

European UC-Cluster

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- **Deliverable description:**

Coordinators of the SFS-01-c projects will be engaged from the project onset. A dedicated European UC-Cluster will be created, coordinated by UCP and co-led by the coordinators of the other SFS-01-c projects. The foundation for the UC-Cluster will be established within the first year of RADIANT, and the network will work as a functional group of stakeholders realising producer-consumer linkages via DVC.

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Executive Summary

Deliverable 7.4 describes the pipeline for the foundation of the Underutilised Crop-Cluster (UCC), which is a network dedicated to UCs and their exploitation in Europe. This initiative is promoted as a clustering activity between the coordinators of the projects approved under the H2020-SFS-2020-2 call for proposal.

Here, the framework for the establishment, coordination, foundation, engagement, and branding of the UCC are described.

1. Setting up the UCC

1.1 From agrobiodiversity to dynamic value chains

The Underutilised Crop-Cluster (UCC) cluster emerges as a response to promote the (agro)biodiversity and respond to the needs of current European agroecosystems. It will consider the different dimensions of agricultural biodiversity, from soil health to genetic diversity and edaphoclimatic adaptation. Importantly, current policies aim to encourage the uptake of farming practices which encourage biodiversity, and scientific effort is now focused on (from the project's call text¹):

- *"expanding the agro-ecological knowledge base on the links and dynamics between biodiversity and agricultural production;*
- *delivering best practices based on production systems (both conventional and organic) that combine support for biodiversity with value creation;*
- *resulting in improved methods and tools to assess, evaluate and monitor different levels of diversity (genetic, species and ecosystem) as well as the linkages between agro-biodiversity and ecosystem services;*
- *defining operational biodiversity targets from the field to regional level;*
- *delivering strategies and tools for biodiversity focused soil management;*
- *reducing the dependence on external inputs in plant management through effective plant-soil interactions and the use of soil organisms;*
- *develop private and public incentives to foster farmer's delivery of biodiversity as a public good;*
- *generate news sets of harmonised data on native biodiversity in farmland landscapes and contribute to foster a European biodiversity platform and network involving farmers."*

¹ https://cordis.europa.eu/programme/id/H2020_SFS-01-2018-2019-2020

1.2 Main objective of the UCC

The UCC aims to act as a community of best practice for transformation of agriculture towards more-sustainable norms, appointing specialised UC-Champions (e.g., pilot farms from each one of the sister projects), and engaging with these multiple actors using specialised channels and the most effective communication routes, to promote the inclusion of UCs in the farming systems. The UCC also aims to leverage the research excellence represented by its members and global partners to valorised UC uses across food, feed and non-food value chains. Using multi-actor approaches and integrating different perspectives for integrated research agroecology, social sciences, economics, agronomy, nutrition, artificial intelligence, genetics, horticultural sciences, food technology and others, members will work to maximise the valorisation of UCs, improving their yield, crop performance and utilisation, as well as the capacities of farmers to integrate UCs in their businesses. This aims to identify UCs and UC-based approaches which enable more-diverse cropping systems, with improved ecosystem-functions (or-services), including enhanced soil functions, greater biodiversity, minimised nutrient losses to the environment, and encouragement of better-balanced and nutritionally-enhanced diets across Europe. The network will bring together leading researchers, academics, NGOs, educators, industry professionals, policy makers worldwide to create a novel, next-generation, grassroots generated and open-data 'theory of change' approach.

1.3 Underutilised crops

There are about 50,000 edible plants on the Earth. However, current food systems are concentrated on the cultivation and processing wheat, maize, and rice. These species provide more than 50% of the plant-based calories consumed by the world's population and occupy 40% of the world's arable land. The lack of agricultural diversity has severe consequences on biodiversity and global environmental sustainability, namely soil degradation and higher global emissions (Pinto et al., 2022). UCs are thus deemed crucial to food security, and researchers have debated for decades their role in climate change mitigation and commercial potential. Given their strong value in a more local context, UCs can contribute to agroecological resilience, and local economies through system diversification, and are special elements of the culture and diets of specific regions. However, they are under-exploited and -conserved resources, which are at risk of disappearing.

There are many possible definitions for a UC, and taking into account the FAO's work on this topic, these can be defined as, "*a neglected, but valuable species, landrace, variety, or cultivar that has limited current use in a given geographic, social, and economic context and that holds great promise to diversify agricultural systems, create resilient agroecosystems, diversify diets, and create economically viable dynamic value chains (for feed, food, and non-food uses)*".

In scope of the four sister projects of SFS-01 subtopic C, different UCs will be target for exploitation and valorisation, including cereals, legumes, and horticultural crops. The need to create a dedicated UCC is also to find common goals, strategies and activities and make the best synergies amongst the four related projects. Some examples of the UCs that are being target of research are listed below:

Bambara groundnut (*Vigna subterranean* L.)
Foxtail millet (*Setaria italica* L.)
Lentil (*Lens culinaris* L.)
Winged bean (*Psophocarpus tetragonoblu* L.)
Barley landraces (*Hordeum vulgare* L.)
Faba bean (*Vicia faba* L.)
Bean landraces (*Phaseolus vulgaris* L.)
Forages (Alfalfa/Clover)
White lupin (*Lupinus albus* L.)
Wheat landraces (*Triticum monococcum* L.)
Maize landraces (*Zea mays* L.)

Tomato landraces (*Solanum lycopersicum* L.)
Pea (*Pisum sativum* L.)
Leafy greens (Several species)
Traditional fruit trees (Cherry, Apple, Pear, Fig, Carob, Tree, Plum)
Bermuda Grass
Oats
Hull-less barley for human consumption
Triticale
Buckwheat

1.4 Dynamic Value Chains

One of the core concepts and values of utilising UCs is that once they are integrated into new value chains and can be geared to offer higher levels of crop diversification (more different crop species are grown), and which offer improved norms of sustainability – together these aspects offer more dynamic values, which may offer resilience through the capacity for adaption to impacts of change - such as may be due to climate or the volatilities of availability and costs of crop traded on global markets. A Dynamic Value Chain (DVC) can be characterised as comprising five harmonised components: i. Producers; ii. Processors; iii. Transportation; iv. Marketing, Sales and Value creation; v. Consumers. A DVC is optimised via improved connectivity, and sharing demand and production data across all actors in the network, as this helps balance product flow, counter the uncertainties of non-integrated value chains, and generates improved capacities and values. Thus, DVCs should be more resilient to disruption and may sustain economic development across scales, and over the longer term.

The transition of the food system to accommodate DVCs for UCs is worthy. Ultimately, realising crop diversification with UCs brings resilience to the farm by promoting variety, we avoid the dependence on a single crop (because at least one component of the cropping system will succeed in case of crop failures), we reduce the effects of price variability due to market demands, and impacts on the local economy. UCs can deliver a variety of products such as food and feed, also firewood, flowers, honey, industrial products. Also, benefits can be seen on the farm, and also in consumer diets, all this while delivering other ecosystem functions (or services), such as pollination, pest regulation by natural enemies, nutrient renewal, water quality, carbon sequestration.



The concept of DVCs is thus inherently associated with that of UCs and will be a central focus for the UCC membership.



2. Coordination, foundation and engagement

2.1 Coordination

The coordinating founding members of the UCC will be the coordination entities of the four approved projects under H2020-SFS-2020-2 call for proposal.

BIOVALUE - Aristotle University of Thessaloniki (Professor Konstadinos Mattas)

The approach of BIOVALUE project is to set-up a holistic perspective, under the “multi-actor” approach, to analyse the link between biodiversity, the agrifood value chain agents, the environment, consumer food preferences and health. By employing a bottom-up vertical approach to develop the BIOVALUE TOOL, a dynamic and customisable agri-food value chain vis-à-vis biodiversity analysis tool, the proposal tries to introduce, model, evaluate, breed, produce and spread specifically selected genetically diverse underutilised crops (UCs)(cereals, legumes, leafy and fruity vegetables) and develop final marketable, certified and labelled culinary products incorporating them (dish recipes and processed foodstuff), that enhance agro-biodiversity to the applied agro-ecosystems and appeal to the consumers, securing their future market performance and concurrently, their cultivation viability. Moreover, in a modelled user-friendly ready-to-work framework, the project will produce a set of key performance indicators destined to measure policy quality and impact, environmental evolution and compliance with regulations of introducing underutilized, genetically diverse crops to the value chain and are by design expandable to further enhance biodiversity in the value chain. Ultimately, this expanding nature, is highlighted by the complimentary effects of BIOVALUE processed and unprocessed final food products and dishes such as low energy consumption, environmental cultivation resiliency to marginal landscapes and future climate, as well as nutritional and health benefits. Incorporating the market power in the whole approach, the proposal can lead towards self-supported sustainability of biodiversity in the future.



CROPDIVA - Ghent University (Professor Geert Haesaert)

Agrobiodiversity is a vital subset of biodiversity and is the result of the interaction between the environment, genetic resources and management systems used by culturally diverse people. It is a crucial prerequisite for ecologically and economically sustainable agricultural systems and is an important tool for ecological intensification. The aim of CROPDIVA is to reinforce agrobiodiversity on different levels and along distinct geographic and socio-economic areas. The activities of CROPDIVA are clustered around five connected research work packages and three pillars, each with a set of specific objectives: i) promotion of six key underutilised arable crops: oats, hull-less barley, triticale, buckwheat, faba bean and lupin; ii) creation of value chains for selected UCs; and iii) study of the socio-economic impact of project results. The concept of CROPDIVA is an innovative challenge driven approach based on the promotion of UCs in sustainable cropping systems and new regional value chains. Project activities will focus on the following major challenges: improved resilience of cropping systems, alignment of the economic and social needs of farmers with ecological goals as well as marketing of new food/non-food products meeting consumer demands. The results gathered in CROPDIVA will not be descriptive, but will be used for innovative solutions along the entire food and non-food chain to enable biodiversity management on all levels, including diversifying the use of genetic resources, crop production systems, new food/non-food products, market opportunities while satisfying producers and investigated consumer requirements.





DIVINFOOD - INRAE Research Institute (Dr. Yuna Chiffolleau)

The overall objective of this multi-actor, participatory project is to facilitate the use and increase the value of Neglected and Underutilised Crops (NUCs) in food chains to foster healthier diets and more sustainable food systems. To achieve this, DIVINFOOD will focus on interactive short and mid-tier value chains that can meet the growing consumer demand for: 1) healthy plant-based food; 2) products with a local/regional identity, and 3) diverse services and benefits received from agriculture and food. DIVINFOOD will study minor cereals and legumes in 3 geographical regions that face various climatic hazards and diverse socio-economic challenges to developing agrobiodiversity-rich value chains. DIVINFOOD will: co-develop, with consumers, new interactive marketing modes and channels valuing biodiversity use and its services/benefits, with the support of participatory guarantee systems and digital tools; co-produce new and diversified plant-based healthy and appetising products and recipes from NUCs meeting consumers' needs, from minimal or mild food processing and formulations better expressing NUCs' potential; benchmark diverse agroecological farming systems and techniques that improve NUCs' performance, inter-specific biodiversity and the provision of citizen-focused agro-socio-ecosystem services; breed more performant cultivars of cereals and legumes with local adaptation, intra-specific biodiversity, biotic and abiotic stress tolerance, and potentiating nutritious and appetising food; demonstrate new business models that diversify income and activities for farmers and small-scale processors who are using agrobiodiversity; co-design pilot multi-actor territorial networks/social cooperatives in charge of managing, propagating and promoting NUCs. Design policy recommendations to promote their replication; disseminate the results to relevant stakeholders to optimise their exploitation.





RADIANT - Catholic University of Portugal (Prof Marta W. Vasconcelos)

RADIANT implements a suite of strategic and fully inclusive multi-actor engagement methods to co-develop solutions and tools to ensure that agrobiodiversity in the form of underutilised crops (UCs) is realised via Dynamic Value Chains (DVCs). RADIANT characterises DVCs as 'a system-state where open information sharing among all value-chain actors allows resilient adaptation to disruptions and sustainable economic development'. RADIANT adopts a 'Theory of Change' approach, where desired system-level states, such as crop diversification, environmental and agrobiodiversity preservation, and fair economic development are monitored and mapped to identify and implement the necessary transformation avenues. RADIANT's 28 multi-actor consortium is composed of highly skilled value chain actors, researchers, and end-users. The scientific excellence of the work plan will release the value of UCs and enable a transformation towards sustainable DVCs that foster agrobiodiversity in educational, financial, technological settings and effectively provisions UCs to farmers' fields and consumers' tables. This will be achieved via eight complementary work packages to: identify, collect, and multiply the genetic resources of core UCs for breeding and farming; widen UC recognition by capturing their ecosystem services; enhance their processing by co-creating novel food and non-food products; invite stakeholders and aspiring participatory farmers into a capacity-building, mentoring-network to trial, test, and embed UCs in sustainable DVCs; co-creating Apps and 'UC-Transition Diaries' to record their transformation; and engage stakeholders to co-design policy instruments, and deliver a decision support tool to create sustainable avenues for DVCs. In sum, the RADIANT approach will empower value chain and policy actors to reach out to 1 million farmers and more than 60 million potential consumers to promote the uptake of UCs in farming, processing, manufacturing, and retailing practices.





2.2 Participating Founding Members

All partners involved in the four sister projects will be invited as participating founding members of the UCC (Table 1), as well as the stakeholders that have supported the projects proposals from the application stage (of RADIANT; Table 2). The foreseen 45 participatory farmers engaged in WP1 activities of RADIANT will also automatically be invited to be part of the UC-Cluster, as will those who have applied to take part in the Participatory Call (T1.3; D1.4).



Table 1. Participating founding members of the UC-Cluster, that represent the project partner organizations from the four sister projects from SFS-01.

	Partner	Country
1	Aarhus Universitet	Denmark
2	Aberystwyth University	United Kingdom
3	Aerial	France
4	Agencia Estatal Consejo Superior De Investigaciones Cientificas	Spain
5	Agri Kulti	Hungary
6	Alma Mater Studiorum – Universita di Bologna	Italy
7	Asociacion Connecta Natura	Spain
8	Associacao de Desenvolvimento Integrado do Concelho de Alvaiázere	Portugal
9	Association De Coordination Technique Pour L'Industrie Agroalimentaire	France
10	AXIA Innovation UG	Germany
11	Biocivam 11	France
12	Biofontinhas	Portugal
13	Bioland Beratung GmbH	Germany
14	Boerenbond	Belgium
15	Budapest Fovaros Onkormanyzata	Hungary
16	CAPNUTRA	Serbia
17	Centre De Recherche De L'Institut Paul Bocuse	France
18	Centre De Ressources De Botanique Appliquee	France
19	Centro Ricerche Produzioni Animali- C.R.P.A. SPA	Italy
20	Ceska Zemedelska Univerzita V Praze	Czechia

21	College of the Holy & Undivided Trinity Of Queen Elizabeth Near Dublin	Ireland
22	Confagricoltura	Italy
23	Consiglio Per La Ricerca In Agricoltura E L'analisi Dell'economia Agraria	Italy
24	Cook.Lab LDA	Portugal
25	Creative Minds	Portugal
26	Crops for the Future	United Kingdom
27	Danko Hodowla Roslin Spolka Z Ograniczona Odpowiedzialnoscia	Poland
28	Dansk Vegetarisk Forening	Denmark
29	Deutsches Institut Fur Lebensmitteltechnik EV	Germany
30	Ecole D'Ingenieurs De Purpan	France
31	Eco-sensus Kutato	Hungary
32	Ecozept France	France
33	Eesti Maaulikool	Estonia
34	Ege University	Turkey
35	Eidgenoessisches Departement Fuer Wirtschaft, Bildung Und Forschung	Switzerland
36	ESSRG Nonprofit KFT	Hungary
37	Fondazione Italiana Per La Ricerca In Agricoltura Biologica E Biodinamica	Italy
38	Forschungsinstitut Fur Biologischen Landbau Stiftung	Switzerland
39	Georgian Farmers Association	Georgia
40	Geoponiko Panepistimion Athinon	Greece
41	Green House Food Doo Novi Sad	Serbia
42	Harper Adams University	United Kingdom
43	HiWeiss SRL	Italy
44	Idener Research & Development Agrupacion de Interes Economico	Spain
45	INRAE Transfert SAS	France

46	Institut De Recerca i Tecnologia Agroalimentaries	Spain
47	Institut Fur Lebensmittel- und Umweltforschung EV	Germany
48	Institut Jozef Stefan	Slovenia
49	Institut Za Agrostrategii I Inovatsii	Bulgaria
50	Institut Za Ratarstvo I Povrtarstvo Institut Od Nacionalnog Znacaja Za Republiku Srbiju	Serbia
51	Institute For Food Technology of Novi Sad	Serbia
52	Innovatiesteunpunt Voor Landbouw Enplatteland	Belgium
53	Innovationscenter for Økologisk Landbrug P/S	Denmark
54	Inovacijsko Tehnoloski Grozd Murska Sobota	Slovenia
55	Julius Kuhn-Institut Bundesforschungsinstitut Fur Kulturpflanzen	Germany
56	Justus-Liebig-Universitaet Giessen	Germany
57	Landbauschule Dottenfelderhofm Gemeinnutziger Verein	Germany
58	Leibniz - Institut Fuer Pflanzengenetik Und Kulturpflanzenforschung	Germany
59	Mediterranean Agronomic Institute of Chania	Greece
60	META Group SRL	Italy
61	Meyerhans Muhlen AG	Switzerland
62	Mitropoulos I - Lyras G Idiotiki Kefalaioxiki Etaireia	Greece
63	Molino Filippini SRL	Italy
64	MPMC	France
65	Nordsaat Saatzeitgesellschaft Mitbeschränkter Haftung	Germany
66	Solintagro SL	Spain
67	Nordvara Nordisk Ravara AB	Sweden
68	Norsk Institutt For Bioekonomi	Norway
69	Okologiai Mezogazdasagi Kutatointezet Kozhasznu Nonprofit KFT	Hungary
70	Open Food France	France
71	Open Food Facts	France
72	Paniflower NV	Belgium
73	Progeno	Belgium

74	Saatzucht Steinach Gmbh & Co KG	Germany
75	Senova Limited	United Kingdom
76	Sociedade Agrícola do Freixo do Meio Lda	Portugal
77	Stichting Wageningen Research	Netherlands
78	Stilusos Videki Ettermiseg Egyesület	Hungary
79	Stolzenberger Reiner Erich	Germany
80	Sveriges Lantbruksuniversitet	Sweden
81	Technologiko Panepistimiu Kyprou	Cyprus
82	The Food and Agriculture Organization of the United Nations	Italy
83	The James Hutton Institute	United Kingdom
84	The University of Nottingham	United Kingdom
85	Tudatos Vasarlok Kozhasznu Egyesulete	Hungary
86	Universidade Nova De Lisboa	Portugal
87	Universidade de Évora	Portugal
88	Universita Degli Studi Di Milano	Italy
89	Universita Degli Studi Di Scienze Gastronomiche	Italy
90	Universita Degli Studi Di Torino	Italy
91	Universita Di Pisa	Italy
92	Universita Politecnica Delle Marche	Italy
93	Universitaet Fuer Bodenkultur Wien	Austria
94	University Of Limerick	Ireland
95	Ustav Experimentalni Botaniky Av Cr	Czechia
96	Wageningen University	Netherlands



Table 2. List of initial participating stakeholders that will be invited to be members of the UC-Cluster

Name	Country	Organization type
97 Terres Inovia	France	Agricultural Research Institute
98 SYKE	Finland	Environment Institute
99 ERSAF	Italy	Agrarian technical Institute
100 Accademia Misena di Roccacontrada	Italy	Association
101 National Association of Nutritionists	Portugal	Association
102 Portuguese Council of Nutritionists	Portugal	Association
103 ISEKI-Food Association	Austria	Association
104 SPCNA	Portugal	Association
105 Associació De Veïns I Propietaris Pobla de Benifassa	Spain	Association
106 Sociedade Portuguesa Ciências Nutrição e Alimentação	Portugal	Association
107 Spanish society of organic farming and agroecology	Spain	Association
108 CESFAC	Spain	Confederation Animal Feed producers
109 MPI-Movement Pro Consumer	Portugal	Consumer Organisation
110 ZERO	Portugal	Consumer Organisation
111 FET	Portugal	Consumer Organisation
112 Societat d'amics de la Serra d'Espadà	Spain	Consumer Organisation
113 Cooperativas Agrícolas de Aragón	Spain	Federation of Cooperatives
114 COAG	Spain	Coordinating Agency for Farmer Organisations
115 Campo Aberto	Portugal	Environmental Association
116 Valencian Network of Land Stewardship	Spain	Farmer Network
117 Associació per la Recuperació de la Tinença	Spain	Farmer Network
118 IUFoST	Canada	Global Organisation Food Science & Technology

119 Ministry for Agriculture, Forestry and Food	Slovenia	Governmental Organisation
120 Directorate Rural Economics and Veterinary Service	Greece	Governmental Agency
121 Nébih - food safety authority	Hungary	Governmental Agency
122 Ministério da Agricultura Portugal (DGAV)	Portugal	Governmental Agency
123 Institute of Agriculture and Forestry	Slovenia	Governmental Agency
124 Regione Veneto	Italy	Regional (NUTS2) Administration
125 Natural Park of the Sierra Espadán	Spain	National Park
126 Natural Park of the Tinença de Benifassà	Spain	National Park
127 IFOAM international	Germany	NGO
128 IFOAM AgriBioMediterraneo	Greece	NGO
129 Agroecology Europe	Belgium	NGO
130 Portugal Foods	Portugal	NGO
131 Semente de Futuro	Portugal	Non-Profit Organisation
132 Agro sanus	Portugal	Organic Farming Consultants
133 University of Economics and Management	Czech Republic	Research Centre
134 Public Health Institute	Portugal	Research Centre
135 Crop Research Institute	Czech Republic	Research Centre
136 ETH Zurich	Switzerland	Research Centre
137 Vrije University	Netherlands	Research Centre Sustainability Food Systems
138 AERES	Netherlands	Research Centre Sustainability Food Systems
139 Laimburg	Italy	Research Centre for agriculture in South Tyrol
140 Eurest (member of Compass Group)	Portugal	Distributer/Catering
141 NotosFresh	Greece	SME
142 Greek and Fresh	Greece	SME
143 Intelligent Green Crops	Greece	SME
144 Agropot	Greece	SME

145 Strigolab	Italy	SME
146 Sipcam Oxon	Italy	SME
147 Farmvent	Netherlands	SME
148 Sannovations	Netherlands	SME
149 SnoodFoods	Portugal	SME
150 R&B Distillers Limited	Scotland	SME
151 Glasgow Locavore	Scotland	SME
152 CANVAS Brewery	Ireland	SME
153 Trivalor	Portugal	SME
154 Arbikie DIstillery	Scotland	SME
155 Birsay Heritage Trust (Bere Watermill)	Scotland	SME
156 Bruichladdich (Bere single malt)	Scotland	SME
157 LikeMeat GmbH	Germany	SME
158 IFOAM EU	Belgium	Umbrella Organisation Organic food & farming
159 UCSC	Italy	University
160 DAFNAE	Italy	University
161 Consortium of Parmigiano Reggiano Cheese's	Italy	Consortium of Parmigiano Reggiano Cheese's
162 Via Campesina	Belgium	European Coordination Organization
163 Táplálkozás, Életmód és Testmozgás Platform	Hungary	Platform on Diet, Physical Activity & Health
164 Business Council for Sustainable Development	Hungary	Business Council
165 Hungarian Bioeconomy Cluster	Hungary	Bioeconomy Cluster

2.3 Who can join, and how will they be engaged?

The UCC aims at gathering representative actors from the different steps of the agrifood value chains, so it will include any stakeholder interested in UCs and their development from economic, social, scientific, or agronomic perspectives, among others.

The partners from the four sister projects will be responsible for contacting related networks and stakeholders through different channels.

A 'UUC toolkit' to recruit members, featuring invitation letters (see Appendix 1), flyers, and workshops will be formalised. This will be allied to a RADIANT-website UCC 'landing page' with access to the UCC communications platform (offering dedicated registration page).

A **legacy framework** with existing organisations/groups including e.g., the "Crop Diversification Cluster" is under construction.

2.4 Activities

A preliminary exercise was conducted to identify project activities in which UC-Cluster stakeholders may wish to participate, and some of the benefits of being part of the UC cluster have been identified as well. Engagement and co-creation activities with stakeholders will include:

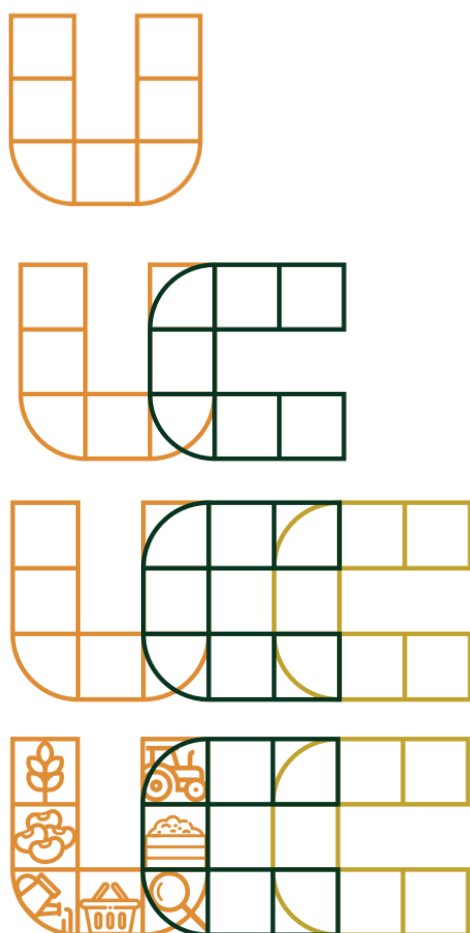
- ⇒ **Invitation to join selected project events.** Members of the UC-Cluster will have first-hand access to register in project events. The stakeholders will be invited to participate, specially at the local level, and to provide their insights and recommendations.
- ⇒ **Participate in UC characterization, including phenotypic descriptors, nutritional value, and sensory attributes.** Stakeholders interested in trialling UCs will be invited to engage with the projects in specific tasks. These can include in-field phenotypic description, where the participants will be provided with methodology and training to make the registration; material collection for nutritional analysis; or collection of the consumers acceptance of UCs in their cooking, food product development, or other contexts.
- ⇒ **Seed sharing.** The partners from the coordinating founding members will be available to provide specific planting material to interested stakeholders, specifically farmers who wish to change their farming systems towards agrobiodiversity and UCs production. Additionally, these farmers can contribute as 'seed multipliers' in the case of UCs that have less available material, re-sharing part of the seeds with the projects' partners.
- ⇒ **Having early access to projects results.** Through the dissemination of a newsletter which will be sent to the specific contacts of the registered stakeholders, UC-Cluster members will have access to the most recent results and there will be a communication channel where these results could be further discussed between scientific partners and stakeholders.
- ⇒ **Conducting field trials.** For stakeholders interested in collaborating for scientific research, different experiments could be performed at the farm-level, to promote a more sustainable, diverse and resilient farming system, using UCs.
- ⇒ **Showcasing products with UCs at international events.** Project partners have a strong presence in international conferences, meetings, or workshops, that could be important opportunities for industry-related stakeholders to showcase innovative or traditional UC-based products.

- ⇒ **Sharing experiences in growing, processing, commercialising UCs.** This can be achieved through different channels. For example, this can be promoted in the above-mentioned communication channel, in group discussions promoted at events/workshops, in the UC-Cluster social media, or even by direct contact with the projects' coordinators.
- ⇒ **Take part in participatory approaches for UCs valorisation.** One of the main goals of each sister project is to promote co-creation activities, that will allow the outcomes of the projects to be more rationale and achievable amongst the targeted stakeholders. The participation of external individuals will, therefore, be fostered and the experiences shared with/by them will be capitalised to revert as important knowledge to the UC-Cluster legacy.
- ⇒ **Collaborate in evaluating innovative agroecological practices.** Stakeholders may sometimes be reluctant to change and, in some countries, the majority of the farming systems are still dedicated to the conventional and intensive production method. Sharing and tutoring innovative practices to the stakeholders will contribute to improve soil and environmental health around Europe.
- ⇒ **Assist in recognizing the environmental and societal value of UCs.** This will be achieved, not only through the implementation of a strong communication strategy, but also by creating diverse educational material, which will be freely available in online resources. The data collected to produce these materials will be from the UC-Cluster members and will have their contribution as advisors recognised.
- ⇒ **Contribute to the development of innovative food, feed, and technical products.** Again, when it comes to industry-based partners, the research projects could assist in small-pilot scale trialling, which would be upgraded by the interested members.
- ⇒ **Providing insights on market trends.** Directed to retailers, distributors or farmers with short value-chains, discussions on market trends will be promoted, and the results from these discussions might influence the course of action of a certain partner to match the market necessities.

3. Graphic Identity and Media

3.1 Logo and Technical Description

The UCC brand logo was developed considering that the project involves not only the RADIANT but also CROPDIVA, BIOVALUE and DIVINFOOD. The colours used were adapted from the graphic identity of the RADIANT and other surrounding projects. The brand symbol was developed through a square where the shape of the letters "UCC" was highlighted (through colour). In this symbol all squares are interconnected, creating an idea of union, teamwork, and interconnection, thus making a relationship with one of the keywords of this project "Cluster". Within each square an icon was applied within the themes reflecting the overall objective of the project.



radiant

PROJECT



UNDERUTILISED CROPS CLUSTER

Other applications



"Realising Dynamic Value Chains for Underutilised Crops" (RADIANT), is a Research & Innovation Action supported by the European Commission Horizon-2020 programme, Grant Agreement number 101000622.



3.2 Social Media Handles

Dedicated social media handles (Facebook, Twitter, Instagram, LinkedIn) will be created for broad dissemination of the UC cluster activities

3.3 Sign up

The initial sign-up page for the UC cluster will appear at the RADIANT project website. Once the cluster is matured, and it's potential realized, a dedicated webpage will be created for the UC cluster.

References

Pinto et al. (2022) Healthier and Sustainable Food Systems: Integrating Underutilised Crops in a 'Theory of Change Approach' (chapter 9). In: Biodiversity, Functional Ecosystems and Sustainable Food Production ISBN978-3-031-07433-2 (in press)

Acknowledgement

RADIANT is Coordinated from the Universidade Católica Portuguesa (Porto, Portugal) by [Prof. Marta Vasconcelos](#). Deputy Coordinator, Dr Pietro Iannetta ([James Hutton Institute](#), Scotland, UK).

Disclaimer

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Appendix 1

"Dear stakeholder,

Herein we present to you a new European network, the Underutilised Crops-Cluster (UC-Cluster). This unique cluster was brought together to address the European Commission Horizon 2020 Research and Innovation call for Sustainable Food Systems (SFS), 01, entitled: "Biodiversity in action: across farmland and the value chain", and specifically Topic C, "from agrobiodiversity to dynamic value chains".

Four research and innovation projects were approved under this call – Biovalue, CropDiva, DIVINFOOD and RADIANT which are joining efforts in the UC-Cluster in proactive response to the impact of major losses in agricultural crop diversity. For example, approximately only 0.4 % (ca. 200) of edible species are used for food, and only three of these (maize, rice, and wheat) provide 60% of the calories in the human diet. Reversing such loss in agrobiodiversity also means to help realise more diverse and healthier diets, plus more resilient farm business, more sustainable cropped systems and reinvigorate local-food culture. The UC-Cluster was built to ensure the necessary collaboration of all supply-chain actors, from crop-breeders to consumers, presenting a co-developed research and innovation plan to realise dynamic value chains and new marketing strategies for underutilised crops - directly empowering and connecting producers and consumers in a true farm-to-fork approach.

The activities in which you can be involved are many. You can find the detailed co-creation opportunities in the UC-Cluster dedicated website, along with an application form to join us.

In due time, an online workshop will be organized for the registered stakeholders, where each one of the sister projects' coordinators will have the opportunity to present the projects to the public and capture further stakeholder interests."

All invitations and personal data will be gathered considering data protection regulations.