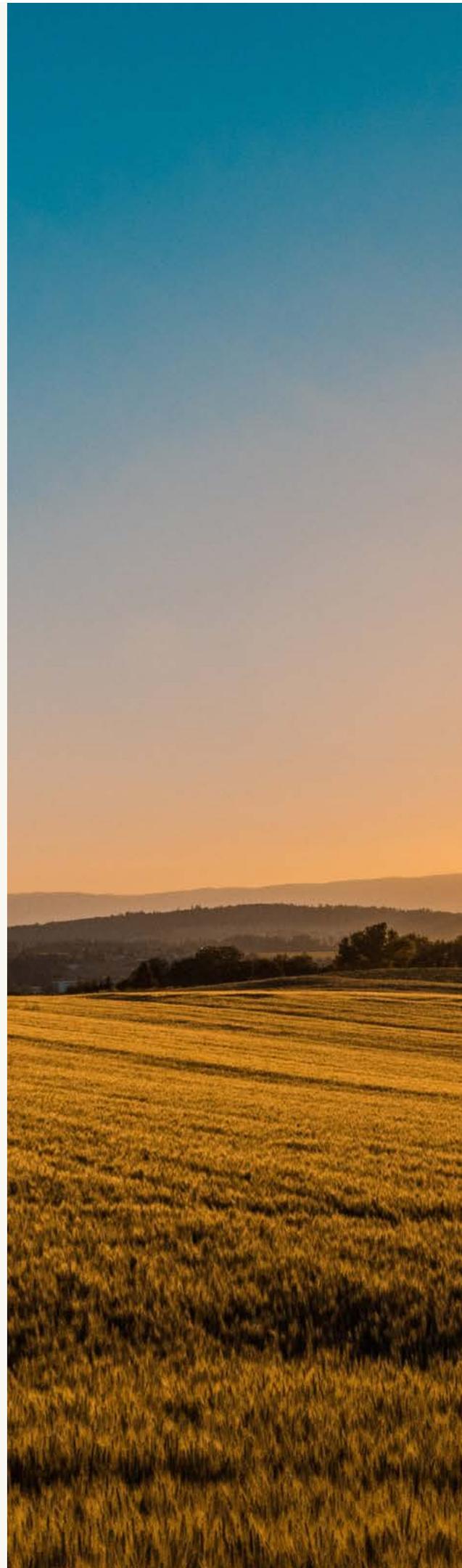
The farm moreover organises demo events linked to the research projects they are engaged in, as well as smaller field days to introduce more specific topics.

Networking

Besides the international network they have developed through participating in EU-funded projects, EKOFARMA PROBIO became the leading farm in a regional cluster, the **FRAMEwork project**. The common goal of the members of this association is to improve the area's biodiversity through common actions. However, it allows them to strengthen their members' economic viability through coordinating their efforts to raise public awareness of their activities and products, also being encouraged to share their resources (e.g., storage space, mechanization) and to set up sales channels together.

Their farm also operates as a hub, hosting the offices of several organisations engaged in the organic sector. They lease some of their fields to these organisations both for cultivation and demonstrational purposes. **Sonnentor**, the Austrian organic herb company is among their tenants. They have some of their production there, and they also use these fields for demonstrational purposes. They introduce their production methods to the public, but most importantly to farmers whom they hope to recruit to produce herbs for them. The EKOFARMA farm also

¹ <https://eagri.cz/public/web/mze/puda/demonstracni-farmy/?-pos=10>



hosts a social enterprise, [Jasan](#) and their fully organic market garden. The fruits and vegetables they produce are processed by employees otherwise disadvantaged on the labour market. Another organization they host is [Veselá Biofarma](#). They are engaged in the dissemination of the idea of organic farming among citizens, and they organise open days and host school excursions on their field. The offices of [Czech Organics](#), a private organic advisory company, are also at the farm. They often host their events on the farm's premises.

As a lighthouse farm, EKOFARMA PROBIO is actively engaged in networking and building an organic hub through its research and demonstration activities. Its strong network provides the farm with insight into the organic sector, which allows them to actively engage in advocacy work to make organic farming research a priority for research institutions.



More information

- [EKOFARMA PROBIO](#)
- [Demonstration farm programme](#)
- [FRAMEWORK project](#)
- [Social Enterprise Jasan](#)
- [Veselá Biofarma](#)
- [Czech Organics](#)

09



GRAND FARM – research and demonstration farm with extensive networking experience

“Our aim is to look for future-proof, organic solutions in the agri-food system – solutions adapted to our region, our soil, our climate, our market. We establish these solutions on our farm, evaluate them together with scientists, and then demonstrate these solutions to other farmers and the society.” – Alfred Grand

Type of research done on the farm

GRAND FARM focuses its research and demonstration activities on three areas: soil health, agroforestry, and market garden activities.

The farm’s climate change mitigation efforts on their arable fields include applying some reduced tillage, mixed cropping and growing cover crops in their rotations. Their climate change adaptation efforts include planting over 1.5 km multifunctional hedges.

In their market garden, they aim to reach peak productivity using exclusively **organic, bio-intensive methods**. They set up systematically planned, uninterrupted sequences of crops on densely planted, permanent beds managed manually, with small tools and machinery. As part of their climate change mitigation efforts, they apply compost on the beds and transfer mulch made from lucerne, alfalfa and hay to bring more organic material into the soil and to increase its carbon storage. Mulching moreover contributes to climate change adaptation as it reduces evaporation and increases water infiltration. Additionally, the farm is committed to a “zero-pesticide strategy”, relying on the use of crop protection nets and compost tea to strengthen the plants and applying production methods that contribute to soil health.

GRAND FARM hosts a wide range of scientific research at their market farm, and they are well-equipped to host demo activities presenting these trials.

One of their new innovation from practice is their **seed coating method**. They produce a compost tea, washing out the microbiome from the earthworm compost and apply that on the seed surface. This method allows them to increase the biodiversity in the soil. They invited a researcher to evaluate this method, and their results showed that this was they could achieve significantly more biomass and a higher germination index.

Grand Farm – Austria

INFO BOX

- GRAND FARM has been set up as a research and demonstration farm since 2018.
- Their 90-ha arable land is certified organic since 2006. They also have an organic market garden since 2019, with a vegetable box system, also being open to cooperate with local retailers and restaurants
- On their arable fields, they produce soybean, wheat, rye, barley, oat and hemp, their market garden hosts over 50 different vegetable varieties.
- They experiment with agroecological practices: crop rotation, cover crop implementation, composting, vermicomposting, agroforestry and multifunctional hedges, flower strips, mixed seeds, under-seeding, reduced tillage, and organic no-till.
- They work closely together with VERMIGRAND, a partner company, where they produce organic fertiliser, soil amendments and peat free soil substrates with the help of earthworms.

When innovative ideas come from a private farm, the farmers are free to start testing their new ideas right away, whereas researchers affiliated to an institution must wait to have their proposals approved, get some funding, and find fields to set up their trials. When a farmer allows unusual things to happen on their farm, some might turn out to be truly innovative. The role of scientists is to assess the viability of such ideas. By hosting these trials and the subsequent demonstrations, change can happen faster than in a traditional R&D setting. They invest in people, hiring many highly educated people for their market garden that can also be assigned to project development and project management. The farmers argue that it motivates young people if they can split their responsibilities between working the fields and being engaged in research projects.

Accelerating innovation through knowledge sharing

GRAND FARM organises about 120 activities annually, with over 2000 people visiting the farm in groups of 2-40 people. Currently, they accommodate many field visits requested by farmers' organisations, farmers, and many other organisations and host demonstrations for their NGO partners. In cooperation with the Lower Austria Government, they are also engaged in demonstrating organic practices applicable by non-professional gardeners. The lighthouse argues that it would be useful to have trainings available for those in charge of the field visits, to improve their presentation skills and deepen their knowledge.

They consider hosting interns to be a "different level of demonstration activity", which allows for more in-depth, peer-to-peer learning. Through the Lighthouse Academy, they are developing weeklong workshops to raise awareness among high-level decision-makers in the global food chain. The owner of Grand Farm is active in attending conferences and participating in workshops.

Networking

The owner of the lighthouse farm, Alfred Grand, has been building its business on cooperation with knowledge centres since the beginning. His proactive outreach for know-how soon turned into mutual knowledge exchange, where these institutions could also learn about his practical experience. In 2018, the lighthouse farm was renamed to indicate that their primary focus from that point on became hosting research projects and organising on-farm demonstrations. Currently, they host over two dozen different research projects. They invite a wide range of stakeholder groups to engage in their research





and demonstration activities and collaborate with several NGOs to improve their outreach to the public.

The Rodale Institute and the Regenerative Organic Alliance are their most important strategic research partners. They are also members of the Wageningen University's [Global Network of Lighthouse Farms](#) initiative. The farm participates projects like [Best4Soil](#) and [trAEce](#). They are actively engaged in the biodiversity conservation work of several NGOs. They cooperate with the Lower Austria Government in setting up multifunctional hedges to restore wildlife habitats and in promoting the adaptation of organic gardening among private citizens.

Conclusions

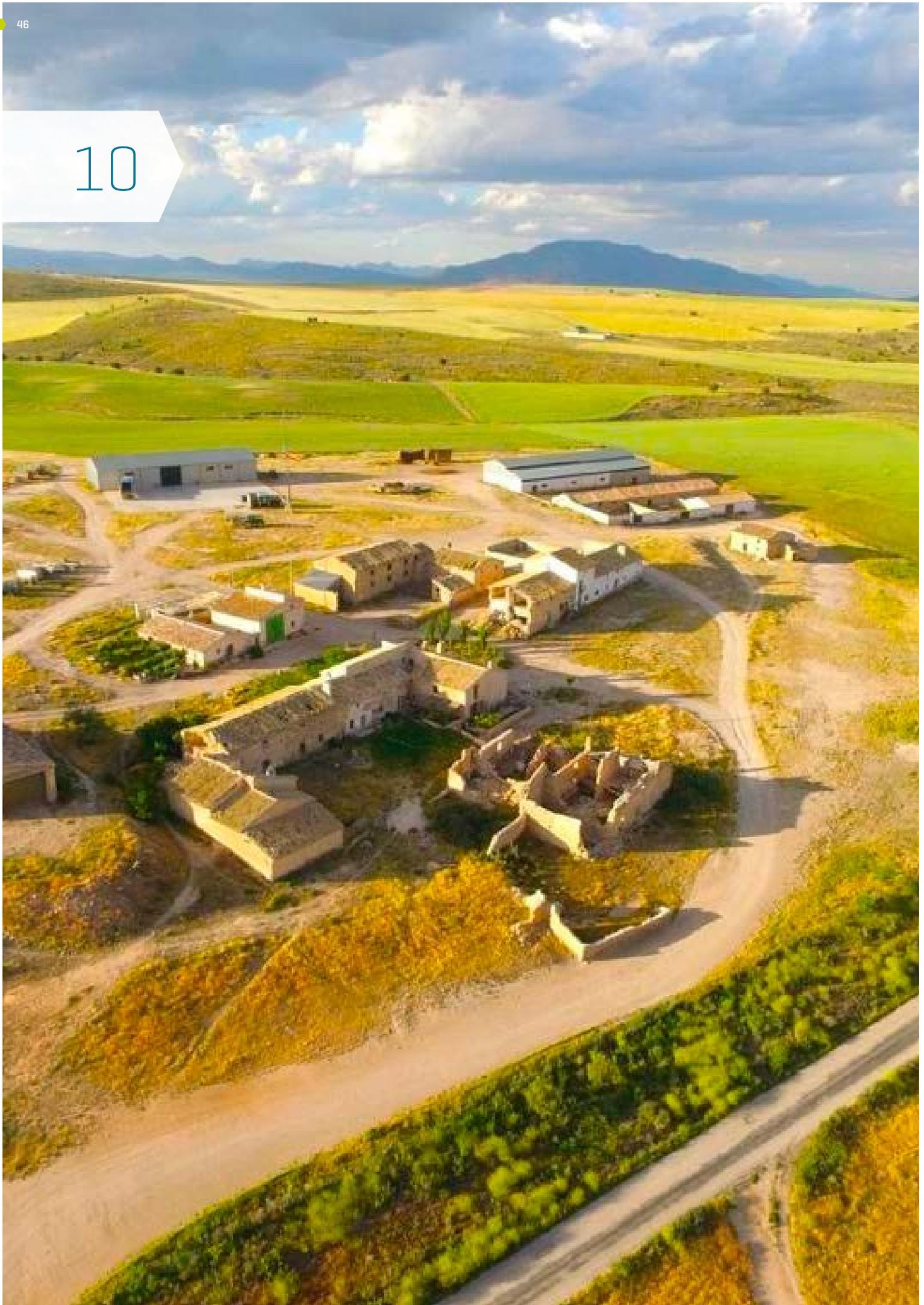
Alfred Grand's personal definition of a lighthouse farm very much reflects GRAND FARM's farmer-led demonstration dynamic: **"a lighthouse farm where research is taking place and where the farmer is initiating this research on a large scale. ... a farm where a strong input is coming from the farmer"**.



More information

- [GRAND FARM](#)
- [Grand Garten](#)
- [Global Network of Lighthouse Farms](#)

10



La Junquera – a regenerative organic lighthouse farm with an in-house academy

Spanish lighthouse farm, La Junquera demonstrates regenerative practices to revive the local community by generating economic activity and to restore its degraded natural environment. The farm and its educational centre, Regeneration Academy, “coexist in symbioses: the farm facilitates land and infrastructure, while the Regeneration Academy helps the farm make better decisions on restoring landscape, biodiversity and sustainable profit”.

for knowledge sharing targeting local farmers, students, and young professionals.

- La Junquera has revived the village around them by attracting a diverse community and developing local and regional sales channels.

La Junquera – Spain

INFO BOX

- The 1100-hectare farm became organic in 2010 and started regenerative agriculture in 2015.
- Production sectors: extensive production of cereals (500 ha), rain-fed almonds (300 ha), pistachios, aromatics, apples, vegetables, and some livestock
- Being located on a hilly terrain, in a semi-arid climate with low precipitation, the main challenges they face are soil erosion, rainwater infiltration, and the loss of organic matter in their soil. To resolve these, they focus on crop diversification, water and erosion management, and ecological restoration.
- They work closely with AIVeIAI, an association that helps farmers to adapt regenerative practices on their farm. To diversify their farm business, they set up the ‘Regeneration Academy’

Type of sustainable farming practices that attract research to the farm

La Junquera is dedicated to farming practices with potential for climate change mitigation. These include the selection of crops that are resilient and hardy, improving soil fertility, reducing soil erosion by building silt traps, developing swales, limited tilling, planting hedges, increasing water infiltration, and stopping evaporation by having the ground covered as much time as possible. Planting hedges of native shrubs and tree species protects the soil against erosion and contributes to carbon sequestration, while also contributing to the restoration of natural areas and increasing biodiversity.

Implementing regenerative organic cultivation methods allows La Junquera to offer more jobs on the farm, which is crucial in an area where unemployment and the abandonment of the territory are critical issues. They develop a welcoming learning environment for people interested in regenerative agriculture.

Swales, hedges and borders

To restore the degrading land, the farm implemented innovative solutions such as building over 10 kilometres of swales (contour-following gullies), hedges with over 10000 trees and shrubs, and over 60 ponds.

“People think that it is how it is and there is nothing you can do about it. However, by implementing these swales with these trenches and contour, we have been able to stop erosion on many plots. We have been able to diversify our plots because, when you add such an element to your plots, you can plant other elements on it, like a hedge; it will be a habitat for biodiversity, and the landscape perspective is also important. “

The process of designing and creating the swales was done together with local farmers' association AIVelAI and COMMONLAND, a Dutch organisation working on landscape restoration that gave courses which inspired them. La Junquera invited some experts and university students to help monitoring the implementation of swales. La Junquera now offers consultancy, hosts workshops, and contributes to the landscape restoration work of AIVelAI. The dynamics were quite similar setting up the hedges and borders. They held biodiversity workshops and involved students in planting and maintaining them.

Accelerating innovation through knowledge sharing

Next to demonstration activities, La Junquera has become a meeting point, offering space to develop regenerative projects and studies, as well as trainings to farmers and entrepreneurs who are interested in transitioning. Among other resources, they use the EIT FOOD¹'s manual on regenerative agriculture² at those trainings, which they co-authored. They host a Regenerative Agriculture Research Program³ for students who would like to combine their thesis/internship with an on-farm learning opportunity on regenerative agriculture, offer students to develop their own research projects in line with the current needs of the farm, and provide internships where the students can participate in the farm activities and the restoration work.

Open days are organised for usually about 30-40 participants. The lighthouse moreover hosts thematic days, where they present specific practices in more detail, together with their partners, such as the AIVelAI association, and the researchers from the universities they work with on EU projects.

1 <https://www.eitfood.eu/>

2 <https://www.eitfood.eu/reports/regenag-manual>

3 <https://www.regeneration-academy.org/rarc>



Networking

Their role in the Global Network of Lighthouse Farms⁴, coordinated by Wageningen University, consists of being an active member that provides “content” and constructive feedback for the development of the network. The network allows them to share their experience with people in a similar position and to have access to funding for projects. It should invest more in communicating what a lighthouse farm is to a bigger audience.

La Junquera is founding member of AIVaIA, an association of farmers, entrepreneurs, researchers, and citizens with a “vision for the improvement of the social-economic, ecological and cultural circumstances to deal with current threats like depopulation, desertification and the lack of opportunities” (van Gent, 2020).

Conclusions

“I think a lighthouse farm is a farm that is an example for many other farmers and people around it, at a regional and European level in our case. I think that it is a farm that works on sharing its knowledge and experiences. Therefore, it can be a place to look up to, to go to for information, for knowledge, for network. I think it is something we are very busy with... Most of the things that we do is trial and error, but I think that’s also part of the charm; we can show where we came from and where we are now. We have the possibility to experiment; we share a lot about how we experiment and what works and what doesn’t, so people can participate in that as well.” - La Junquera’s lighthouse experience in their own words.

⁴ <https://www.lighthousefarmnetwork.com/>



More information

- [La Junquera](#)
- [Library for research](#) developed at Junquera
- [Common Land report](#) on the swales development project
- [Global Network of Lighthouse Farms](#)



11



Mustiala – a teaching and research campus as an organic lighthouse farm

Mustiala farm hosts and showcases on-farm experimental activities in cooperation with educators, students, researchers and companies. They also host research projects for other research centres they cooperate with, providing access to their certified organic fields, and engage their student body in these trials as part of their education modules.

HAMK Mustiala - Finland

INFO BOX

- Mustiala is an organic dairy farm that hosts a campus for the Häme University of Applied Sciences' (HAMK) and for the Häme Vocational Institute's undergraduate degree and vocational training.
- Their crop production focuses on organic forage on 185 ha organic arable fields.
- Their milk production is certified organic since 2020, with around 70 dairy cows.
- The teaching and the research activities are an integral part of the farm's operation. They have diverse, simultaneous field trials set up on their fields, under constant monitoring.
- They sell their produce through local markets and to local dairy companies. Being certified organic and getting premium prices for their produce contributes to the farm's economic viability and long-term sustainability.

Pilot lighthouse farm Mustiala showcases organic smart farming, provides courses and experiments with innovative solutions. They offer an international teaching programme on "Smart Organic Farming", have a broad range of monitoring tools installed on their fields and use other digital tools as well, e.g., drone imaging. An integral part of their practical educational programmes is to engage students in the everyday activities of the farm, including data collection and analysis. They offer four phenomenon-based learning modules per academic year. The students focus on one thematic issue for a few weeks (e.g., cover crops, organic pest control), based on their field experiences, and are also engaged in the field trials. This extra manpower allows them to host more research projects.

Type of research done in the lighthouse

Being a field observatory for Carbon Action Platform (CAP), Mustiala collects data through a range of sensors within their biochar field trial since 2019. They have animal welfare research in their barn, where they study how environmental changes affect the cows' behaviour and milk production. They record the cows and analyse the footage with Artificial Intelligence (AI). The farm experiments with manure treatment for safe use in greenhouses, uses drones for machine learning to study these fields and experiment with the effects of crop rotations on soil structure, recycled organic fertilisation, and natural weed control. The research ideas at Mustiala come from the everyday realities of the farm: the experienced employees, their network with other local farmers, and discussions with researchers from other organisations. However, being a commercial farm, their priority is to produce enough feed for their cows and other inputs they need for their operation; the trials set up on the farm should not interfere with the farm's economic viability. Still, hosting research projects can contribute to the farm's financial independence by covering the cost of some necessary investments. They often find it challenging to

design their crop rotations without knowing with certainty which calls will come through, if there will be enough funding, if the funding will arrive in time, etc.

Accelerating innovation through knowledge sharing

Mustiala's field days are dedicated to specific research projects. Usually, the farmers explain at each field what is going on there, providing a detailed introduction to the trial set up. The presentations are typically held on the field, and the participants are encouraged to engage in in-depth discussions and experience-based knowledge exchange.

When they test a company's product in a trial, representatives of that company usually participate in the demonstration event, too, showcasing the product's performance. Both conventional and organic farmers attend these field days. Even though the discussions on the field are always inspiring, there is a lack of dedicated funds and capacity to follow up on them. Nevertheless, some projects have funds set aside to support a more in-depth peer-to-peer learning process.

Collaboration with CAP includes the development of a process aimed to educate farmers about carbon farming through workshops and seminars, while also offering consultations to address more site-specific questions. Mustiala offers educational modules on a diverse range of topics to professional farmers, free classes at its open university, as well as fee-charging courses for professional farmers. Besides publishing results in academic journals and attending conferences, social media are used to disseminate their results and to provide insight into their everyday activities.

Networking

Participation in joint clusters and cooperation with other research organisations allows Mustiala to jointly follow up on research ideas, apply for calls, and share their competences. Collaboration with research organisations with more established networks and the development of their own alumni network allows them to improve their outreach and recognition. They are members of the Regional University Network, CAP, and [AgriHub](#), coordinated by the Natural Resources Institute Finland ([Luke](#)). They have set up several research projects together with [ProAgria](#), an organisation that works closely with their large farmers' network, which allows them to disseminate their results directly to their member base. Finally, they host research projects for the Natural Resource Centre of Finland.





Conclusions

Mustiala is a working lighthouse farm that demonstrates and hosts farm-scale solutions, research, development, and innovation activities that are integrated into its teaching and training programmes. They invite a range of companies to bring in their ideas or present challenges their researchers could focus on and students could learn from (e.g., seed producers, fertiliser suppliers, machine makers, digital tool developers, dairy and food processing companies interested in carbon-neutral food production).



More information

- [Mustiala farm](#)
- [Mustiala campus](#)
- [Häme University of Applied Sciences \(HAMK\) Smart Organic Farming degree programme](#)
- [Häme Vocational Institute](#)
- [ProAgria](#)
- [AgriHub](#)



Conclusion

This study demonstrated through inspiring cases of 7 organic living labs and 5 organic lighthouse farms (with one of the initiatives counting as both) **that the organic sector actively works toward the sustainable transition of the European agri-food system. It showcased the diversity of approaches and methods across Europe to find local organic solutions and achieve both technological and social innovation.** There are organic living labs that use a participatory on-farm method to improve organic practices, which results in product and technology development, while others build platforms that bring together organic and conventional stakeholders to jointly enhance soil health. Still others focus more on how to improve facilitation and decision-making processes among organic stakeholders. This diversity enables living labs within their own contexts to create impact for organics as they work in conjunction with a wide range of stakeholders to find solutions to local, practical problems. At the same time, all presented organic lighthouse cases demonstrate well-proven organic solutions in real, running farms. Some concentrate on smart and digital tools that can be adopted to organic farming, others on soil health or market gardening. In addition, lighthouses have the potential to contribute to a better implementation of organic solutions since the showcased or tested practices reach farmers as well as other actors in a more targeted and structured manner through regular farm visits, open demonstration days, and even educational courses and training.

However, these initiatives face many challenges that hinder them to exchange and learn from similar open innovation structures, at both national and international level. Most importantly, these cases point out that the needs of organic farmers and other actors are currently not sufficiently met through existing agricultural knowledge and information systems (AKIS), notably national advisory services. National services rarely include and communicate about organic solutions, let alone the latest innovation. To organise a better flow and exchange of information, a **European advisory network** should be developed, built around specific topics and problems faced by organic farming such as organic pest management, soil health, animal welfare etc. and adapted to different country-specific and/or regional needs and circumstances. This network could bring together organic farmers, advisors, and researchers across Europe to solve the problem of disconnect from and underrepresentation of organics in national AKIS. This could also enable the faster knowledge exchange across Europe on urgent topics such as climate adaptation and water retention practices. Such an EU network should be created in close connection to national advisory services and similar EU networks (e.g., Climate Smart Advisors EU-funded project) in order to ensure synergies and mutual learning. Finally, such an advisory network would have the potential to function as a platform that supports participatory, farmer-led research and innovation.

Recommendations

Whereas industrial agriculture is relying on external inputs, organic agriculture is knowledge intensive. Both conversion to and maintaining organic farming require capacity building along the supply chain for using organic practices, the adoption of which depends on farmers having access to contextualised knowledge and innovation that are applicable to the local conditions. Technical advice and information must be readily available for farmers, including in very remote areas. The new Organic Action Plan (OAP) for the EU¹ launched on 25 March 2021 recognises the importance of research and innovation for organic, knowledge exchange on organic farming, and building organic agricultural knowledge and innovation systems (AKIS). **The organic living labs and lighthouses presented in this study showcase solutions to improve the sharing of knowledge and innovation in the organic sector.** They also give valuable insights and indications as to how the exchange of knowledge for successful organic agriculture can be boosted across Europe and around the world, which can be summarised in the following recommendations (described below in more detail):

1. Support peer-to-peer learning events
2. Invest in online platforms and social media
3. Bring organic and conventional farmers together
4. Raise awareness about the living lab and lighthouse farm concepts in the organic sector
5. Invest in courses and trainings for farmers
6. Set up a sub-network for organics in the Soil Mission network of living labs and lighthouse farms
7. Better connect and integrate organics in national AKIS

¹ European Commission (2021): Commission communication: action plan for the development of organic production in the EU. https://agriculture.ec.europa.eu/farming/organic-farming/organic-action-plan_en#organicsintheeu

8. Set up an EU network of organic advisory services

1. Support peer-to-peer learning events

The most effective knowledge sharing tools they use are the various forms of online and offline **peer-to-peer learning events** and activities such as workshops, seminars, field visits, on-farm demonstrations, roundtables, or webinars. These occasions not only support peer-to-peer learning but also foster informal exchanges. They make it possible to clarify uncertainties or ask questions on the spot, provide space for networking and spread information. However, farmers are often unable to attend such events in person due to time and capacity constraints. Also, these events are often organised in big cities, which requires farmers to travel long distances from their rural base. Therefore, **EIP-AGRI and national AKIS should dedicate funds to the planning and organisation of peer-to-peer learning events.**

Moreover, the organisation of in-person peer-to-peer events should shift from big towns toward rural regions. Establishing **peer-to-peer rural hubs** that focus on experience and knowledge sharing about local problems and that can organise such events simultaneously in different locations may attract more farmers and potentially new stakeholders. National AKIS networks should be strengthened in their role to support the organisation of these knowledge-sharing activities through hubs.

2. Invest in online platforms and social media

In addition to physical meetings, the **targeted use and integration of online platforms like social media, video and image sharing platforms and podcasts** is essential to help farmers and other actors to receive information and not miss anything. Experience in organic living labs shows that farmers are becoming more and more convinced of the benefits of videos and podcasts, especially in times of Covid-19 restrictions. These tools allow farmers to stay

up to date with other farmer's experiences or new organic practices, as they can listen to them during field work. Social media are an unavoidable tool for every organic stakeholder to boost their visibility and outreach and to share organic practices, innovation, or business activities. However, due to the lack of capacity resulting from heavy workload and lack of specialised skills, organic farmers and researchers struggle to take care of communication and engagement activities, which hinders them to share their results and experiences in a catchy way and on a running basis. Thus, to improve the sharing of information in the organic sector, funds should be allocated to develop communication and engagement trainings or modules that target farmers and organic initiatives to improve their skills and competences in this regard. At the same time, the possibility of building a communication and dissemination network that cooperates with freelance communication specialists and institutions specialised in science communication should be explored.

Also, organic living labs and lighthouses do not work in isolation from conventional farmers and networks; they actively seek media collaborations with them to enhance their outreach. Both ÖMKi On-Farm Living Lab and LLA-EBIO publish in conventional agricultural written press. Cooperation with conventional media (journals, television etc.) can greatly broaden the target audience for the purpose of knowledge sharing.

3. Bring organic and conventional farmers together

Organic living labs and lighthouses are open toward conventional farmers to **accelerate the implementation of organic solutions**. Conventional farmers are just as interested in organic knowledge sharing events, or farm visits as organic farmers. They want to see, touch, and learn first-hand about organic solutions, products, or technologies during such events. This inspires them to try out the solutions themselves. Therefore, **creating more in-person and online opportunities that bring organic and conventional farmers together** is essential and could also improve the communication between stakeholders in national AKIS networks.

4. Raise awareness about the living lab and lighthouse farm concepts in the organic sector

Consciously applying the living lab and lighthouse concepts boosts the implementation of organic solutions. Living labs create ground for place-based innovations where different stakeholders from a given territory come

together to experiment and find solutions for practical, local problems. Lighthouses can greatly increase the spread and uptake of innovative solutions through demonstrations and education. Both help inspiring local organic solutions to emerge and boost replication in other regions or countries. This, in turn, attracts more farmers and interested stakeholders. The European Commission will provide funds for the development of living labs and lighthouses under the EU research and innovation framework programme Horizon Europe. Yet, additional support is needed in raising awareness about the importance of these concepts on the national level. In many EU countries, the stakeholders might know that the funds will be available, but the concepts themselves, the associated benefits, and the know-how to implement them are largely unknown. Thus, **targeted support to raise awareness about the two concepts in the organic sector and their importance in creating innovative solutions** is crucial. Another way for accelerating the implementation of organic solutions in living labs and lighthouse farms is the building of **farmer and stakeholder networks**. In these networks, experimental trials are set up or solutions are demonstrated in real-life circumstances, which boosts the sharing and acceptance of innovations and results. However, the networks all struggle to maintain their technical expertise, to acquire funds for maintenance, to enlarge their capacities, or to find and train staff, and they still work in isolation from similar initiatives. Therefore, projects that focus on the **building, strengthening or maintenance of organic, real-life experimentation or demonstration networks** (national or international) are needed.

5. Invest in courses and trainings for farmers

Creative and out-of-the-box thinking is key for accelerating the implementation of organic innovation. Yet, the main conductors of research, usually the researchers, are often trained to think in rigid processes that might hamper the acceleration of innovation. **Courses, trainings, or projects to educate organic researchers and farmers about ideation methods, imaginative thinking techniques**, including co-creation or co-innovation methods, would very much facilitate and advance the implementation of innovative solutions in the organic sector. **On-farm demonstrations**, combined with field visits and tours in organic living labs and lighthouses, are a frequently used tool to share experience and showcase innovative solutions. While demonstrations are not compulsory for living labs, nor very common, the ÖMKi On-Farm living lab yearly organises one-day demonstrations to bring the farmers and stakeholders closer to their on-farm trials and solutions they are experimenting with.

LLAEBIO cooperates with an Experimental Platform to regularly organise demonstrations for their stakeholders. Since farmers learn from other farmers, on-farm demonstrations create space for knowledge exchange on how they worked with a certain crop or how a technique was applied in real environment. Associated with not only learning but also building trust in the showcased innovation or solution, demonstrations are considered reliable and valuable sources for knowledge gathering. If a research trial is demonstrated, the farmers can see and learn about how it is done, how it needs to be set up, how it fits their everyday activity and what are challenges, thereby motivating them to join participatory research.

However, the experiences with demonstrations in organic living labs and lighthouses also show that these events have a limited time span of one or two days. Farmers do not get in-depth knowledge after a one-day demonstration. Therefore, **investing in the development of courses and trainings for farmers and other actors at demonstration sites would greatly support the acceleration and implementation of organic solutions.** Besides courses, the organisation of series of on-farm demonstration events with the help of organic living labs and lighthouse farms, and in cooperation with national AKIS, could enhance knowledge sharing and implementation of organic practices. In addition, online materials and live streams about on-farm demonstrations would be important to reach actors who otherwise are not able to attend. Such materials could be made available through existing, well-known platforms for practical agricultural knowledge such as Organic Farm Knowledge², which provides practice-oriented tools and scientific information to allow for local co-creation of solutions.

6. Set up a sub-network for organics in the Soil Mission network of living labs and lighthouse farms

Building organic experimentation and demonstration networks is essential to get new connections, forge relationships, learn and collaborate on research projects. However, organic living labs and lighthouse farms often work in isolation from other networks, especially from those in other countries. There is no central entity that brings them together or helps to communicate about their existence and results – except for organic living labs that are members in the European Network of Living Labs (ENoLL). But ENoLL's focus is very broad. It comprises living labs from many industries and is not specialised in

accelerating the implementation of organic solutions. It also does not deal with lighthouses. Another issue is the lack of funds and the limited competences to acquire EU funds, to develop EU proposals, as well as the limited budget to travel to networking events. Thus, it is not enough to organise networking events; funds should be available to get actors to attend them, too, and supporting the creation of national and/or international organic living lab and lighthouse networks under the Soil Mission of Horizon Europe should be considered. This new instrument will create a network of soil-health focused living lab and lighthouses across Europe. Therefore, a **sub-group dedicated to organic living labs and lighthouse farms** should be explored. This sub-group could also provide support to its members to acquire funds and to bring the right actors together for research projects. It could also provide the technical background to help its members to work on common practical challenges in a coordinated manner. Agroecological living labs that will be funded under the Agroecology Partnership instrument should be integrated into this subgroup to avoid the duplication of efforts.

7. Better connect and integrate organics in national AKIS

AKIS play a key role in better organising the sharing of knowledge and information about organic innovation, e.g., through peer-to-peer learning activities, on-farm demonstration organisation or networking events. However, the selected organic living lab and lighthouse cases pointed out that the maturity and organisation of AKIS vary greatly across countries. In some cases, such as Spain or Finland, the term itself is not really known, the workings of the system are not visible and organic actors do not have any connections to it. It is mainly considered a concept that is used by policymakers to explain a vague system but does not mean much in practice. This is especially the case for farmers who do not feel that their challenges and needs are addressed through the main AKIS actors, i.e., the public advisory services. Generally, organic practices and innovations do not spread across national AKIS, especially not through the official advisory services. Organic living labs and lighthouses and their networks should be enabled to integrate their results and experiences into the national system, so that organics would be equally represented. However, this integration will not be enough. There is still a need to increase awareness on how the AKIS operates in the respective countries. Funds should be allocated to communicate and explain the system, how it works, who the actors are, and which services they offer. Online and digital tools (e.g., AKIS apps) should be much better exploited to spread information and bring in young farmers. Since many stakeholders are

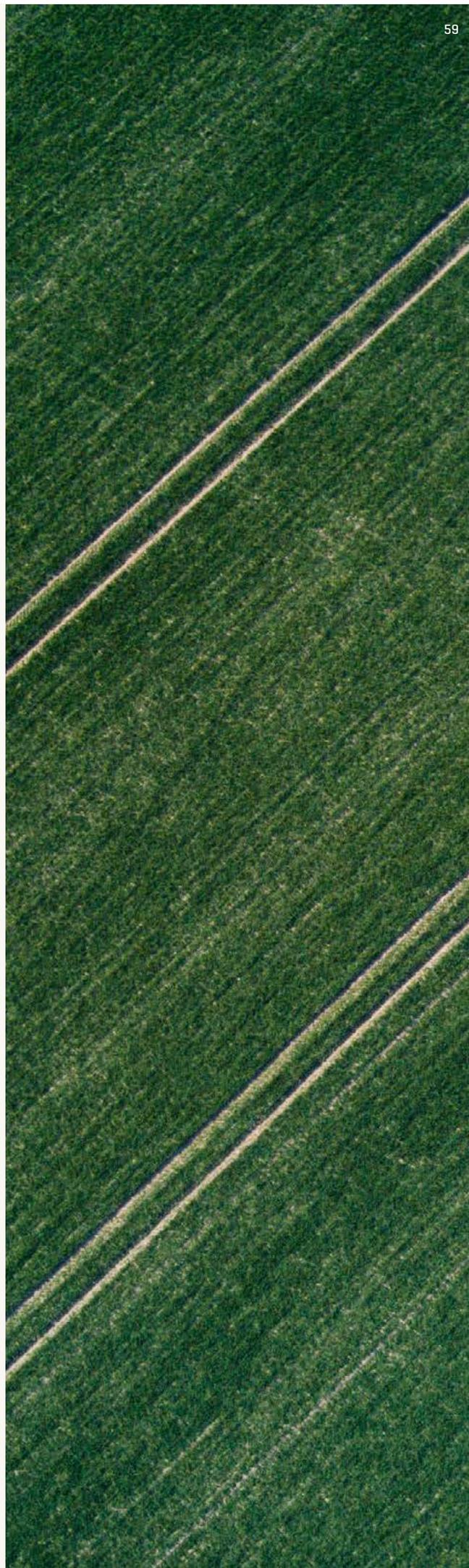
2 <https://organic-farmknowledge.org/>

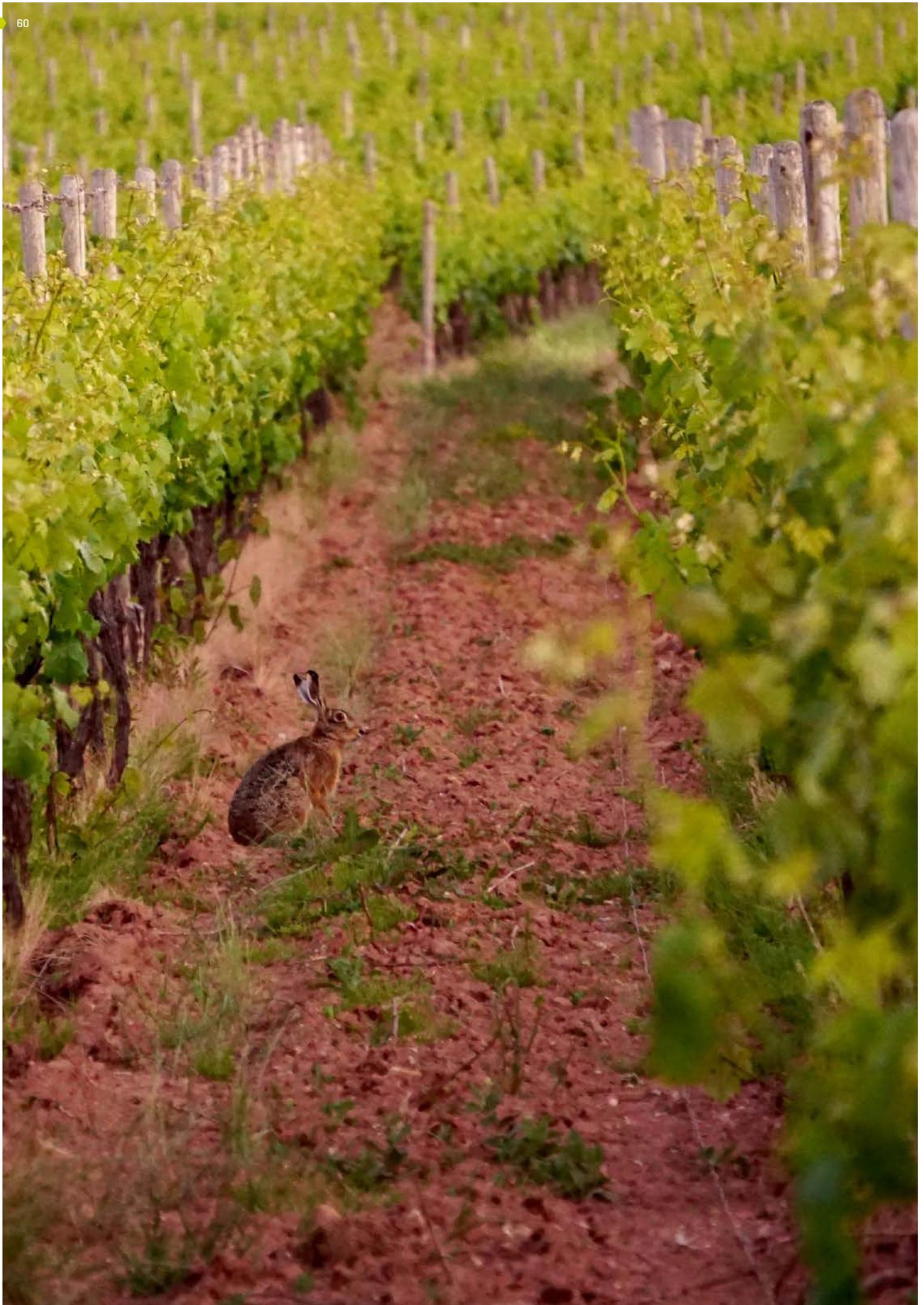
not aware that they are part of AKIS, better engagement methods should be explored to enhance participation. Another obstacle that hinders the implementation of organic innovative solutions is the dry, technical language that researchers often use to explain the latest results. Specific communication techniques should be tested and used to translate the language of research to the everyday language of other practitioners.

8. Set up an EU network of organic advisory services

When it comes to public farm advisory services, in some cases, they have organic divisions. In most countries, however, public services do not have organic divisions, and if they do, they are under-resourced. This divide between EU countries calls for a **common, EU advisory network on organic farming** that will connect farmers, advisors, and other actors from across the EU to help address the problem of disconnect from and underrepresentation of organics in national AKIS. The European Commission should provide support for a such European network of organic advisory services, strongly embedded in national or regional AKIS. This network would, inter alia, aim to improve production methods of organic farms and generally increase the standard of living of the farmers and their families and the economical sustainability of their farm operations. It should be complemented with online knowledge exchange as outlined above, including digitally supported farmer field schools and knowledge reservoirs. The online platform Organic Farm Knowledge should have a more prominent role, as should have international open access archive Organic Eprints³ for more academic-oriented knowledge related to research in organic food and farming.

3 <https://orgprints.org/>





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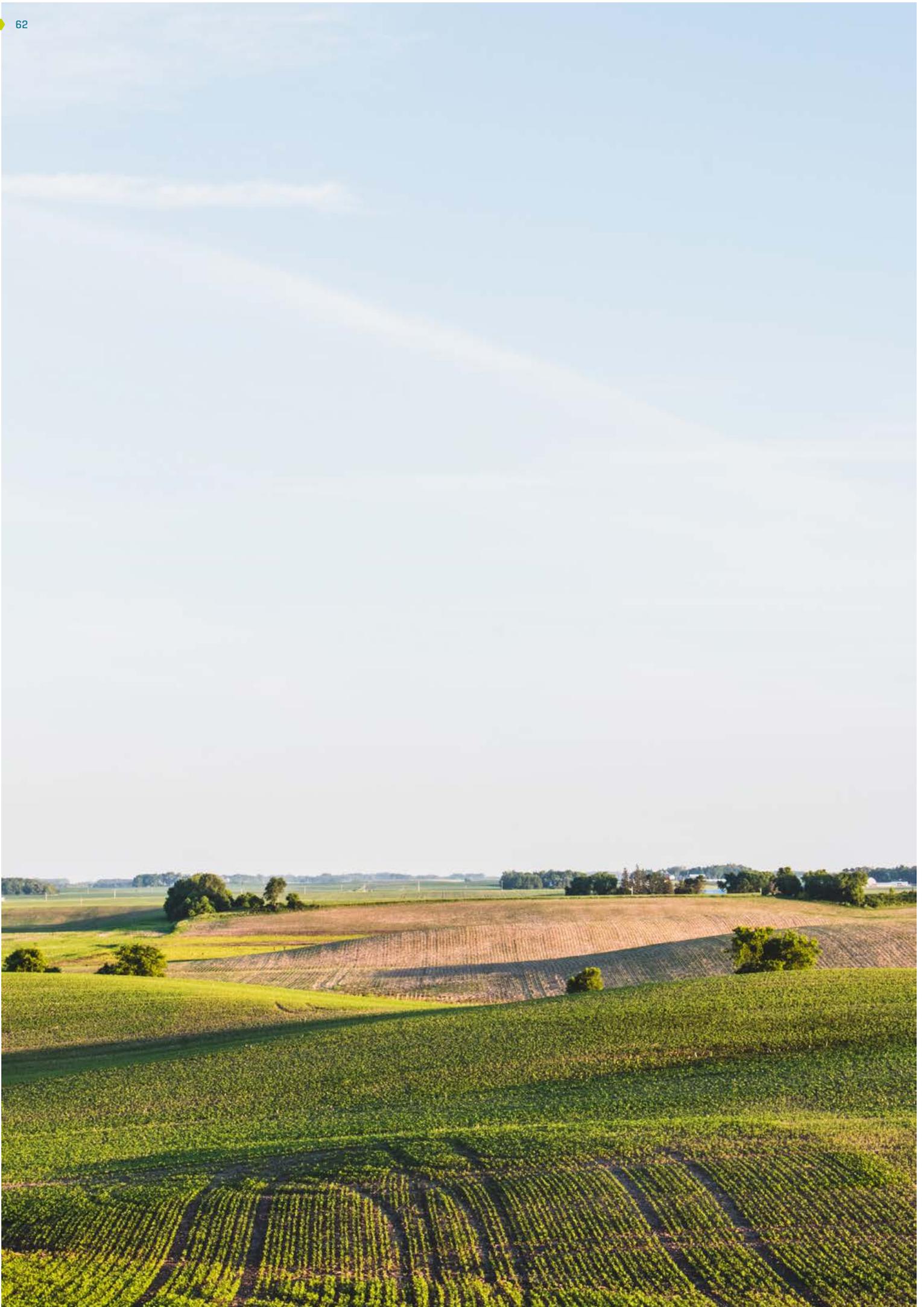
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