

EU CAP NETWORK FOCUS GROUP ENHANCING THE BIODIVERSITY ON FARMLAND THROUGH HIGH-DIVERSITY LANDSCAPE FEATURES

The role of knowledge and promotion

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Introduction

High Diversity Landscape Features (HDLF) are small natural or semi-natural areas of vegetation (e.g. flower strips, hedges, tree grove, etc.) and specific habitats (e.g. dry-stone walls, terraces, etc.) in agricultural land which provide important contributions to biodiversity and other ecosystem services. The EU Biodiversity Strategy 2030 sets a target of at least 10% of agricultural area under HDLF. For this to succeed, farmers need to be motivated to maintain these elements on their farms or to create new ones. However, many farmers have not explicitly considered HDLF elements on their farm, know the benefits of biodiversity for food production, know how these features should be created and maintained, or which ones best suit their own farm enterprise. Various factors can contribute to addressing these issues such as rewards and incentives for habitat creation, financial and technical support for maintenance services, increased awareness of direct benefits for production or an adapted knowledge transfer.

In this paper we focus on knowledge exchange for the promotion of HDLF for biodiversity. We explore the methods and tools currently used to communicate and disseminate biodiversity knowledge in the agricultural knowledge system. We examine the effectiveness of different mechanisms and look at which approaches are successful and which less so, and for what reasons. Good practice examples are provided. Based on the review and description of tools, we identify research needs and highlight potential ideas for innovation.

Promotion and knowledge of HDLF

The generation, dissemination and exchange of knowledge and innovation is a fundamental component of progressive agricultural systems. A recent shift toward multi- and transdisciplinary approaches in research and practice emphasises the importance of integrating experiential and scientific knowledge in farmers' decision-making (Klerkx, 2020). The Agricultural Knowledge and Innovation Systems (AKIS) model explicitly recognises the benefit of stronger knowledge flows and multi-actor networks for supporting sustainable agriculture and resilient rural communities. This is increasingly pertinent in the context of several social, economic and environmental 'grand' challenges facing the agriculture and food sector, including biodiversity loss (Firbank *et al.*, 2018).

Actors in Agricultural Knowledge and Innovation Systems (AKIS) (Figure 1) inform themselves via different channels. To ensure that the information reaches the right target group, it is important to know which channels and methods the various actors use, which messages resonate with them, and which values they represent.

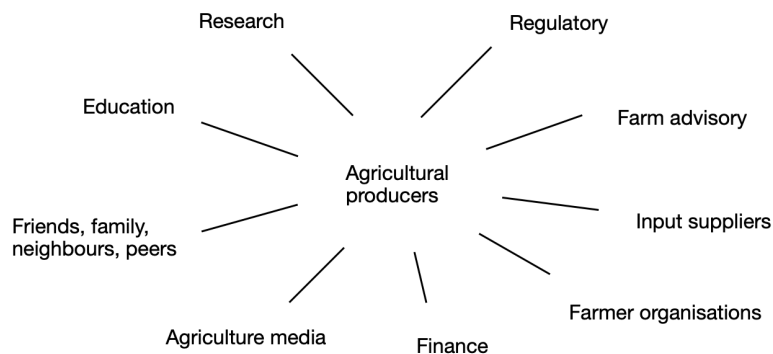


Figure 1: Different actors in Agricultural Knowledge and Innovation Systems (AKIS). *Source: Authors*



Farmers, for example, often prefer personal contact and exchange over written information. They are more likely to pick up the phone to ask someone directly for advice than to read a fact sheet. Information needs to be quickly accessible and provided in digestible formats (e.g. via smartphones). Agricultural press and social media are used extensively by farmers as a source of information. Conversely, scientists and professionals often obtain information from technical literature or websites. These observations are important in terms of which channels and methods we should use to convey messages about the establishment, maintenance and benefits of HDLF to the different target groups.

1. Advisers play a key role

Farm advisors are key actors in AKIS and are essential to a well-functioning system. Advisory services encompass social, economic and environmental considerations delivered using different tools, which assist farmers to optimise their farm management. Importantly, the support and advice needed by farmers is acutely context-dependent and will differ according to the family and farm situation, as well as the desired outcomes (e.g. increased biodiversity). There are very different advisory organisations, for example private or official ones. They might have their focus on different topics and represent different interests.

The best farm advisors are well educated and informed on a variety of topics from financial decision-making to land management (Dockés *et al.*, 2019). They have a range of soft and hard skills, which enable them to make informed decisions and impart good advice to their clients in a way that is understandable and coherent (Hansen *et al.*, 2018). The embedded knowledge that an advisor accumulates through their work with clients in specific regions enables them to provide context-specific guidance for individual clients as well as for groups of farmers.

Personal contact between farmers and advisory services remains one of the best valued information channels. However, the quality and type of information generated is largely dependent on the knowledge and skills of the facilitator, as well as the receptiveness of the farmer(s). There are some crucial aspects for a successful advisory meeting including the professional expertise of the advisor, which is best combined with some experience in the relevant topic. As well as this transdisciplinary aspect, interdisciplinarity is becoming increasingly important. For example, there is limited benefit in orchid specialists as advisors, unless they also know about wider biodiversity and are able to take in practical points of view about working processes and costs. Underpinning the entire relationship are issues of trust. Advisors must strive to do the best for biodiversity but also remain cognisant of the need to deliver benefits for the farmers. Legislation and regulation in agriculture is broadly prescriptive and farmers are therefore often upset with officials telling them what to do or, equally important, what not to do. Therefore a feeling for tact and sensitivity is needed to avoid eliciting a perceived dichotomy between pro-farmer and pro-environment. In this regard, to speak an understandable language is a very important challenge for advisors as well as for anyone who wants to bring knowledge to practitioners. Using short sentences, explaining foreign words, trying to make a point clear, and keeping information limited to the essentials is a big benefit not only for farmers but for everyone else involved. Time is often short, and information must be absorbed accurately and relatively quickly.





Above: Training of farmers in the ZiBiF project. Photo: Corinne Zurbrügg

2. Advisory has a positive effect on biodiversity

Various studies across Europe confirm the positive impact of advisory services for biodiversity improvements on farmland (e.g. Chevillat et al., 2017; Gabel et al., 2018). The evaluation of biodiversity contributions (Fontana et al., 2019) considers competent advice to farmers to be central to the effectiveness of biodiversity promotion and to sensitise farmers to the concerns and interrelationships of biodiversity, as well as to demonstrate the purpose of various measures. Studies by Chevillat et al. (2012, 2017) show that whole farm advice, which takes into account ecological as well as economic and management parameters, has a positive influence on the motivation of farmers and their willingness to establish Biodiversity Promotion Areas (BPA), a key component of Swiss agri-environment policy. Compared to non-advised farms, advised farms planted more BPA and qualitatively more valuable BPA. In arable land, more diverse types and 10 times more BPAs are planted when advised. Furthermore, it has been shown that whole farm advice also brings economic benefits (Bosshard, 2018) and that the costs of the advice can be covered in a few years by the higher contributions achieved (Chevillat et al., 2017). Interestingly, advised farms are also more likely to see the compatibility of production and biodiversity promotion, understand the importance of biodiversity and acknowledge that biodiversity promotion on farms is valued by society (Gabel et al., 2018).

Nonetheless, practical experience and scientific studies show that biodiversity advice is considered by farmers and advisors as less relevant than advice on production or business management issues. In addition to the low priority given to biodiversity advice by many farmers, other reasons for the low demand are lack of time, lack of knowledge about the offers of advice, too little knowledge about the topic of biodiversity and no or too many contact persons (Fontana et al., 2019). In Switzerland, advice on ecological connectivity projects are in high demand, as they are mandatory at least once during the project period. Interestingly, all farmers who



already availed of biodiversity advice reported a good experience and would use similar advice again (Zurbrügg, 2020).

Tools for promotion and knowledge

1. Advisor support (face-to-face, phone)

Case studies evaluating biodiversity contributions show that farmers primarily want a practical offer, attach importance to the fact that the advisors have an agricultural background and want their concerns and experiences to be taken on board (Fontana et al., 2019). Biodiversity advice is found to be most useful for farmers when it informs about changes in requirements and practicalities such as registration of biodiversity target areas (e.g. HDLF), the ease in which various requirements or actions can be fulfilled, or the correlation between different programs. In addition, several farmers prefer individual farm advice to small group consultations, as these are better suited to the concerns of their own farm. Single-farm biodiversity advice can range from low-threshold introductory consultations on the phone on a specific topic to whole-farm biodiversity advice.

Despite the above-mentioned needs of farmers, we believe that consultations should urgently be used to show farmers the benefits of HDLF for biodiversity and agricultural production, to exploit the ecological potential of a farm, to show the financial impact of the measures and, last but not least, to build up a relationship of trust between the farmer and the consultant. In this way, there is a greater likelihood that follow-up advice will be taken up.

Good practice: German landscape associations give advice about biodiversity measures and funding opportunities to farmers. They are organised as associations with farmers, officials from agriculture and nature conservation in their board of management and therefore are used to discuss topics with different points of view. They are financed by fundings and donations and are not under the control of the authorities, which is highly appreciated by the farmers. <https://www.dvl.org/>

2. Discussion/Knowledge exchange groups

A discussion group provides an open forum and environment that encourages a farmer to learn, reflect and share best practice with one another, and with support of specialists and professionals. Participation in discussion groups has been shown to increase uptake of new technologies and practices among farmers (Prager and Creaney, 2017). The discussion group is an effective mechanism in the delivery of advice and a focal point for farmers to help in solving problems, give support in trying new ideas, gaining technical information from others, promoting positive attitudes, gaining new friendships and overall in their own personal development (Mahon *et al.*, 2010). As topics and ideas are often farmer-driven, discussion groups can adapt to the needs of farmers as a group develops and evolves, as well as supporting farmers in adopting new practices and technologies. The success or otherwise of discussion groups is largely dependent on the skills and expertise of the facilitator and the commitment of group members. While farmers are primarily interested in optimising their own farm, group events allow for broader sensitization and can trigger new dynamics for the creation and maintenance of HDLF. Moreover, they can also help to deepen topics of interest to several farmers and can thus be considered a good complement to individual consultations (Fontana et al., 2019). For example, various organic labels are well organised and have discussion groups as part of their remit. Organic farmers often are more isolated from other local farmers and therefore reliant on knowledge exchange with other organic farmers.



Good practice: A lot of nature parks organise exchange groups with farmers, authorities, and nature conservationists to discuss critical topics. For example, the working group on farming in the nature park Southern Black Forest is discussing different views on the return of the wolf. Such existing groups could be used to address the more subordinated challenges of HDLF such as the social demand to have landscapes tidied up. <https://www.naturpark-suedschwarzwald.de>.



Above: Knowledge exchange groups can facilitate peer-to-peer learning among farmers. Photos: Gary Goggins (l); Corinne Zurbrügg (r)

3. Agri-environment schemes (e.g., Results-Based Payment Schemes)

A prescriptive-based model has been central to agri-environment policy for more than 25 years, with landowners obliged to follow pre-defined requirements (Massfeller *et al.*, 2022). This rules-based approach has not succeeded in halting the decline in quality of our environment (Sidemo-Holm *et al.*, 2018). Results-Based agri-environment Payment Schemes (RBPS) provide a promising alternative, as they directly link farmer payments to the environmental quality of the land, with higher nature value attracting higher payments. Ecological quality is determined using a scorecard adapted to the habitat type. This approach significantly differs from traditional agri-environment schemes, where flat-rate payments are made independent of environmental quality. In hybrid-RBPS models, such as [Wild Atlantic Nature RBPS](#) in Ireland, landowners who wish to improve the ecological quality of their lands can avail of financial and technical support including advice, training, regulatory assistance and funding. This approach puts farmers and their skills, expertise and knowledge of their land central to the development of the initiative as active engaged participants, and builds capacity and support in local communities for long-term nature conservation.

Good practice: Inspired from result based payment systems in Ireland and Austria, the project ‘*Target-oriented biodiversity promotion in the canton of ZH*’ was launched in Switzerland in 2020. The main difference to other biodiversity projects in Switzerland is that for the individual biodiversity promotion areas, management measures are not prescribed, but habitat and species targets are defined with the farmers on their ecologically valuable areas. Farmers are free to choose their own measures to achieve the targets. The different habitat types are divided into four quality levels and if a higher quality level is achieved, higher contributions are paid. Farmers are accompanied by two advisors (an agronomist and an ecologist) throughout the duration of the project. Every year, a further training course is held on a current biodiversity topic. This also promotes exchange and shared learning among the participating farms. Each



farmer has to observe 3-4 areas annually on the basis of indicators whether the areas or species are developing in the right direction and whether the intended goals are being achieved. In order for the farmers to acquire plant knowledge, a photo quiz was created, so that what they have learned can also be checked straight away. <https://zielorientierte-biodiversitaet.ch/home>

<https://www.biofotoquiz.ch/domain/user/id/5343/tab/favorite>

4. Results-based nature conservation plan

A results-based nature conservation plan entails a collaborative process with the farmer, in which concrete targets are defined for the conservation of areas particularly valuable from a nature conservation perspective. To set targets for all relevant areas, an ecological advisor pays a visit to the farm and inspects suitable parcels together with the farmer. They discuss conservation targets and agree upon them jointly. The farmer then takes responsibility for monitoring and documenting the targets over time. After some years, the results are reviewed and evaluated together with the ecological adviser. Results-based nature conservation plans allow farmers to contribute their practical farm management experience in working towards nature-conservation targets. They can react more flexibly to external influences such as weather events and can better align cultivation measures with business processes. Farmers have a more thorough understanding of the connections between their activities and the occurrence of certain plant and animal species on their land, and thus become long-term partners of nature conservation.



Photo: Gary Goggins

Good practice: A result-based nature conservation plan (Ergebnisorientierter Naturschutzplan, ENP) involves the definition of concrete conservation targets in collaboration with farmers directly on their land. The targets generally relate to high-nature value farmland, and are to be reached by the end of the commitment period as laid out by the Austrian Agri-Environmental Programme (ÖPUL). Farmers themselves decide upon which measures to implement to reach the targets. To ensure that the ecological value of the designated parcels does not deteriorate, so-called control criteria are defined. These criteria can be monitored by the Technical Testing Service of AMA, the leading Austrian agricultural marketing company. Just like the conservation targets, control criteria are defined in collaboration with the farmer during the first field visit. Each farmer engaged in a results-based nature conservation plan receives a handy and individually designed logbook for the tractor. This logbook summarises both conservation targets and control criteria. It also contains tips on how better to achieve targets. The participating farmers also use the logbook to document the management measures they have implemented on the designated parcels and how the defined targets are coming along. <https://noe.lko.at/19-ergebnisorientierte-bewirtschaftung-ebw-%C3%B6pul-2023+2400+3579957>



5. Demonstration farms

Demonstration farms can be an effective tool to build up trust in a method or a measure to improve biodiversity and to test new technologies or farm practices. Demonstration farms can be used to monitor and evaluate the effectiveness of HDLF for biodiversity on farmland as well as tracking farm performance, profitability and other environmental indicators. They can provide test sites to experiment with scientific advancements and technological improvements as well as demonstrating traditional techniques and practices.

Good practice: The Teagasc Signpost Programme is a multi-annual initiative to improve the environmental performance of farming in Ireland. It builds a network of Demonstration Farms by providing enhanced advisory and training support for farmers to implement sustainability actions on their farms. Demonstration farms are located throughout the country and cover all different types of farm enterprise (e.g. beef, dairy, sheep, tillage, organic). Environmental and financial data are monitored and an annual sustainability report is produced for participating farmers. <https://www.teagasc.ie/environment/climate-change-air-quality/signpost-programme/>



Above: Excursions and courses on farms and with farmers are a good opportunity to exchange knowledge and get new information. Photos: FiBL, Simona Moosmann

6. Farm visits/Open days

Farm visits or open days provide opportunities for farmers to experience biodiversity measures in practice. Farmers can see actions applied in a real-world setting, see how it works, see that it works, can ask questions about benefits and costs and experience the results. Ideally, farmers or groups of farmers visit farms that are similar to their own farm enterprise. Knowledge exchange can be led by the farmers themselves, or can be facilitated by their advisor or other professionals, with input from the farmer. However, to reach the goal of 10% HDLF there must be more than the dedicated biodiversity farmer to learn from. Farmers, or people in general, are more likely to be convinced by people with opinions not too far from theirs. Therefore, it can be beneficial to encourage a diversity in voices and perspectives. This may include actively asking the more silent farmers to take over such responsibilities. It can also be valuable to have different kinds of farmers and farm types as best practice examples such as more conservative farmers, organic farmers, economically oriented farmers, extensive/intensive farmers, and lateral entrants.

Good practice: The Trinottières experimental farm (Chamber of agriculture of Pays de Loire – France) welcomed 1,200 people during its open days on September 30 and October 1, 2021. In particular, it organized a "Digestive walk agroforestry and biodiversity". A farm without biodiversity; it does not exist. There are always exchanges between the farm and its environment and a healthy biodiversity makes it possible to increase the resilience of its system. For many years, the Experimental Farms has integrated biodiversity in order to



promote mutual benefits. <https://pays-de-la-loire.chambres-agriculture.fr/innovation-rd/innovation/evenements/portes-ouvertes-de-la-ferme-experimentale-des-trinottieres-2021/>



Above: Farm events, like the organic arable farming day in Switzerland, offer the possibility of knowledge exchange to farmers, researchers and advisors. Photo: Simona Moosmann, FiBL

7. Biodiversity farm audits

Biodiversity monitoring with farmers can help to improve education and awareness of the diversity of flora and fauna on farmland, as well as inform farmers and others about the optimum habitat type and condition for different species. Various survey methods and techniques can be used to determine the diversity, abundance or richness of species in an area. These include, *inter alia*, transect walks, pitfall traps and light traps.

Good practice: Since 1995, a large number of farms within the framework of the Austrian Agri-Environmental Program (ÖPUL) have adhered to the agreed management requirements of the nature conservation measure (WF) in the use of their species-rich meadows. However, for nature conservation measures to work sustainably, more is needed than incentive payments. Farmers must really understand why they are implementing certain management measures and contract design must be as simple as possible. The sole advice of ecologists is not enough to achieve long-term awareness. Therefore, the program “*Farmers keep an eye on plants and animals!*” started as a part of Austria’s program for rural development during the period 2007-13. The program stands for the annual monitoring and documentation of plants and animals, as well as for the willingness to care for and sustain the extensive grassland. About 700 farmers throughout Austria, as well as students from 14 agricultural and forestry schools, are observing the diversity of plants and animals on their own meadows and pastures. The program is part of the education measures of the rural development program, with the aims to raise awareness, to build knowledge among farmers about biodiversity on their meadows as well as to inspire them for biodiversity monitoring. This helps to better understand the relationship between grassland management and the abundance of certain indicator species.



Monitoring observations and management measures are reported on an online reporting portal. Farmers are paid a compensation for their monitoring activities, if they take part in further measures of Austria's Agri-Environmental-Program ÖPUL. <https://www.biodiversitaetsmonitoring.at/>



Above: Mapping a meadow in a course on whole-farm biodiversity consulting. Photo: Corinne Zurbrügg

8. Living Labs

Living labs are socio-technical sites of experimentation for developing and testing new technologies, methods, business models or ways of doing in a real-world context. They are based on a multi-actor approach, which incorporates perspectives from practice, science, business and policy as equal partners in proposing, testing, refining and adopting social and technical innovations. In living labs, innovation processes and experimentation are focused on the user, within a specific geographical context. Living Labs can be used to generate ready-to-adopt practices that support farmers to create and maintain HDLF on their farms.

Good practice: The Mission "[A Soil Deal for Europe](#)" highlights the lack of knowledge and awareness of the importance of long-term soil health among different stakeholders including farmers, advisors, consumers and wider society is a major driver of soil degradation. The European Network of Living Labs (ENoLL) will be leading the EU-Funded Framework Partnership "SOILL – Support Structure for SOIL Living Labs" (2024-2030). Under the initiative, a partnership of 47 organisations will establish a one-stop-shop structure to support, coordinate, and promote a network of 100 Soil Health Living Labs, which will be funded under the EU Mission "A Soil Deal For Europe". In addition, the future [Agroecology Partnership's Strategic Research and Innovation Agenda](#) (SRIA), developed via the Standing Committee on Agricultural Research's Strategic Working Group on Agroecology (SCAR-AE), will use Agroecology Living Labs as instruments to provide a long-term user-centered framework for co-design and implementation of innovations tailored to specific locations, including activities relevant for improving farmland biodiversity through HDLF.



9. Ambassador programmes

Ambassador programmes can be used to acknowledge and promote good practice in creating and maintaining HDLF for biodiversity on farmland. Ambassadors are generally selected using some kind of competition or application format, which includes an evaluation and selection of suitable candidates. Ambassadors are supported in communicating and disseminating good practice among their peers and the general public. Ambassador programmes can help with building a network of exemplary farmers (so-called Ambassadors) and celebrate the positive role that these farmers play in supporting biodiversity, while advocating on their behalf. They can also be leveraged in making sure that this ‘can do’ attitude is reflected in the discourse around farming & the environment and facilitate farmer-to-farmer knowledge exchange.

Good practice: Farming for Nature (FFN) is not-for-profit initiative established in Ireland in 2018, which aims to support high nature value farming. The initiative seeks to acknowledge and support those farmers who farm, or wish to farm, in a way that will improve the natural health of the countryside. The goal of the initiative is to show that farmers are a part of nature and not apart from it, demonstrating that farming for nature can also be agriculturally, economically and socially progressive. The FFN initiative started with a national award. The main purpose of this award was to find and to share the stories of farmers across Ireland who are making a positive difference to nature on their farms and in their communities. Today, FFN network has grown to include farmers from every land type and farming sector across Ireland and several other EU countries (Austria, Croatia and Lithuania). <https://www.farmingfornature.ie/>

10. Traditional media (newspaper, radio, tv, etc.)

Scientists and professionals often read newspapers, whether in paper form or online articles, and follow specialised media programmes. Farmers also inform themselves through farmer focused newspapers, radio or television programmes. While there are some good examples, an opportunity exists to place more articles and stories in the agricultural media about the purpose, establishment and maintenance of HDLF. These outlets can inspire farmers and open up local and national discussion and debate around environmental issues.



Above (r) Print products like magazines are still important for many farmers to get information. Photo: Simona Moosmann, FiBL; Above (l) TV programmes can attract a large and diverse audience (Photo: Screenshot from RTP website)



Good practice examples exist across the EU, for example:

<https://www.badische-bauern-zeitung.de/>; <https://www.schweizerbauer.ch/>;
<https://www.landwirt.com/>; <https://www.rte.ie/radio/radio1/countrywide/>

11. Social media

Social media is often used for populist views about farming and a lot of discussion proceeds without corrective, professionally competent voices. It is important that there is more profound information on social media for farmers and alternative discussion forums from trusted and informed sources. Related to existing discussions on social media, there is an evident need to ask short questions with personal feedback in an uncomplicated, quick manner. In various projects, WhatsApp groups are created with the participating farmers to exchange information with each other. Experience has shown that this works much better than exchanges via email, for example.

Good practice: The Swiss Farmers' Union's "Smart Mowing" campaign is an awareness-raising project aimed at optimising mowing techniques and the use of mower conditioners in order to promote biodiversity on production areas. In the campaign, the Swiss Farmers' Union received technical support from both agricultural and nature conservation organisations. Numerous information bases in various formats were produced as part of the project. The content was made available on the website in German, French and Italian. About every two weeks during the growing season, a post appeared on social media, which was shared by each of the participating organisations. In this way, a wide audience could be reached. In particular, the social media posts were frequently shared and liked by farmers. Having agricultural associations work together with conservation organisations in this campaign is a win-win. Agricultural associations are more likely to be heard by farmers than if the same message had been distributed through conservation. Many agricultural media have reported on the project and these media are read by farmers. In addition, many farmers also follow the farmers' association's social media channel. <https://www.schlaumaehen.ch/de/>

12. Websites

Websites can be used as a communication and dissemination tool to reach a variety of actors in AKIS including farmers, farm organisations, policy-makers, academics, businesses and others. Websites can also function as an education tool with information on HDLF, biodiversity, farming and related topics. It is important that websites are user-friendly and attractive for different types of target users, and on different platforms. It is important to keep websites updated regularly and to align the website with other communication tools (e.g. social media).

Good practice: The website Agrinatur bundles information on biodiversity promotion on the farm and replaces the previous information platforms agri-biodiv.ch of FiBL and the Swiss Ornithological Institute and bff-spb.ch of AGRIDEA. Previously, the legal requirements for biodiversity promotion could be found on AGRIDEA's website and more detailed information including many films on the FiBL and Swiss Ornithological Institute websites. Since farmers are mainly interested in the conditions and requirements, they were not very familiar with the website of FiBL and Vogelwarte. The experts, on the other hand, often found information on the FiBL and Vogelwarte site. With the merger the organisations can join forces and now have all the information in one place. AGRIDEA is known to the farmers and it is hoped with the merger to make the website better known and also to motivate the farmers to engage in further topics. A media release was made in the agricultural press for the launch of the website. <https://www.agrinatur.ch/>



13. Films, tutorials, podcast

Films or podcasts are useful for explaining complex content, processes and correlations, as watching or listening to them makes complex content easier to understand and more memorable. For farmers, the films are ideally short and the main message comes at the beginning. It is appreciated when farmers talk about their own experiences in the films. Animated or illustrated explanatory videos are also gaining in importance. Nonetheless, the production costs and requirement for professional equipment and expertise (e.g. sound, editing) should not be underestimated.



Above: Listening or watching addresses other senses than written information. Photo: Simona Moosmann, FiBL

Good practice: The channel FiBL film from the Institute of Organic Agriculture presents different biodiversity measures with background information and best practice examples. Farmers with experiences on that measure are often involved. AGRIDEA has recently started to produce more educational films to explain complex issues such as new requirements in agricultural policy or the use of plant protection products.

<https://www.youtube.com/watch?v=Geiwz95SK0o>
 FiBL Focus 29: Was Landwirtschaft mit Biodiversität zu tun hat
<https://www.youtube.com/watch?v=rAsSnOFsv5A>
<https://www.vonbauernfuerbauern.ch/de/>
<https://youtu.be/O5nkG9ngwbq>; <https://youtu.be/iET1IW92Uso>

14. Webinars/lectures

Many organisations host regular webinars to inform their followers on different topics. Webinars are often held at regular intervals (e.g. weekly; monthly) and include a guest speaker talking about their area of expertise. Speakers often come from a professional background, although farmers are also invited to present. Webinars can attract a diverse audience, although they are more often frequented by professionals.

Good practice: The Teagasc Signpost webinar series takes place once per week in a regular morning slot. Invites are sent each week via a mailing list and upcoming topics are promoted on an ongoing basis. Recordings are available to view online after each event. The webinars provide knowledge and information to farmers and the farming sector on environmental issues including climate change, biodiversity, water quality and soils.

<https://www.teagasc.ie/environment/climate-change--air-quality/the-signpost-series-webinars/>





Above: Farmers attending an information day for Wild Atlantic Nature RBPS programme. Photo: Gary Goggins

15. Apps

Apps have become increasingly popular over the past decade in almost every aspect of life. They are considered modern yet are often user friendly. In projects that include ecological or biodiversity surveys, many farmers and farm advisors use apps for identifying different species, with plant identification apps particularly popular. Mobile apps can be used in the field and generate quick and accessible information. However, apps can become quickly outdated and have a high maintenance requirement.



Good practice: Wild Atlantic Nature RBPS uses apps for data collection. Advisors score the plots for each participating farmer using a bespoke app which records the necessary ecological information as well as photos of the farm and sends the information directly to a centralised database for processing. They also use an app to identify and record the location and type of features of interest. www.wildatlanticnature.ie

Photo: Gary Goggins

16. Promotional materials (e.g. newsletters, brochures, information packs, etc.)

A lot of documentation already exists on the creation and maintenance of biodiversity promotion measures. However, these are used to varying degrees. Scientists, consultants and other experts are usually very well read and know many of the existing publications. Among farmers, information on conditions and requirements for receiving contributions is popular.



Publications that focus more on the awareness aspect (value of land for biodiversity) generally tend to be read less. In our experience, farmers prefer to pick up the phone to get the information they need. Reading, especially long texts, is rather unpopular. In addition, farmers are not familiar with some publications as they are often written by institutions where farmers do not look for information. Also documents that are given directly to the farmers are more likely to be read than if they are only sent online.

Good practice: The Institute of Organic Agriculture develops brochures for farmers from scientific results, projects and experiences, also a lot on the topic of biodiversity. Brochures are free to download and kept in an understandable language. They are therefore easily accessible to farmers. <https://www.fibl.org/de/shop>



Above: Newsletters are often correlated with websites or distributed to mailing lists. Photo (l): FiBL, Simona Moosmann; (r) Gary Goggins

17. Others

Other tools for promotion and knowledge include scientific journals, citizen science initiatives, workshops, outreach events with schools, local communities and storytelling.

Conclusion/Summary

The agricultural management of HDLF and species-rich areas can be demanding and labour intensive. At the same time, there is increasing pressure for even more efficient management of farmland, and the negative impact of the machines used is increasing. Accordingly, the execution of agricultural activities on site often shows deficiencies in biodiversity. Therefore, new and innovative approaches are needed to empower farmers and to promote their understanding of the concerns of nature conservation. Crucially, it is important for the exchange of knowledge to realise that ecology and biodiversity professionals often have a different way of thinking than farmers. This implies different interests (goals), ways of knowing, working contexts and languages.

Advisors are key actors in AKIS and play a relevant role in bringing scientific knowledge to farmers. To be effective in promoting knowledge and awareness of HDLF for biodiversity on farmland, advisers must have agronomic understanding in addition to good ecological knowledge. For farmers starting out on their biodiversity journey, it might be prudent to focus more on motivation and awareness-raising in order to promote understanding and strengthen the rationale for measures and their correlation with biodiversity and production. This implies promoting on-farm advice that takes into account biodiversity, economy and production in equal measure. It is also crucial to consider and value the experience of farmers and create



opportunities for autonomy, flexibility and freedom of action for farmers (e.g. as in voluntary result-based payment systems). Advice needs to be tailored to the individual farmer or farm type, such as specific advice for farms with or without animal husbandry. For farm-specific concerns, individual consultations may be needed, while group consultations can be effective for topics that interest several farmers. This will trigger new dynamics and promote shared learning. Farmers can use information material for their benefit, such as storytelling and marketing of their farm products. In this way, information can be easily passed on to non-specialists as arguments for sustainable agriculture. Additionally, as consumers increasingly seek information about the production processes, this might help farmers in discussions with the broader public.

Research needs from practice

1. Research on the understanding of enablers and barriers to the adoption of HDLFs

Farmers inform themselves about issues that affect the farm or for which they are looking for a concrete solution. The topic of biodiversity is not directly in demand, which means that a lot of work has to be done to stimulate interest. To solve this challenge, research is needed on the social and environmental factors that enable farmers (e.g. social norms, fit to context) and those that prevent them (e.g. arguments, workload, financial compensation, politics) from maintaining or creating HDLFs. This research could be conducted at a **regional, national or Europe-wide level** and is relevant for **extensive and intensive farms and different farm enterprises** (e.g. livestock, tillage, mixed use, etc.).

2. Research into knowledge exchange between different actors

Ecologists, scientists and policy-makers think different than farmers. They belong to different thought collectives. This means different interests (goals), ways of knowing, working contexts and languages. To overcome these challenges, research is needed to explore what factors (e.g. importance of context, choice of language, motivating factors, personal exchange, self-study) favour the exchange of knowledge between the different thought collectives, and how these can be aligned to deliver for biodiversity and farmers. This research could be conducted at a **regional, national or Europe-wide level** and is **relevant for all farm types**.

3. Research of the effectiveness versus effort of different communication channels (e.g. advisory).

Biodiversity knowledge is communicated to farmers using different methods and tools. The success and effort required to create the different tools or the effort required to use the different methods of communication varies greatly. In order to find out which combination(s) of tools and methods achieve the greatest cost/benefit effect for biodiversity in the field, it is important to know the needs of farmers in terms of the communication tools and methods used (e.g. digital - analogue, face-to-face). This research could be conducted at a **regional, national or Europe-wide level** and is **relevant for all farm types**.

4. Research on how biodiversity advice is organised in different European countries

Advisory service in Europe is very diverse with different financing models and organisations involved. One main difference is advisory through NGOs or official authorities. Other



differences can be the extent of advisory service, independence of advisory organisations, qualification of advisors, the financial side (funding possibilities for measurements, free advisory or with costs, etc.) and more. Therefore, the effects, quality and acceptance of biodiversity advisory might differ significantly. The term advisory is used very broadly and it is not always clear what lies behind. Experts (e.g. in Focus Groups) might think of totally different advisory systems because of the different systems in European countries.

It would be helpful to have an overview over the existing advisory systems and how they relate to biodiversity. For the establishment of new advisory services, one could profit from the experiences with pros and cons of different systems. This research can include **all of Europe**, but also **smaller regions**. Moreover, the research could look at the correlations between advisory offers and establishment of HDLFs.

Ideas for innovations

1. Testing the integration of different tools for knowledge and promotion of HDLF, and in different contexts.

These include extensive and intensive farms and different farm enterprises (e.g., livestock, tillage, mixed use, etc.). It would also be important to compare the potential for replicability of integrated tools across different geographical and cultural contexts across the EU through a **transdisciplinary multi-actor approach** involving farmers, advisors, policymakers and others.

2. Development and testing of new advisory tools to help farmers establish HDLF on their farms.

Communication on biodiversity often is conservative and old-fashioned. With new tools like **apps** another **target group** could be reached, e.g. farmers who like to work with new technologies, young farmers, farmers who have not been interested in biodiversity very much but maybe are interested in how to adapt to climate change and so on. **Geographical systems** are used broadly, for example in precision farming. They can also help to develop functioning habitat networks. Apps could also help farmers to become more independent from advisory services, however they must be maintained for the long term.

3. Developing and testing farmer-to-farmer training as a potential new advisory system.

Advisors are often perceived as some highly educated people who want to tell the farmers what to do. A special challenge in biodiversity advisory is the fact that it is not a very relevant topic for the farmer at first sight. Moreover, advisory might not be accessible for all farmers in Europe. A new advisory system could be to train farmers on biodiversity topics and afterwards offer a funding opportunity for them to act as advisors for other farmers. This is a bottom-up principle which might resonate better for the advised farmers. They have someone on eye level, with whom they can discuss the practical effects of new measures. This could be a **regional project**, especially for regions with a lack of alternatives. It could also add to existing advisory models and might improve the acceptance. Another approach would be to have discussion groups with more farmers on the topics. Those would need the support of an organisation and fit into the time schedule of farmers.





Photo: Corinne Zurbrügg



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