



Enabling farmers to respond to the biodiversity crisis together: the role of Citizen Science in Farmer Clusters

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FRAMEWORK

Farmer clusters
for Realising
Agrobiodiversity
Management
across
Ecosystems



*“Working with
farmers to build
biodiversity
sensitive
farming.”*

FRAMEwork in a nutshell



H2020 project: 2020-2025, 8M

Coordinator: James Hutton Institute (UK – Scotland), 18 partner org

Ambition: Scale UK Farmer Cluster approach across Europe to **enhance biodiversity monitoring in farmland landscapes and promote biodiversity-sensitive farming at the landscape scale.**



TRANSFORMATIONAL

INCREMENTAL

LEVEL 5
Build a new global food system based on participation, localness, fairness and justice

LEVEL 4
Reconnect consumers and producers through the development of alternative food networks

LEVEL 3
Redesign agroecosystems

LEVEL 2
Substitute conventional inputs and practices with agroecological alternatives

LEVEL 1
Increase efficiency of input use and reduce use of costly, scarce or environmentally damaging inputs

FOOD SYSTEM

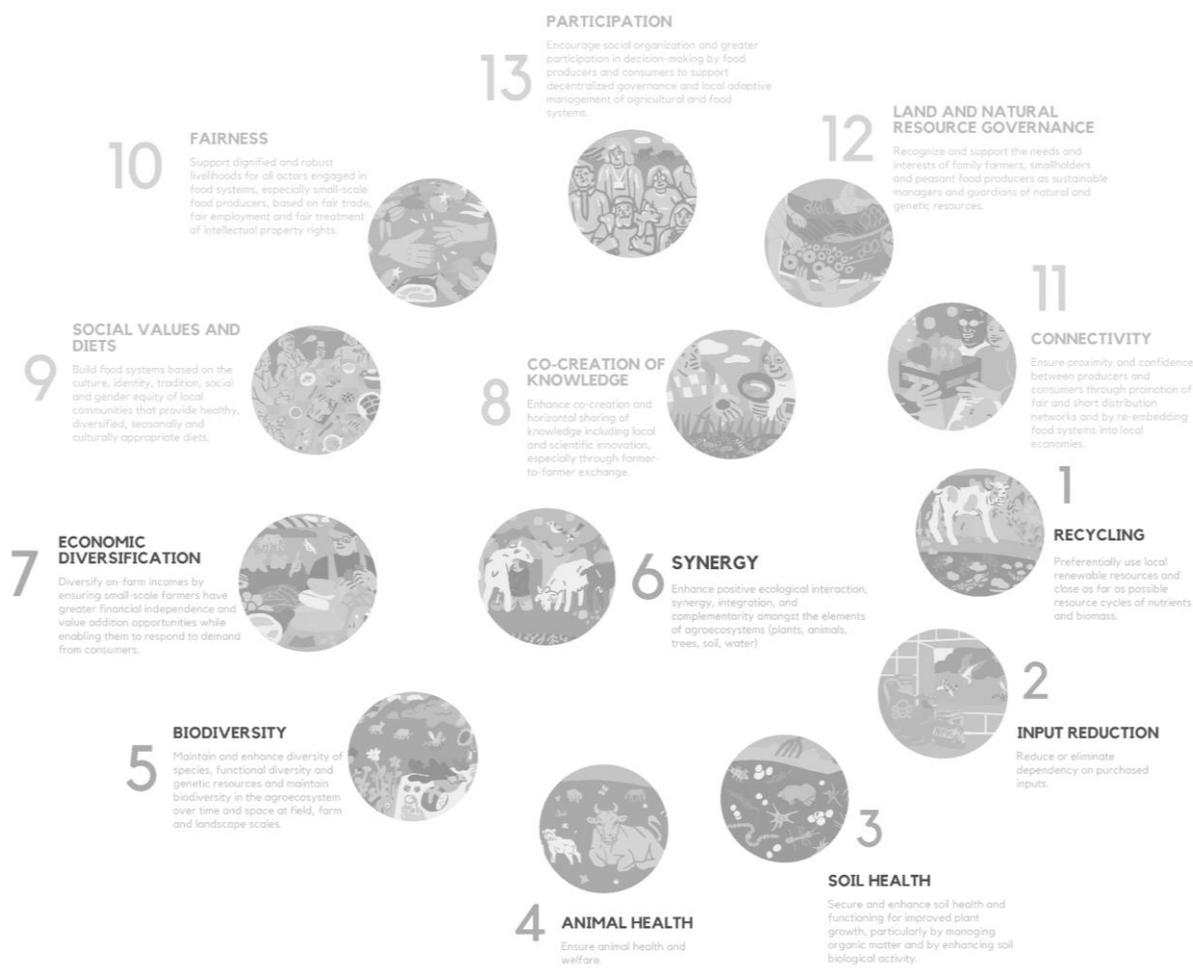
AGROECOSYSTEM



ILLUSTRATIONS: DOROTTYA POÓR

THE FIVE LEVELS OF TRANSITION TOWARDS SUSTAINABLE FOOD SYSTEMS AND THE RELATED 13 PRINCIPLES OF AGROECOLOGY

SOURCE: GLIESSMAN (2007) AND HLPE (2019)



5 BIODIVERSITY
Maintain and enhance diversity of species, functional diversity and genetic resources and maintain biodiversity in the agroecosystem over time and space at field, farm and landscape scales.



8 CO-CREATION OF KNOWLEDGE
Enhance co-creation and horizontal sharing of knowledge including local and scientific innovation, especially through farmer-to-farmer exchange.



13 PARTICIPATION
Encourage social organization and greater participation in decision-making by food producers and consumers to support decentralized governance and local adaptive management of agricultural and food systems.



12 LAND AND NATURAL RESOURCE GOVERNANCE
Recognize and support the needs and interests of family farmers, smallholders and peasant food producers as sustainable managers and guardians of natural and genetic resources.



The role of Citizen Science and participatory biodiversity monitoring in Farmer Clusters



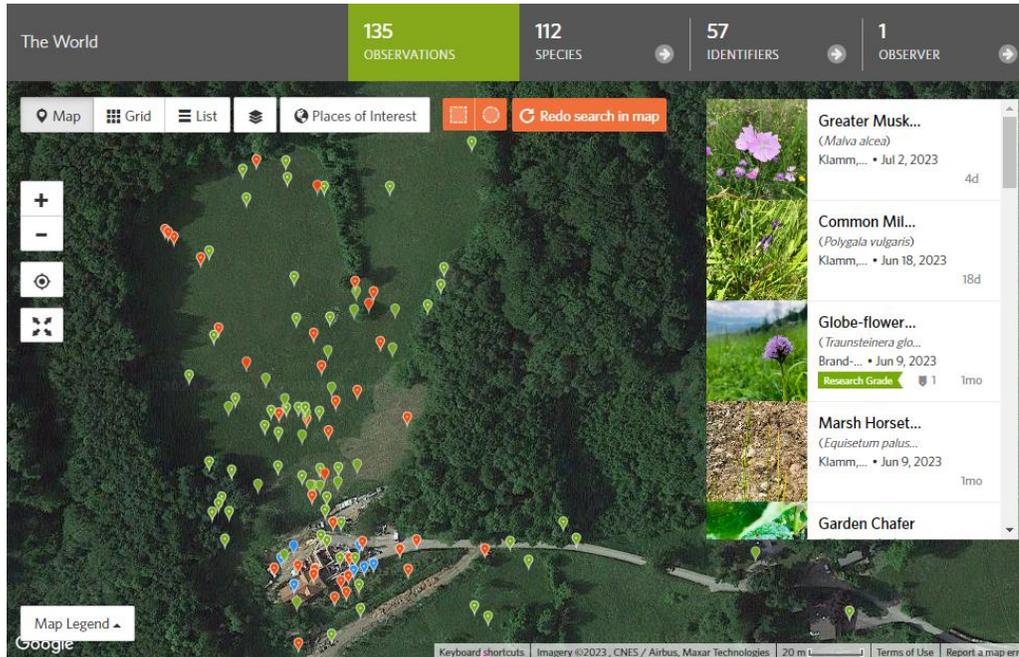
Promoting activities in Farmer Clusters to engage farmers and the wider community in citizen science and participatory biodiversity monitoring practices.

 Action research

Assessing the effects of engaging farmers in biodiversity monitoring on their awareness and willingness to adopt biodiversity-friendly farming practices.

 Pre-post interviews

Evidence-based, locally embedded approach



Combining **semi-structured monitoring and community action to underpin adaptive land management practices** for biodiversity protection and enhancement.

What is a Farmer Cluster?



A ‘Farmer Cluster’ is a **group of farmers**, located in the same region and supported by a **facilitator**. They share knowledge, support, and motivate each other to **improve biodiversity and the ecological health of their connected farmlands**.



Framework Farmer Cluster in Luxembourg

FRAMEwork’s farmer cluster in Luxembourg consists of apple, pear and quince orchards that are grazed in summer. All growers sell their fruit to the main stakeholder of the cluster: Ramborn Cider

- ACTIVE
- CONVENTIONAL
- ORGANIC
- PERMANENT CULTURES AND TREES
- GRASSLAND
- FRUIT AND NUTS
- LUXEMBOURG



Pome fruit orchards in “Basse-Durance Valley”

Potential Key Issues for Farmers : Integrated Pest Management in pome orchards (voles and codling moth) Reducing pesticide use (insecticide and herbicide) Enhancing farm economic and social

- ACTIVE
- CONVENTIONAL
- ORGANIC
- PERMANENT CULTURES AND TREES
- FRUIT AND NUTS
- FRANCE



OliValGraziosa Calci

The cluster is located in Tuscany, in the province of Pisa in an area called Monte Pisano, a small relief of high hills between the cities of Pisa and Lucca. The working context is a terraced land bui...

- ACTIVE
- ORGANIC
- CERTIFIED
- PERMANENT CULTURES AND TREES
- FRUIT AND NUTS
- ITALY



Cazadores de Aguilar

El Farmer Cluster está impulsado por la sociedad de cazadores locales. Son ellos los que están fomentando la recuperación de las cubiertas vegetales en el olivar.

- ACTIVE
- CONVENTIONAL
- PERMANENT CULTURES AND TREES
- FRUIT AND NUTS
- SPAIN

Farmer Clusters

11 Clusters in 9 countries

Farming systems

- Arable, extensive grassland and grazing, intensive grassland, orchards, olive groves
- Organic and conventional



What is Citizen Science?

Public participation in science and research.

It is most well-established in the **natural sciences**, particularly in biodiversity research.

Provides well-tested methods and tools for farmer- and citizen-based collection of data on biodiversity.



<https://hiking.org/portfolio/giving-a-hand-to-science/>

Citizen Science as applied in...



Observation protocols: Simple to use, not too time consuming or requiring specialist skills, including earthworm sampling, grassland survey, wildlife cameras.

Data recording tools, platforms: iNaturalist.org: global biodiversity observation and data recording platform and community.

Activity formats: e.g., BioBlitz: Time- and space-bound public activities to record biodiversity observations, often combined with expert talks and hands-on activities.



Projects with farmers

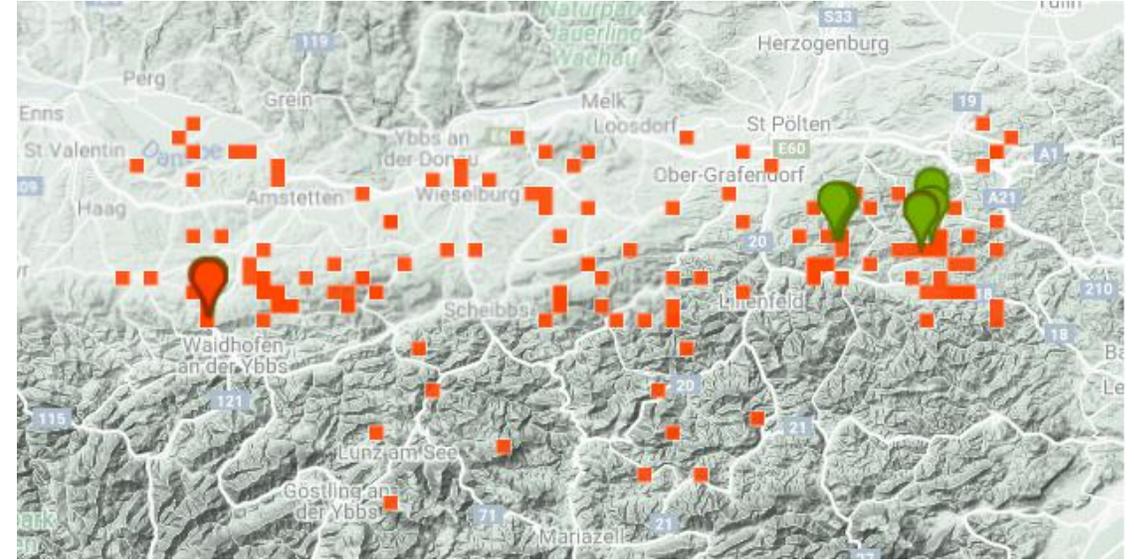


Wildlife cameras



Projects with farmers

Grassland vegetation



Stats

Totals	Most Observations	Most Species	Most Observed Species
<p>474 Observations »</p> <p>272 Species »</p> <p>10 People »</p>	<p> hendlberghof 129 observations</p> <p> daniela_abl 86 observations</p> <p> walter_starz 85 observations</p> <p> most4fc 64 observations</p> <p> markus202 49 observations</p>	<p> hendlberghof 105 species</p> <p> daniela_abl 67 species</p> <p> walter_starz 53 species</p> <p> most4fc 49 species</p> <p> markus202 38 species</p>	<p> Common Spotted Orchid 9 observations</p> <p> Early Purple Orchid 9 observations</p> <p> Bird's-foot Trefoil 6 observations</p> <p> Common Columbine 6 observations</p> <p> Spiked Rampion 6 observations</p>





BioBlitz successes

Observations on iNaturalist in LUX cluster



Before BioBlitz (since 2018): 87



During BioBlitz (2 days): 777
10% of all observations taken in Luxembourg
during CNC 2022



**120
participants**
**421
observations**
**8th best
BioBlitz out
of 16 places
in Italy**



Data gathered, people engaged



The screenshot displays the iNaturalist web interface. At the top, a dark navigation bar shows 'The World' and summary statistics: 6,983 OBSERVATIONS, 1,903 SPECIES, 1,174 IDENTIFIERS, and 511 OBSERVERS. Below this is a toolbar with options for 'Map', 'Grid', 'List', 'Places of Interest', and a 'Redo search in map' button. The main area is a map of Europe with several red location markers. On the right, a vertical list of observations is shown, each with a photo, species name, date, and user profile picture.

Species	Date	Research Grade	Engagement
Tawny Owl (<i>Strix aluco</i>)	Jun 23, 2023	Research Grade	2 likes, 1 comment
Glossy Ibis (<i>Plegadis falcinellus</i>)	Jul 2, 2023	Research Grade	1 like
Woodland Dor Beetle (<i>Anoplotrupes stercorosus</i>)	Jul 2, 2023	Research Grade	1 like
Greater Musk-Mallow (<i>Malva alcea</i>)	Jul 2, 2023	Research Grade	0 likes, 0 comments
Marbled White			

Local actor network



- Other likeminded farmers
- Everyone within the extended and cross-generational family context in and around operating farms
- People within the close social circle of farms

**Farmers,
farming
families and
friends**

**The wider
public,
community
groups**

- School/student groups
- Families, couples, groups of friends
 - Local associations and clubs, e.g., Scouts
 - Community initiatives

- Farming associations
- Agri-env. organisations
- Citizen science networks
- Nature conservation orgs
- National institutions, e.g., Natural History Museums
- Government and regional bodies

**Stakeholders,
advisory
organisations**

**Local
businesses**

- Farm cooperatives
- Sustainability start-ups
- Farm shops
- Local food businesses (e.g., producers and local sellers, food coops)



Challenges and opportunities

Time availability and effort for farmers

- Finding the hook, finding the soft spot

Role and capacity of facilitator/facilitating team is critical

- By-in and leadership

Increased exposure – vulnerability vs. opportunity

- Within the community
- Access to data, implications of information – data as “boundary objects”
 - Effects on farming business and local traditions, ways of knowing
 - Effects on perception of farmers (intra-personal, inter-personal)

Empowering farmer clusters and **strengthen local capacity** to function as local systems in a **self-sustaining way**, including taking ownership of citizen science and participatory monitoring activities.

Thank you

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