

Assessing ecosystem services provided by underutilised crops

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Radiant

is a Horizon 2020 project focusing on agrobiodiversity and more specifically on Underutilised Crops (UCs)

Underutilised crops

are crop landraces, varieties or cultivars that has limited current use in a given geographic, social, and economic context but that holds great promise to diversify agricultural systems, diets, create resilient agroecosystems and create economically viable dynamic value chains

RESEARCH FOCUS

Our work on Workpackage 3 of Radiant is focused on:

- Evaluating the Ecosystem Services (ESs) provided by Underutilised Crops (UCs)
- Developing an ESs self-assessment tool

METHODOLOGY AND ROADMAP

2022

Literature review process to draft the framework for the assessment of ESs provided by UCs

2 Participatory workshops to gather feedback on the framework, carried out with researchers, farmers and other food chain stakeholders:

- June 2022 in Athens, Greece
- July 2022 in Orkney, Scotland

Definition of the framework to be tested in case studies

2022 - 2023

Testing of the framework in 8 farms across Europe

ASSESSMENT FRAMEWORK

26 Ecosystem services have been selected to be assessed

Each ecosystem service is evaluated by one or several indicators

25 indicators have been chosen, divided in 5 main categories

The OASIS methodology (Škorjanc et al. 2021), had been the starting point for the selection of indicators to assess each Ecosystem Service

Each indicator is scored according to a liker scale from 1 to 5

Ecosystem Services

Provisioning

Food
Feed and fodder
Fiber and raw materials
Cosmetics and medicines
Timber
Energy
Genetic Resources

Regulating and supporting

Increase C sequestration
Reduce C emissions
Increase N fixation
Reduce N emission
Enhance soil fertility
Minise soil erosion
Water quantity and quality
Nutrient cycling
Pest and disease control
Climate regulation
Pollination
Wind protection
Fire protection
Biodiversity (landscape, specie and genetic)

Cultural

Aesthetic value
Cultural heritage
Recreation and tourism
Education and science

Indicators

Agroecological practices

Use of agroecological soil tillage techniques
Agroecological soil fertility management
Agroecological Crop pest management
Agroecological Crop disease management
Agroecological Weed Management
Maximisation of Soil cover
Use of plant reproductive materials adapted to low input systems
High Level of animal welfare
Agroecological livestock management
Agroecological grassland management
Efficient water management
Favourable microclimate management
Adoption of agroforestry

Socio-political aspects

Substantial and continuous participation in networks, collectives, organisations
Advocacy and education regarding underutilised crops and their sustainability
Promotion of traditional local seeds and heritage breeds
Strong involvement in preservation of traditional food

Environment and Biodiversity

Minimal pollution
Soil carbon budget optimization
Soil erosion minimisation
Soil salinization minimisation
Soil compaction minimisation
Maximisation of ecological networks
Maximisation of agrobiodiversity

Resilience

Maximal use of stress-tolerant breeds and cultivars



Leafy greens

Freixo do Meio - Portugal



Acorns

Biofontinhas - Azxores islands



Beans and lentils

Feneos - Greece



Local landraces of Wheat

Papavero Rosso - Piedmont, Italy



Bere Barley

Orkney - Scotalnd UK

Adaptation of the framework to be used as a self-assessment tool

Literature Škorjanc K., Peeters A., Wezel A. and Migliorini P., 2021. OASIS, the Original Agroecological Survey Indicator System. Methodology and guidelines for the assessor. Agroecology Europe, Brussels: 115 pages ISBN 978-2-9602977-3-7

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