Showcasing synergies between agriculture, biodiversity and ecosystem services to help farmers capitalising on native biodiversity (SHOWCASE)

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Abstract

The slow adoption by the agricultural sector of practices to promote biodiversity are thought to originate from three interrelated issues. First, we know little about which incentives effectively motivate farmers to integrate biodiversity into daily farm management. Second, few studies so far have produced evidence that biodiversity-based approaches produce benefits in terms of key variables for farmers (yield, profit). Third, there is a large communication gap between the scientists investigating biodiversity-based farming practices and the farmers who have to implement them. To overcome these barriers, SHOWCASE will review and test the effectiveness of a range of economic and societal incentives to implement biodiversity management in farming operations and examine farmer and public acceptance. Focus will be on three promising approaches: (i) result-based incentives, (ii) involvement in citizen science biodiversity monitoring and (iii) biodiversity-based business models. SHOWCASE will co-produce together with stakeholders solid interdisciplinary evidence for the agro-ecological and socio-economic benefits of biodiversity management in 10 contrasting farming systems across Europe. SHOWCASE will also design communication strategies that are tailor-made to farmers and other key stakeholders operating in different socio-economic and environmental conditions.

SHOWCASE will develop a multi-actor network of 10 Experimental Biodiversity Areas in contrasting European farming systems that will be used for in-situ research on biodiversity incentives and evidence for benefits as well as knowledge exchange. This network will be used to identify and test biodiversity indicators and targets relevant to all stakeholders and use them in a learning-by-doing approach to improve benefits of biodiversity management on farms, both within the network and beyond.

Keywords

Fixed EC keywords: socio-ecological systems, biodiversity conservation, biodiversity indicators, agroecology, biodiversity monitoring

Free keywords: economic incentives, ecosystem service benefits, public goods, knowledge exchange, citizen science

1. Excellence

1.1 Objectives

In SHOWCASE, leading scientists in the field of agro-ecology and socio-economy join forces with farmer and citizen science networks, nature conservation NGOs and science communication specialists to achieve a breakthrough in the integration of biodiversity into farming. The overall objective of SHOWCASE is to:

*Make biodiversity an integral part of European farming by identifying effective **incentives** to invest in biodiversity in diverse socio-ecological contexts, providing the **evidence** that these incentives result in biodiversity increases and biodiversity-based, socio-economic benefits and **communicating** both the principles and best practices to as wide a range of stakeholders as possible.*

SHOWCASE's specific objectives are to:

- Establish a scientific framework, based on state-of-the-art knowledge about biodiversity-agricultural production synergies and trade-offs;
- Analyse and model relevant economic incentives in the context of biodiversity management;
- Determine the incentives that effectively motivate farmers to integrate biodiversity practices into production and improve implementation of biodiversity management on farms;
- Develop a multi-actor pan-European network of 10 Experimental Biodiversity Areas (EBAs) and apply the scientific framework to the EBAs to illustrate the interactions between biodiversity and agriculture;

- Inform and inspire stakeholders and the general public to embrace the benefits of sustainable agricultural production that puts a stress on biodiversity conservation.

1.2 Relation to the work programme

SHOWCASE addresses the following challenges and scope of topic SFS-01-2018-2019-2020 (part B): [2019] in the work programme:

- Integrate biodiversity into farming practices, identify incentives for wider biodiversity management and enhance the understanding of the relationship between farm management and native biodiversity.
- Assess dynamics of biodiversity by covering a diverse range of species beneficial for landscapes with agricultural intensification or abandonment.
- Develop, test and scale up existing and new biodiversity indicators using stakeholders' perspectives.
- Provide integrated information platforms and improved methods.
- Support definition of biodiversity targets at an appropriate scale and design result-based incentives at policy and/or market level.
- Build on the system proposed for "Citizen Observatories" and the effective transfer of biodiversity knowledge to farming, research, policy and society.
- Address synergies between farmers' increasing biodiversity acceptance and their involvement in the monitoring of farmland biodiversity.
- Build on existing initiatives, support the setting-up of new biodiversity networks in farmland landscapes and liaise with relevant European Research Infrastructures.
- Use 'multi-actor approach' with key stakeholders and experts, enabling networking across Europe and including contributions from social and economic sciences.

1.3 Concept and methodology

In order to increase the uptake of biodiversity management by the agricultural sector, we need a better understanding of both benefits and costs of biodiversity management by farmers. Additionally, we need to address the intricate interplay between farmers, the general public and policy-makers. Therefore, we need:

- knowledge on which incentives effectively motivate farmers
- evidence of the benefits of biodiversity
- communication between scientists and farmers

Based on these three needs, SHOWCASE has created a project structure which identifies incentives to promote biodiversity and ecosystem services in agricultural landscapes (WP2), increases the evidence base for synergies between agriculture and biodiversity (WP3), communicates the benefits of agrobiodiversity through multi-stakeholder knowledge exchange (WP4) and implements the network of Experimental Biodiversity Areas (EBA) using a multi-actor approach (WP1).

1.4 Ambition

SHOWCASE will provide answers to key questions that need to be addressed before we can expect large-scale integration of biodiversity into mainstream farming. Research will focus on the identification of the key aspects of biodiversity that are most appealing to farmers and that trigger more biodiversity-friendly farm management. SHOWCASE will determine societal and private benefits provided by biodiversity in agronomically relevant contexts and, based on these insights, it will develop communication strategies tailored to different target audiences.

2. Impact

2.1 Expected impacts

The outputs produced by SHOWCASE will constitute a major advance in the scientific knowledge base on the synergies between biodiversity and agricultural production. We will present evidence on how biodiversity management results in value creation, helping farmers take the first steps towards a more biodiversity-based farming system. Particular emphasis will be placed on the development of a unique e-handbook with ‘how to’ plans guiding different stakeholders through the process of establishing best practices for biodiversity-based innovations.

The project will also significantly improve methods and tools to assess, evaluate and monitor biodiversity. It will develop an effective multi-actor approach for identifying biodiversity targets at different scales, selecting a set of key performance indicators that underlie the realisation of the targets. SHOWCASE will deliver new harmonised datasets describing levels of biodiversity indicators and environmental and economic variables, generating knowledge on large-scale patterns that are difficult to assess in individual projects. It will also present a critical assessment of the types and combinations of incentives that most effectively trigger farmers to manage biodiversity on their farms.

The results produced by SHOWCASE align with the Convention on Biological Diversity’s Strategic Plan for 2011-2020 and a number of Sustainable Development Goals (SDGs), particularly SDGs 15 (Life on land - Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss) and SDG 12 (Responsible consumption and production).

2.2 Measures to maximise impact

SHOWCASE will follow an innovative approach towards communicating its activities, disseminating its results and securing their re-use after the project. Rather than applying only traditional dissemination methods, the project will create a set of innovative dissemination and exploitation tools. A key activity towards ensuring their success is the development of an effective narrative to communicate the benefits of agrobiodiversity.

SHOWCASE will develop and implement a coherent plan for the dissemination and exploitation of the project results during and after its duration. We will adhere to best practices to make our effort, outputs and results FAIR (findable, accessible, interoperable and reusable). The plan will draw on a multi-channel targeted approach tailored for the specific needs of each stakeholder group – practice, umbrella organisations, policy, scientific community and the general public.

SHOWCASE will participate in the Pilot on Open Research Data in Horizon 2020, in line with the Commission's Open Access to research data policy for facilitating access, re-use and preservation of its research data. Research data underlying scientific publications will be deposited in an institutional repository of the relevant project partner. Besides research data and peer-reviewed publications, Open Access will be provided to other types of scientific output of the project such as monographs, books, conference proceedings and reports. To coordinate data management within the project, SHOWCASE will develop a guiding Data Management Plan (DMP).

Finally, the vision of SHOWCASE is that communication should be bi-directional, i.e. not only delivering new results to the public, but also receiving their knowledge. Some of the main communication tools will be the project website, scientific publications, presentations at conferences, press releases, social media, newsletters, posters, flyers and other outreach materials.

3. Implementation

3.1 Work plan — Work packages, deliverables

The SHOWCASE project is composed of six interconnected work packages. WP1 aims to build on existing national farmland biodiversity initiatives and to develop a pan-European network of Experimental Biodiversity Areas (EBAs). WP2 deals with incentives used to successfully steer agricultural farm management in a direction which enhances biodiversity and the associated ecosystem services on productive land and in the surrounding landscape. WP3 aims to enhance the evidence base for synergies between biodiversity and agricultural production along the gradient of land use ranging from intensification to abandonment. WP4 aims to revise and evaluate which types of narratives can best convey the existing evidence on the benefits of biodiversity management to different interest

groups. WP5 aims to have the project run smoothly and pleasantly and to make sure the project achieves both scientific and societal impact. WP6 sets out the 'ethics requirements' that the project must comply with. Tasks and deliverables have been carefully mapped on to the expertise of individual WP members with sufficient resources allocated to ensure delivery.

3.2 Management structure, milestones and procedures

SHOWCASE consists of 21 partners of which nine are universities, six are public research organisations, three are industries and three are non-governmental stakeholder organisations.

3.3 Consortium as a whole

The SHOWCASE consortium has a multi-disciplinary membership, which will enable trans-disciplinary approaches to the study of the agro-ecological and socio-economic effects of biodiversity integration in farming systems. Expertise across partners is complementary and covers all aspects of the project aims. The management structures of SHOWCASE will effectively integrate all of these players and enable them to contribute fully.

4. Members of the consortium

- Wageningen University (WU), The Netherlands
- University of Reading (UREAD), United Kingdom
- Centre for Ecological Research (OK), Hungary
- Agroscope (WBF), Switzerland
- Swedish University of Agricultural Sciences (SLU), Sweden
- University of Natural Resources and Life Sciences (BOKU), Austria
- Spanish National Research Council (CSIC), Spain
- Estonian University of Life Sciences (EMU), Estonia
- Leibniz Centre for Agricultural Landscape Research (ZALF), Germany
- University of Evora (UEvora), Portugal
- Dutch Butterfly Conservation (DVS), The Netherlands
- WWF European Policy Office (WWF EPO), Belgium
- Scienseed SL (SCIENSEED), Spain

- University of Bern (UBERN), Switzerland
- French National Centre for Scientific Research (CNRS), France
- Pensoft Publishers (PENSOFT), Bulgaria
- National Research Council (CNR), Italy
- University of Bologna (UNIBO), Italy
- Babes-Bolyai University (UBB), Romania
- Peterson Projects (PETERSON), The Netherlands
- Linking Environment & Farming (LEAF), United Kingdom

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Hosting institution

Wageningen University (WU), The Netherlands

Conflicts of interest