

DIVINFOOD

Co-constructing interactive short and mid-tier food chains to value agrobiodiversity in healthy plant-based food

Deliverable D4.1

On-line catalogue of available interesting varieties of selected NUCs

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Executive summary

This report presents the methodology and the results of the DIVINFOOD project's work on the participatory elaboration of an interactive online catalogue of varieties of neglected cereals and legumes from the case of France, Italy and Portugal. The catalogue focuses on a selection of neglected cereals and legumes studied in the French, Italian and Portuguese living labs (LLs) of the project: einkorn (*Triticum monococcum*), rivet wheat (*Triticum turgidum*), white lupin (*Lupinus albus*), grass pea (*Lathyrus sativus*), meat bean (*Phaseolus vulgaris*) and lingot bean (*Phaseolus vulgaris*).

Through this interactive catalogue, which includes information from 5 LLs and 6 Neglected and Underutilised Crops (NUCs), farmers will have access to new resources to initiate or reinforce on-farm trials, with landraces or varieties that have already been selected and multiplied by other farmers in similar growing conditions.

The catalogue consists of two complementary tools freely accessible from the DIVINFOOD website (divinfood.eu/our-nucs-en):

- an interactive map where farmers of the three countries can register and contact each other to exchange information on the landraces and varieties of the selected NUCs they are using. This map also lists public institutes, seed companies and associations that preserve, offer or sell varieties of the selected NUCs.
- a documentation of the landraces and varieties of interest used by farmers and studied in the French, Portuguese, and Italian LLs, with their conditions of use and main characteristics in these conditions of use.

This report also provides guidelines to extend this catalogue to the other crops and living lab regions of the DIVINFOOD project.

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1. Introduction

The cereals and legumes used around the world are restricted to a few species. In Europe, 46.7% of cereal production is represented by common spelt and wheat gathered. The next five major cereal productions are maize, barley, rye, oats, and durum wheat. All other cereal species collectively account for only 6% of the production (European Commission, 2023). Regarding the dry legumes for human consumption, this category is not extensively cultivated, representing only 2,1% of European arable land in 2015, compared to 54% for cereals (De Cicco, 2015). However, legumes are highly valuable for soil quality, notably due to their ability to fix nitrogen into the soil (Watson et al., 2017). Moreover, they have a significant nutritional value, providing a substantial amount of proteins (Dilis, Trichopoulou, 2009).

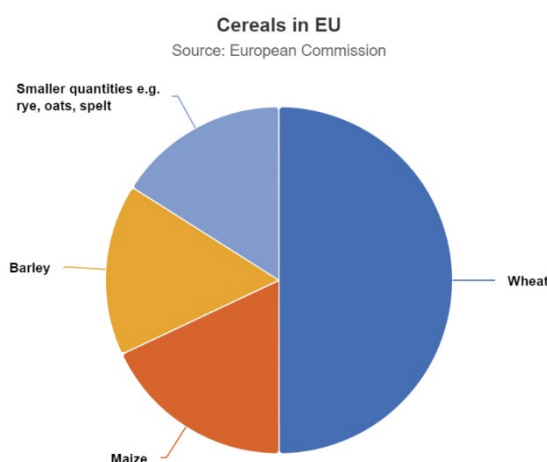


Figure 1. Cereal production in the EU in 2023 (Source: European Commission)

Using such a limited number of crops has an impact on agrobiodiversity and on the resilience of agricultural systems. Valuing a diverse range of species that have been neglected since the beginning of modern agriculture can restore agrobiodiversity and help recreate a system that is better able to meet the challenges of today's agriculture. In addition, it can help to face some of the consequences of climate change (Da Silva, 2012).

To contribute to reverse the loss of agrobiodiversity, DIVINFOOD proposed the creation of a tool that will enable farmers, associations, and local stakeholders to access and share information on available interesting varieties and landraces of neglected cereals and legumes. The aim is to increase the use of these crops, and the knowledge about them. The approach involves inventorying, mapping, and characterising landraces and varieties of neglected cereals and legumes in their growing conditions. These varieties and landraces have been preserved, multiplied and/or cultivated by farmers, local seed banks, gardeners, seed companies and researchers. The project begins with the creation of an interactive catalogue in 3 countries (France, Italy, and Portugal) and for 6 crops, with the aim of extending it to other European partner countries and crops.

This initiative aims to assist farmers in different regions with similar pedo-climatic conditions and cropping systems in identifying relevant varieties and landraces for them, as well as sources of seeds, and in sharing knowledge.

Developed using a participatory methodology, the catalogue has taken the form of two complementary tools in the DIVINFOOD website:

- an interactive map that enables anyone involved in cultivating, preserving, selecting and/or multiplying varieties of the 6 selected NUCs to provide descriptions of those ones, as well as their contact information, thus facilitating networking among different stakeholders;
- a documentation of the 6 NUCs' varieties of interest cultivated by farmers in the 5 French, Italian, and Portuguese Living Labs (for the market or just for a trial), and studied by the DIVINFOOD project, that allows farmers to access the conditions of their cultivation and their main characteristics when cultivated in these Living Labs regions.

These two tools complement each other and enable farmers to find information on available varieties and landraces of the selected NUCs, including guidance on production methods, growing conditions, and sources for accessing seeds. All together, they serve the dual purpose of (i) facilitating access to information on the 6 NUCs' landraces and varieties and (ii) fostering the sharing of information, knowledge, and seeds among stakeholders to contribute to greater use of cultivated biodiversity in Europe.

2. Methodology

2.1 Co-construction of the catalogue with the stakeholders

The first step was to co-build the content of the catalogue with potential users and especially collect the relevant information for farmers.

In each living lab (France, Italy, Portugal) and region around, the stakeholders involved in the preservation, selection/multiplication and cultivation of genetic resources were inventoried and interviewed, individually and also during meetings.

At the same time, some national networks were also contacted to contribute to the project:

- In France: The RSP (Réseau Semences Paysannes), a national network of peasant seeds savers organisations;
- In Italy: The Rete semi rurali, a rural network of seed savers organisations;
- In Portugal: Colher para semear, an organisation aiming to inventory and preserve landraces from all over Portugal, and an informal network of producers of landraces of cereals in north of Lisbon;
- In Europe: Let's liberate diversity, a European Coordination of organisations involved in the preservation of cultivated biodiversity (21 members).

After these first contacts, two different approaches were used:



- In France, meetings were organised to collectively define the content of the catalogue and its format:
 - Meetings with farmers of the Cer-Occ living lab to specify the most important criteria for potential users of the catalogue.
 - Workshop organised during the "forgotten cereals day" in EIP Purpan agronomic school (DIVINFOOD's partner) (2023/06/08).
 - The main questions raised at these meetings were as follows:
 - *"What is/are your motivation(s) to be linked with other farmers or stakeholders in Europe around varieties and seeds? How and by what means do you want to connect with them?"*
 - *"Do you already have access to the information on varieties of interest and which information do you need on those varieties?"*
- In Portugal and Italy, the approach was different since the Biocivam11 team did not have the opportunity to be on-site for meetings to collect farmers' opinions and needs about NUC cultivars. The networks and stakeholders of these countries were contacted to be part of the interactive map.

The DIVINFOOD annual meeting of 2023, held in Alvaiazere (Portugal), was a great opportunity to strongly involve the stakeholders of the Italian and Portuguese Living Labs in reflecting upon the NUC varieties catalogue. French farmers went to meet Portuguese farmers to discuss about the difficulties of accessing NUC seeds and about their use and valuation.

The DIVINFOOD partners were also consulted to create the tool itself and decide more specifically which criteria should be used to document the varieties considered in the project. For this, meetings were organised by BioCivam11 with the task partners INRAE and CRBA. The WP coordinator and the project coordinator were also consulted. The criteria from the general database of the project on GxE were included and completed in order to meet the needs of the stakeholders identified previously.

2.2 Adjustment of the methodology from the feedbacks of the stakeholders

All of the information collected allowed for a better vision of what was expected by all potential catalogue users. Certain concerns seemed important to take into account when creating the tool:

- During several meetings (mostly done in the French Living Labs) farmers expressed an interest in getting in touch with farmers and collective organisations which may cultivate landraces and varieties in similar climatic and agronomic conditions, to exchange information about these varieties and see if they could be adapted to their local conditions. They also clearly expressed that they needed real contacts before being able to share information about their own varieties. What was pointed out was that a digital tool such as the catalogue would be important to facilitate contacts but should be complemented by meetings in person between organisations from these different countries. These feedbacks cannot be generalised to all Living Labs as most of the farmers met were French.
- Farmers also expressed their reluctance to share information online about the landraces and varieties they had been conserving and cultivating for many years. The importance of



making these varieties more available was recognised, but farmers also pointed out they preferred to share this information directly with an interested person rather than giving the information online. Again, this may not be representative of all the farmers in all the Living Labs in DIVINFOOD.

- Additionally, different partners of the DIVINFOOD project pointed out that various catalogues already exist, and even if they were not specific on landraces and varieties of the 6 selected NUCs, they could include some of them. It was deemed very important to not be too redundant and to make visible existing catalogues.

To adhere to the requirements of the stakeholders, it was decided that some adjustments would be made to the interactive catalogue. Instead of a single catalogue as initially planned, the task partners, in agreement with the project coordinator, decided to create two complementary tools:

- The first tool is an interactive and open-access platform aiming to map all farmers and stakeholders cultivating or preserving landraces or varieties of the selected neglected cereals and legumes all over Europe. It will also geolocate public institutes (biological resources centres, research stations, etc.), private companies and other stakeholders that preserve, offer or sell seeds of the varieties of the selected NUCs. This map will enable all stakeholders involved in preserving, cultivating or selling landraces or varieties of the 6 selected crops to register themselves and find all the contacts and information about varieties published by other stakeholders on this map. In order to facilitate the registration, it was decided to make not compulsory for the farmers to provide detailed information about the variety's characteristics and their growing conditions on this platform. This interactive platform should facilitate peer-to-peer exchanges about landraces or varieties already selected and multiplied by farmers in similar growing conditions, to start on-field trials.
- The second tool is a documentation of the varieties of interest used by farmers in the Italian, French and Portuguese Living Labs, and studied by the DIVINFOOD project (through on-farm trials and survey on farming systems), with detailed information on their environment, the way they are cultivated and pre-processed from information acquired through Living Labs activities (T3.1). Since it appeared unlikely that farmers and gardeners would feed online detailed information about varieties they have been preserving for years, at least initially, it was chosen that this part of the catalogue would not be interactive. However, it is possible to contact the DIVINFOOD website coordinator to add information about varieties of interest related to the 6 selected NUCs and not registered yet.

Rather than creating a specific site to host these tools, it was decided to facilitate the free access to these tools directly from the DIVINFOOD site.



3. Results

The tools are accessible from the DIVINFOOD website at divinfood.eu/our-nucs-en/

3.1 The outcomes of the meetings with stakeholders

Farmers confirmed that they needed more information about the NUC landraces and varieties available, their agronomic interest and where to find seed.

They also stressed that they were interested in face-to-face meetings, not just online information. They are interested in study tours and exchanges of experience to see concrete information in the field, which is planned through the stakeholder days organised at the annual project meetings.

3.2 Content of the two tools

A new tab (named "Crops") was added on the navigation bar of the DIVINFOOD Site <https://divinfood.eu/our-nucs-en/>. This tab is divided in two sections: i) the first one "Our Neglected Crops" presents the 16 minor cereals and legumes considered in the project, with general data (name, origin, etc.); ii) the second one "Catalogue of varieties" leads to the page presented below (see Figure 2). This part of the website focuses on varieties of a selection of neglected cereals and legumes used in France, Italy and Portugal LLs, and is accessible in English, French, Portuguese, and Italian languages.

This page offers two complementary tools, accessible by clicking on the links associated with the coloured square buttons, each of which opens a dedicated page. "Interactive map" and "Varieties of interest".





Figure 2. DIVINFOOD's website screenshot: Homepage "Catalogue of varieties"

3.2.1 The interactive map

The left button (see Figure 2) "**Interactive map**" leads to an interactive map hosted on the French open-source digital tool "GoGoCarto"¹ (see Figure 3a). Farmers and/or guardians of varieties of NUCs can register themselves and put information on their varieties. The map is in open access and any stakeholder can consult it and look for the information they need. This map will also allow farmers to network and get in touch with other farmers cultivating or testing the same crops and varieties in similar conditions. Additionally, it will allow farmers to find seeds more easily since the map locates public institutes and private seed companies that offer a large panel of NUCs seeds.

The interactive map allows anyone to share information on NUC varieties in use. Anyone is invited to create a profile by clicking on "add a user of NUC varieties", and filling out the form that appears (see Figure 3b). Some information is compulsory, such as the species, the variety(ies), and the category of stakeholder (farmer, public institute, private company selling seeds, others) and other optional data such as the name, address, contact may be provided.

¹ For more information, see <https://gogocarto.fr/projects>

The search bar offers a very simple way to access information concerning NUC varieties used in a specific location or by a particular structure. Stakeholders may also be filtered according to their category and the crops they are using/saving.

This map will be more useful if it includes as many stakeholders as possible, so that as much information as possible is available for farmers. This is why it includes public institutes, private companies and associations which publicly declare that they cultivate, preserve and/or offers or sells varieties of the 6 selected NUCs, and are located in DIVINFOOD partner countries or other European countries (e.g. UK, Germany).

Before being added to the map, farmers, for whom personal data will be collected, are asked to give their consent, in full compliance with the GDPR:

“By submitting this form, I agree that the European project DIVINFOOD (Grant number 101000383) will collect and process the following information, which are necessary to add my profile to the map: E-mail address, Place of residence, Crop(s). I am free to give additional information on variety(ies), growing conditions, pre-processing techniques, availability of seeds. By submitting this form, I accept to be contacted by other stakeholders through an interface which will not show my e-mail address.”

① Except your e-mail, this information will be published on the DIVINFOOD website. You have the right to consult, modify or delete your data at any time by accessing your personal file.

DIVINFOOD is committed to protecting and respecting your privacy, in full compliance with the General Data Protection Regulation (GDPR).

For more information, contact the project coordinator Yuna Chiffolleau: yuna.chiffolleau@inrae.fr

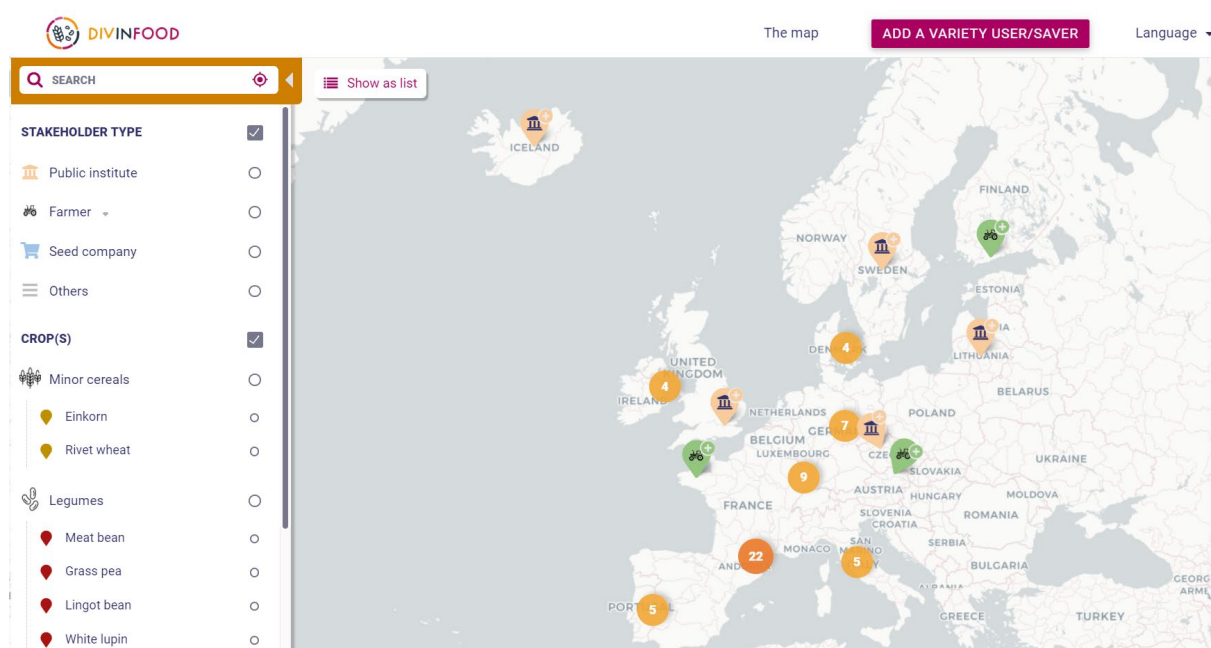


Figure 3a. DIVINFOOD's website screenshot: The map of varieties users and savers

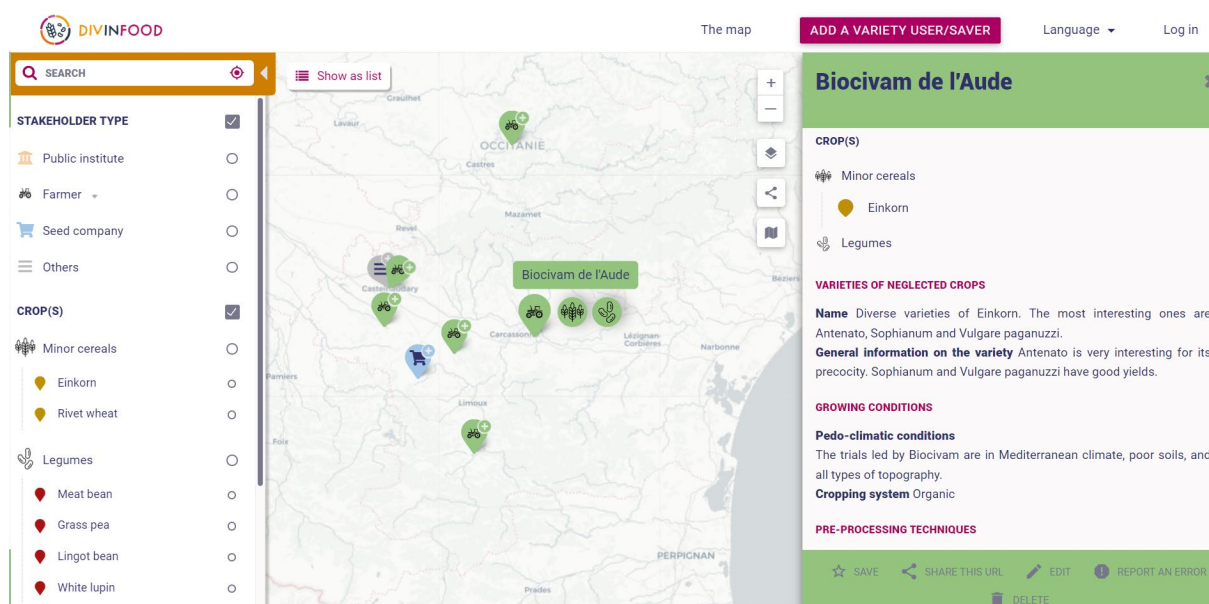


Figure 4b. DIVINFOOD's website screenshot: Information on users/savers of varieties

The Appendix 1 lists the farmers and other stakeholders located in the interactive map on 28 March 2024 (n= 54).

3.2.2 The documentation of varieties of interest as used in the French, Italian and Portuguese Living Labs

The right button “**Varieties of interest**” allows farmers to discover the landraces and varieties of the 6 minor crops as used in the French, Italian and Portuguese living labs, with their main conditions of cultivation (type of soil, climate, etc.) and characteristics (appearance, resistance to diseases, possible food products and marketing channels, etc.) in these specific contexts of LL regions. This documentation is based on data collected by the DIVINFOOD project through on-farm trials and farming systems surveys.

It is not always easy to find on the Web scientific data concerning NUCs varieties and describing their main characteristics in specific contexts of use. This documentation first summarizes the main information concerning the varieties of interest of NUCs used by farmers and studied in the living labs of France, Italy, and Portugal, which were chosen in the DoA as the pilot countries to develop the catalogue: Rivet Wheat, White Lupin, Einkorn, Meat Bean, Lingot Bean, Grass Pea (see Figure 4). It provides relevant data for people interested in growing or learning more about these NUC varieties in specific contexts.



Figure 5. DIVINFOOD's website screenshot: Buttons for accessing documentation on the varieties of interest for the 6 selected crops

For each crop, various varieties of interest, available and used or tested by farmers, are presented with specific information related to their use in specific contexts. On the bottom of the page, a link to the map of users/savers is proposed. As an example, the Figure 5 presents the screenshot for Einkorn varieties of interest:

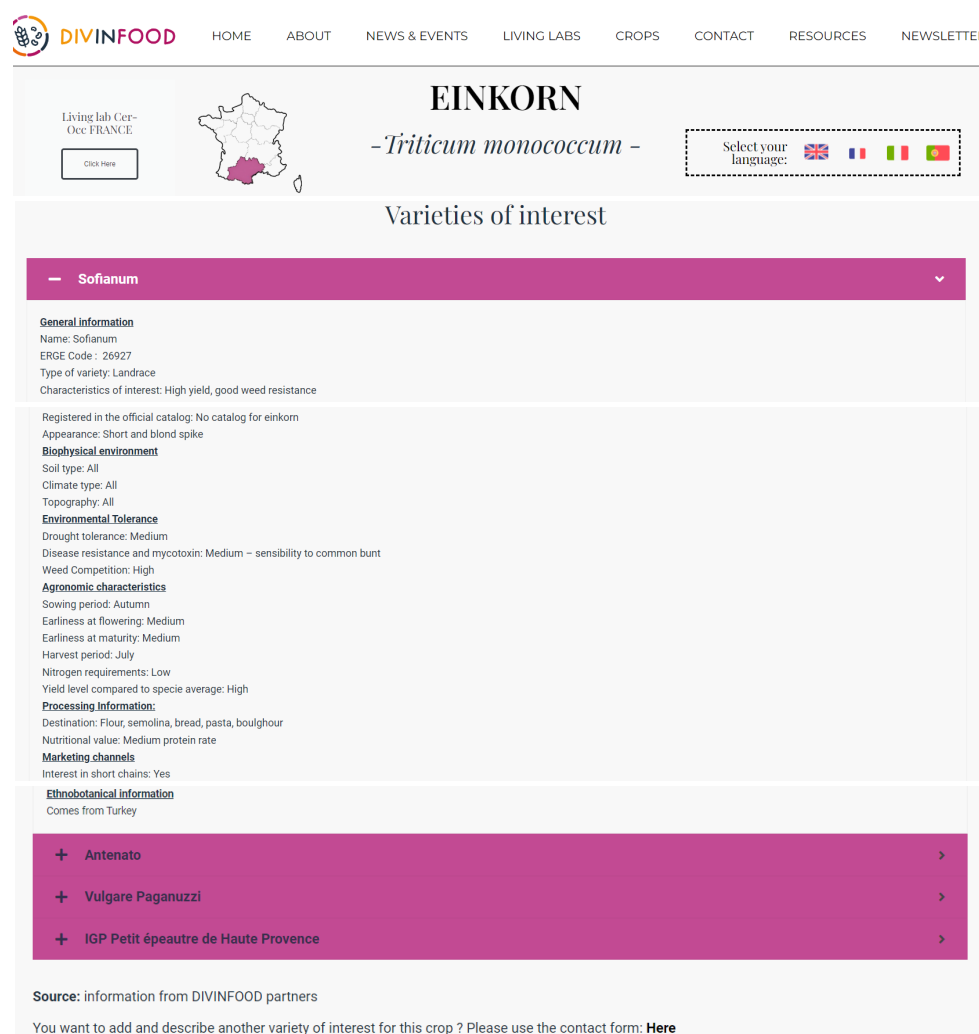


Figure 6. DIVINFOOD's website screenshot: Varieties of interest of einkorn used in the French Living-Lab “Cer-Occ”



3.3 Guidelines to extend the catalogue to other Living Labs and NUCs

All DIVINFOOD partners working in other Living Labs are invited to extend the catalogue to their region and for the neglected crops they are working on with farmers and other stakeholders. The process should be as follows.

3.3.1. Feeding the documentation of interesting varieties from surveys and trials

Living labs partners have been surveyed farmers using minor cereals and/or legumes in their region. They also have been co-developing trials of genetic resources, especially landraces, to identify or breed relevant varieties. The data collected through these surveys and trials can feed the documentation of varieties of interest used/tested in the living lab regions. A template for storing the common data to all varieties is proposed in Appendix 2.

Pictures of the grains and mature plants must also be supplied. The final step is to contact the DIVINFOOD webmaster (OFFr) to add the documentation of a variety to the DIVINFOOD website.

3.3.2 Feeding the interactive map with farmers and stakeholders involved in DIVINFOOD

The second step is to encourage farmers involved in DIVINFOOD surveys or trials to register themselves on the map, in order to facilitate interactions with other farmers around the varieties and their use. Public institutes, seed companies and associations which are part of the living labs, and save, offer or sell varieties may also be added to the map by DIVINFOOD's members (no personal data collected in this case), or invited to register themselves on the map.

3.3.3 Enlarging the network through the map

Beyond their LLs' partners, DIVINFOOD members may also contact and invite other farmers/stakeholders to register themselves into the map. An example of invitation and reminder emails are provided in Appendixes 3 and 4.

Information about this map may be disseminated through social media. Once new stakeholders have been added, DIVINFOOD members will send another email to inform them and invite them to disseminate the map within their network (see Appendix 5). The Appendix 6 can be used to keep track of the contacts made from each LL, and will be shared in the DIVINFOOD collaborative work space.



4. Conclusion

Accessing data on NUC varieties used in specific contexts (pedo-climatic conditions, cropping systems, pre-processing techniques), and having the possibility to discuss with their users, is crucial for farmers who want to cultivate or test these varieties in their farm. Knowing where to provide seeds of these varieties is also a key issue. The interactive catalogue co-built with potential users consists of two complementary tools, devoted to document varieties as used in specific regions, geolocate users and savers, and facilitate interactions between them around varieties in use. Develop for 6 neglected cereals and legumes, and from 5 living labs in 3 countries, this catalogue is intended to be extended to other crops and countries/regions, with the help of guidelines and templates provided in this report. The catalogue is very easy to use, intuitive and its co-construction has already made it possible to connect people and networks. Its use over a longer period of time and deployment across the Living Labs of the DIVINFOOD project will allow to better assess its impact and make adjustment if necessary. Especially, it may be graphically enhanced, depending on user feedback.

5. References

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6. Appendixes

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Appendix 1. Table of Stakeholders placed on the map on 28 March 2024

Name of the stakeholder	Crop	Specie	Category	E-mail	Full address	Web site
Alain Choclazer	Legume	Lingot bean	Farmer		Castelnaudary, France	
Arche Noah	All		Farmer		Switzerland	https://sortenhandbuch.arche-noah.at/
Arcoiris	All		Seed company	sementibio@arcoiris.it	Italy	https://arcoiris.it/en/products
Banca del Germoplasma del CREA	All		Public institute	ignazio.verde@crea.gov.it	Italy	http://pianta-res.politicheagricole.it/pages/elenco_specie.php
Banco Português de Germoplasma Vegetal (BPGV)	All		Public institute	polo.merelim@iniav.pt	Portugal	http://bpgv.inia.pt/gri/global/
Beany Thing	Legumes		Farmer		Valence, Spain	https://magicbeancollectors.wordpress.com/
BioCivam 11	Minor Cereals, Legumes	Einkorn, Lingot bean	Group of farmers		Trèbes, France	
Catalogo Empresa Sementes Vivas	All		Seed company	informacion@semillasvivas.bio	Portugal	https://www.google.com/url?sa=t&rct=j&q=&e_src=s&source=web&cd=&ved=2ahUKEwii6LKK6Mn-AhWcTaQEHVzZA5wQFnoECBcQAQ&url=https%3A%2F%2Fwww.sementesvivas.bio%2Fimg%2Fcms%2F2022%2520Catalogue%2520EN_compressed.pdf&usg=AOvVaw08SRhw3zSSEBQLyvw9u2IJ
Catalogo Variedades Locals Islas Baleares	All		Farmer		Balearic Islands	https://varietatslocalsib.com/ca/webcataleg
Catalogo Varietat Locals Mallorca	Legume		Farmer		Mallorca, Spain	https://www.varietatslocals.org/wp-content/uploads/2023/11/Cataleg_AVL_2024-web-pag.pdf
Centre de Ressources de Botanique Appliquée (CRBA)	Legume	Meat bean	Research institute	crba@crba.fr	Domain Melchior Philibert, 357 rue de l'Eglise, 69390 Charly, France	https://crba.fr/?-Centre-de-Ressources-de-Botanique-Appliquee-
Cercatori di semi	All		Seed company	terranatura@cercatoridise.mi.com	Italy	https://www.cercatoridise.mi.com/banca-dei-semi
Colher para semear	All		Farmer		Portugal	https://colherparasemear.wordpress.com/manuaislevantamentos/
CRB Protéagineux	Legumes	White lupin	Public institute	crb.proteagineux@inrae.fr	Dijon, France	https://florilege.arcad-project.org/fr/crb/protéagineux
CRB Straw Cereals	Cereals	Einkorn, Rivet wheat	Public institute	crb-ara@inrae.fr	Clermont-Ferrand, France	https://florilege.arcad-project.org/fr/crb/cereales-a-paille



Dreschflegel Saatgut	All		Farmer		Germany	https://www.dreschflegel-shop.de/
Ecole d'ingénieur de Purpan	Minor cereal	Einkorn, rivet wheat	Others	mh.robin@purpan.fr	75 Voie du Toec, 31076 Toulouse, France	https://www.purpan.fr/
EURISCO - European Search Catalogue for Plant Genetic Ressource	All		Public Institute	eurisco@ecpg.r.org	Germany	https://eurisco.ipk-gatersleben.de/apex/eurisco_ws/r/eurisco/home
Frøsamlerne	All		Others	louisewindfeldt@froesamlerne.dk	Denmark	https://www.froesamlerne.dk/sortsdatabasen
GAB65	Minor cereal	Rivet wheat	Group of farmer		28 avenue Libération, Hôtel Entreprise Libération, 65000 Tarbes, France	
Gatersleben Genebank	Minor cereals, Legumes		Public Institute	gabis-bestellung@ipk-gatersleben.de	3 Corrensstraße, 06466 Gatersleben, Germany	https://gbis.ipk-gatersleben.de/gbis2i/jsessionid=gRFngvpCIUJ7kE-DtV3TGc1roqjF-Eb5Wj7givxStRA5nbNmGaOg!-525396668
Genesys	All		Public Institute	helpdesk@genesys-pgr.org		https://www.genesys-pgr.org/
Getreidezüchtung Peter Kunz	Legumes and minor cereals	Spring pea, lupin, spelt, triticale, emmer and sweet pea	Others	c.scheiner@gzpk.ch	Verein für Kulturpflanzen entwicklung, Switzerland	www.gzpk.ch
Graine del País	All		Seed company	contact@grainesdelpais.com	France	https://grainesdelpais.com/engrais-verts/engrais-verts
Henri Tubery	Minor cereals	Einkorn	Farmer		Fonters sur Razès, France	
Hodmedod's	Legumes		Group of farmers	hello@hodmedods.co.uk	Seestrasse 6 8714 Feldbach Switzerland	hodmedods.co.uk
INRAE DiaScope	Minor cereals	Einkorn, rivet wheat	Public institute	dominique.desclaux@inrae.fr	Chemin de Mezouls à Bosc-Viel, 34130 Mauguio, France	https://www.inrae.fr/centres/occitanie-montpellier
Irish Seed Savers	All		Others	info@irishseedsavers.ie	Ireland	https://irishseedsavers.ie/shop/
Italian in situ lanrace inventory	All		Public Institute	valeria.negri@unipg.it	Italy	http://vnr.unipg.it/PGRSecure/html/national_inventory.html
Jardin'enVie	All		Seed company	contact@jardinenvie.com	Drôme, France	https://www.jardinenvie.com/
Kaol Kozh	All		Farmer		Bretagne, France	http://kaolkozh.bzh/grainotheque/



La Banca Dati di Rete Semi Rurali	Minor cereals		Farmer		Italy	https://rsr.bio/banca-dati/
Landsorten	Cereals		Farmer		Denmark	https://landsorten.dk/kornsorter
Le Biau Germe	All		Farmer		Lot et Garonne, France	https://www.biaugermes.com/
Maison de la semence de la Loire	All		Farmer		Loire, France	
Maison des semences Paysannes Périgord	All		Farmer		Périgord, France	http://www.agrobiopereigord.fr/upload/biodiv/CATALOGUE_MDS2020-web.pdf
Michel Sendra	Minor cereals	Einkorn	Farmer		Esperaza, France	
Nicolas Carton	Legume	cowpea, pea, grass pea, chickpea, common bean, runner bean, lupin, soybean, fenugreek, buckwheat, chia	Others	nicolas.carton1@gmail.com	Clermont Ferrand, France	https://linktr.ee/lumin_euses_div
Nordgene	All		Public Institute	https://www.nordic-baltic-genebanks.org/gringlobal/ContactUs	Northern Europe	https://www.nordic-baltic-genebanks.org/gringlobal/search
Nyby gard	Cereals		Farmer		Finland	https://nybygard.fi/en/our-cereals/
Open Source Seed	All		Others	info@opensource-seeds.org	Germany	https://www.opensource-seeds.org/fr/trouver-des-varietes
Organic seeds	All		Public Institute	info@organicseeds.com		https://www.organicseeds.ch/
Pétanielle	Minor cereals		Farmer		Occitanie, France	https://www.petanielle.org/documentation/les-varietes-de-la-collection-de-petanielle/
ProSpecieRara	All		Others	romandie@prospecierara.ch	Switzerland	https://www.prospecierara.ch/fr/vegetaux.html
Red de Semillas	All		Others	info@redandaluzadesemillas.org	Andalusia	https://redandaluzadesemillas.org/red-resiembra-intercambio
Royal Botanic Garden of Kew	All		Public Institute	seedbank@kew.org	England	https://www.kew.org/science/collections-and-resources/collections/seed-collection
Sativa	All		Seed company	https://www.sativa.bio/fr/contact-fr	Switzerland	https://www.sativa.bio/fr/
SCEA Saint Raffine	Minor cereals	Einkorn	Farmer		Montréal, France	



Semillas la peba	Legume	Diverse varieties of beans	Farmer		Extremadura, Spain	
The Plant Farm	Legume	Diverse varieties of beans	Farmer		"Whithorn", Newton Stewart, UK	https://www.facebook.com/theplantfarmwhithorn/
Vern eV	All		Others	info@vern.de	Germany	https://vern.de/katalog/
Vincent Dias	Legume	Lingot bean	Others	vincent.dias@cneap.fr	Castelnaudary, France	https://qciaf.fr/ https://www.facebook.com/QCIAF/
VURV - Crop research institute Prague	All		Public Institute	https://grinczech.vurv.cz/gringlobal/ContactUs.aspx	Czech Republic	https://grinczech.vurv.cz/gringlobal/search.aspx



Appendix 2. Template for the documentation of varieties of interest

Information on the variety, as used in a specific context	General information	Name	free text
		Type of cultivar	DUS (Distinctness Uniformity and Stability test) variety, landrace, amateur variety, OHM (Organic Heterogeneous Material), organic variety
		Characteristics of interest	Free text
		Nature of the variety	Population, pure line, ...
		Variety currently registered	yes/no
		Appearance	Colour, Height, Lodging, PMG with scale relative to species. For beans dwarf, creeping, climbing. For cereals : naked or hulled grain, PMG
	Biophysical environment	Kind of soil	Sandy/silty/clayey
		Climate type	rainfall, temperature
		Topography area in which the NUC is produced	Plain, coastline, medium mountains, mountains, Is the area affected by erosion?
	Environmental tolerance	Drought Tolerance	Low/medium/high
		Disease resistance / Mycotoxin -or other disease Sensibility	Name of the disease + degree of resistance/sensibility or just general resistance to diseases
		Freeze tolerance	Sensitive or not
		Weed competition	Poor/Medium/Good
	Agronomic characteristics	Sowing period	Month
		Maturity Earliness	Low/medium/high
		Spike Earliness	Low/medium/high
		Harvest period	Month
		Nitrogen needs	Low/medium/high
		Level of Yield compared to the mean of the specie	Data for the last 2 years/cropping seasons if possible
	Processing characteristic	Destination (food products)	flour, semolina, bread, pasta, bulgur, other (specify)
		Organoleptic quality	free text
		Nutritional value	Protein rate, bakery's strength level
	Marketing channels	Major marketing channel	cooperative, supermarket, producer store,
		Interest for short chains	Yes/no and why?
	Other	Particular restrictions	Need for dehulling for einkorn, difficulty of harvest for climbing beans, etc.
	Ethnobotanical information	History, where from, etc.	free text

Appendix 3. First email to send to potential stakeholders to be placed on the map

Dear [add the name],

As part of the DIVINFOOD project, a European initiative aimed at promoting the use of neglected and underutilized crops (NUCs), an interactive map featuring farmers and other users of varieties of these crops has been developed.

The purpose of this tool is to facilitate communication and information exchange among users, savers, sellers of varieties of these crops. We encourage you to explore the map, as it may prove beneficial for you, and consider adding yourself and the varieties you use, save, offer or sell to the map if you wish to connect with other farmers or NUC varieties users.

You can access the map with the following link:

<https://divinfood.gogocarto.fr/map#/carte/@48.92,-20.57,3z?cat=all>.

Please do not hesitate to contact us if you would like any further information about the project or the map.

Thank you for your time and attention.

Best regards,

[Your signature].



Appendix 4. Reminder email to send to stakeholders

Dear [add the name],

I am contacting you about the interactive map, about which I had sent you an email on [insert the date], as you have been identified as a key player in the cultivation/preservation/selling [choose] of varieties of neglected and underutilised crops (NUCs) [specify the crop(s) if needed].

I invite you to add yourself and the varieties you cultivate/save/sell to the map, using this link:
<https://divinfood.gogocarto.fr/elements/add>.

If you wish, I can also add you to the map with your consent.

Thank you for your time and attention.

Best regards,

[Add your name].



Appendix 5. Confirmation email to the stakeholders that have been placed on the map

Dear [Add the name],

You have been included in the interactive DIVINFOOD map on users/savers of varieties of neglected crops [specify the crop(s) if needed]. Thank you for your contribution. You can view your profile or the profiles of other stakeholders through this link:

<https://divinfood.gogocarto.fr/map#/carte/@52.80,-13.18,3z?cat=all>.

We also invite you to encourage other stakeholders you may know to add themselves to the map and explore its content.

Thank you.

Best regards,

[Add your name]



Appendix 6. Table to fill when collecting data on stakeholders to be placed on the map

Name	Type of stakeholder	Type of crop	Species	Email	Address	Web site	Description of available varieties	Date of the 1st contact	Date of agreement