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## Boosting Organic Seed and Plant Breeding across Europe 2017-2021

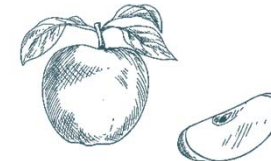
### Highlights and Policy Recommendations

Bram Moeskops & Ágnes Bruszik IFOAM EU, Project Coordinators  
Monika Messmer, FiBL-CH, Scientific Coordinator

**LIVESEED Conference for Stakeholders and Policy Makers**

24<sup>th</sup> November 2020 video conference

[Monika.Messmer@fibl.org](mailto:Monika.Messmer@fibl.org)



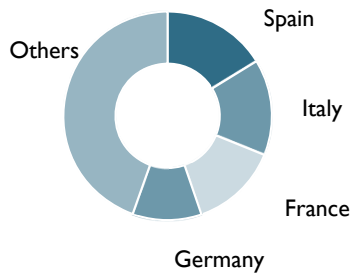
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 727230 and by the Swiss State Secretariat for Education, Research and Innovation (SERI) under contract number 17.00090. The information contained in this communication only reflects the author's view. Neither the Research Executive Agency nor SERI is responsible for any use that may be made of the information provided.



# EUROPE: ORGANIC FARMLAND 2017



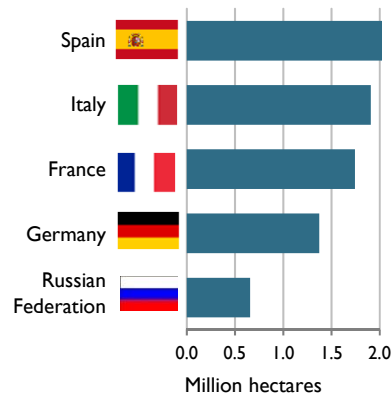
Over half of Europe's organic farmland is in 4 countries.



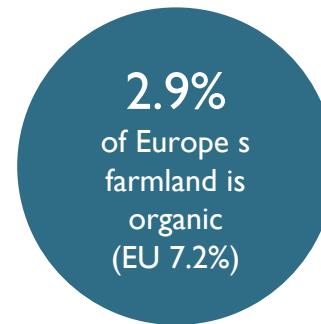
Distribution of organic agricultural land by country 2017



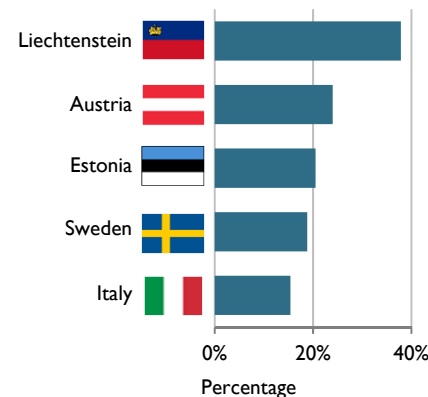
The country with the largest area of organic farmland is in Spain, followed by Italy and France.



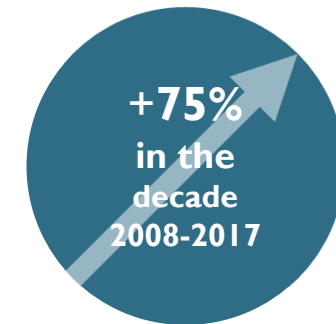
Top 5 countries with the largest areas of organic agricultural land 2017



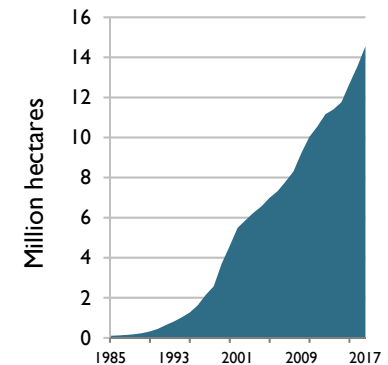
Ten countries have 10% or more of their agricultural land under organic management.



Top 5 countries, where more than 10 percent of the farmland is organic 2017



In 2017 over one million hectares more were reported compared with 2016.



Growth of the organic agricultural land 1985-2017

# LIVESEED in a nutshell

- Budget: 7.4 M EUR EU funding & 1.5 M EUR Swiss funding
- Duration: 4 years
- Coordinator: IFOAM Organics Europe
- Scientific coordinator: FiBL (Switzerland)
- Multi-actor approach: 50 partners in 18 countries
- Goal: **Boosting organic seed and plant breeding in order to improve the performance, sustainability and competitiveness of the organic sector**
- Approach:
  - Inter- and transdisciplinary
  - Policy – economy – science interface
  - Multi-actor & stakeholder involvement
  - Wide geographic representation



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# Aim: Improve integrity and competitiveness of organic sector by reaching 100% organic seed of cultivars suited for Organic Agriculture

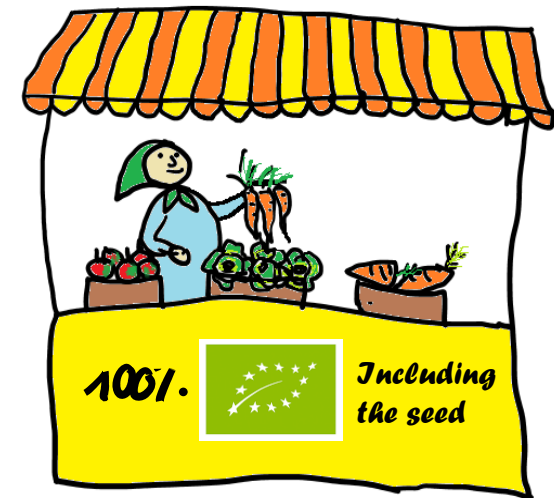
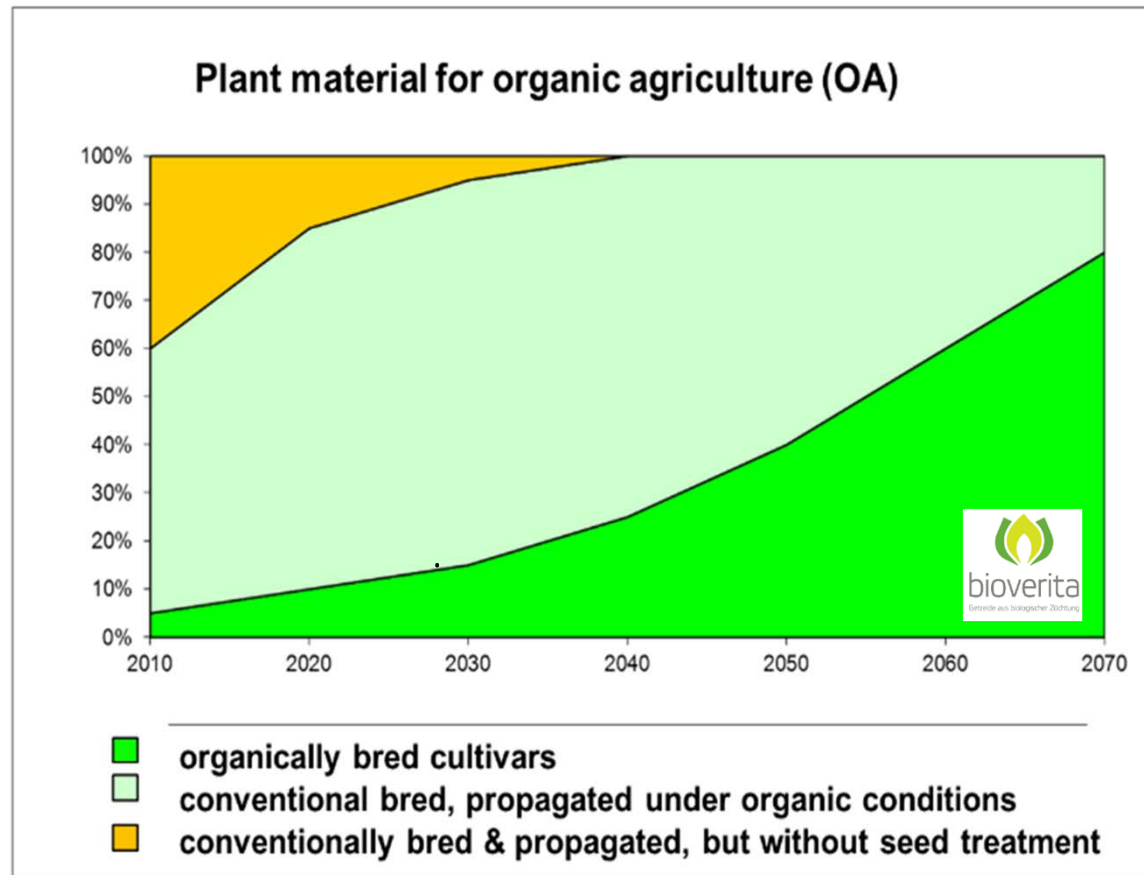


Figure 1 : Schematic time line to reach the goal of 100% organically propagated seed of suitable cultivars (light green) in short term and to foster cultivars specifically bred for organic farming systems (bright green) in the long term

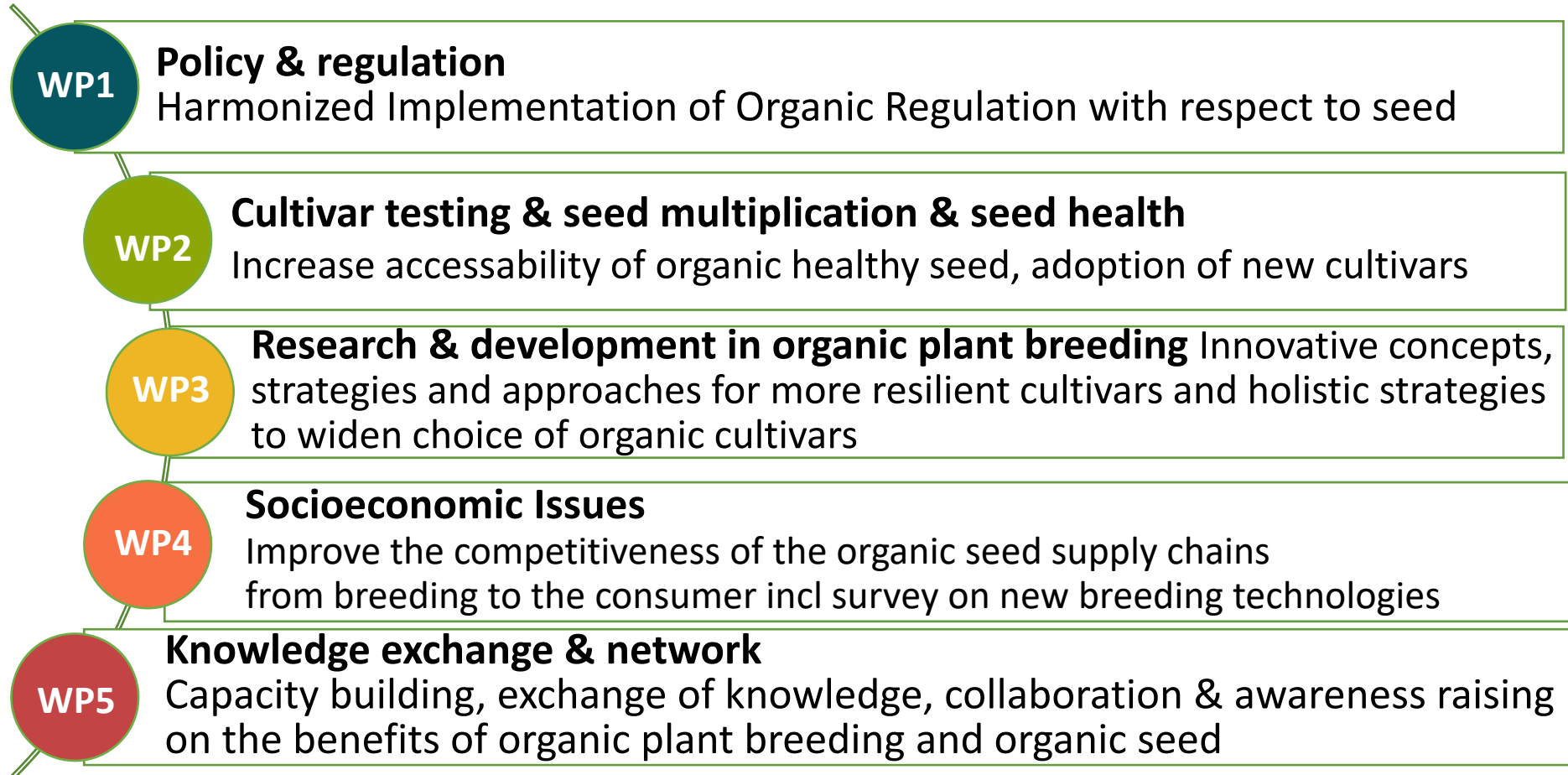
# Definitions

**Cultivar:** comprises registered varieties, landraces, populations, composite cross populations, organic heterogeneous material etc.

**Organic plant breeding (OPB):** Organic cultivars are obtained by an organic plant breeding program as defined by the IFOAM International norms of 2014. All breeding steps from crossing till final selections take place under organic conditions and the applied breeding techniques are in accordance with the techniques listed in the Annex of the position paper of IFOAM International for organic breeding from November 2017. Moreover, cultivars derived from OPB shall also not be patented.

**Breeding for Organic (BfO):** are more product oriented and have a special focus on the breeding goals which are specific for organic agriculture (e.g. tolerance against seed born diseases, weed tolerance, nutrient use efficiency), they do not use critical breeding techniques and selection occurred at least partially under organic conditions.

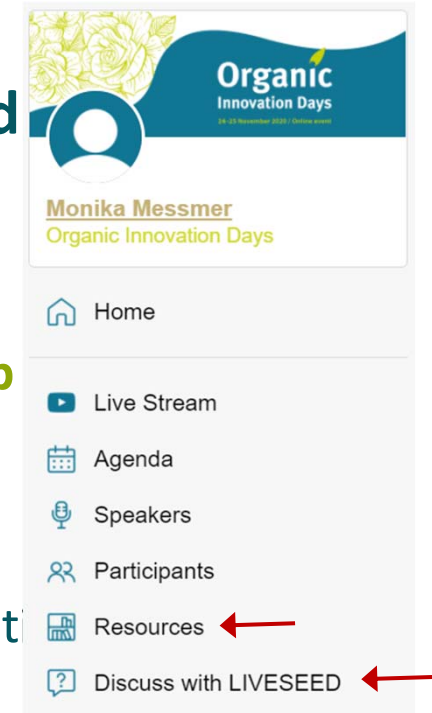
# Main objectives



# Main project outcomes and results

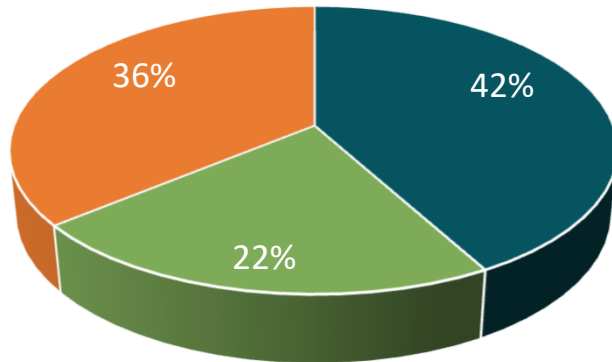
## Main project outcome and results for free download

- Conference under **Resources > LIVESEED Final conference** summarized in two booklets and individual reports
- Conference under **Resources > LIVESEED European workshop on organic seed** (see agenda of 25<sup>th</sup> November) booklet and individual reports
- Visit and comment the posters on improvement of implementation regulation with respect to organic seed of the 10 countries under **Discuss with LIVESEED**
- More information under our homepage [www.liveseed.eu](http://www.liveseed.eu)

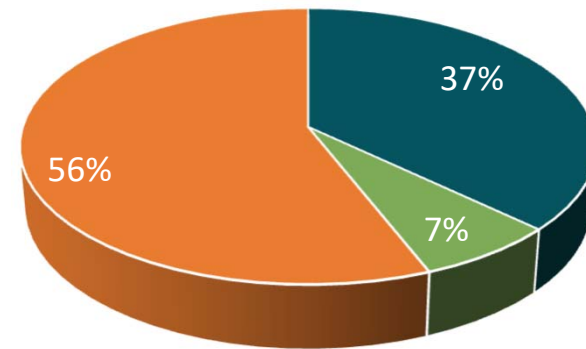


# Demand and supply of organic seed in EU and Switzerland in 2016

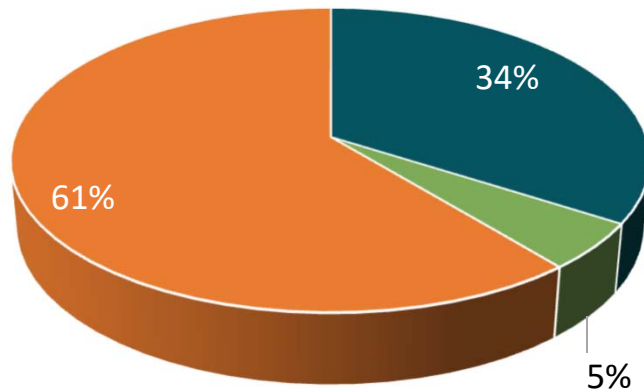
Arables



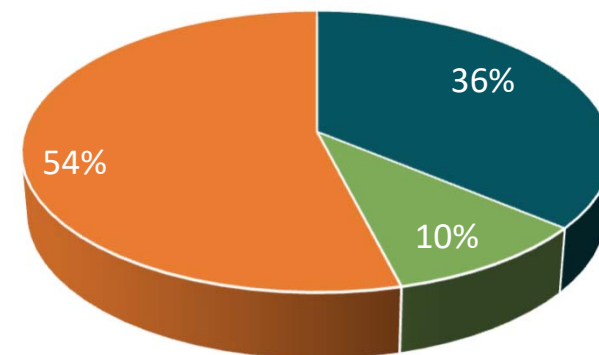
Vegetables



Forages



Fruits



ORGANIC SEED SUPPLY  
NON-ORGANIC SEED SUPPLY \*

} Total Seed supply for OF

ORGANIC FARM SAVED SEED

<https://orgprints.org/38616/>

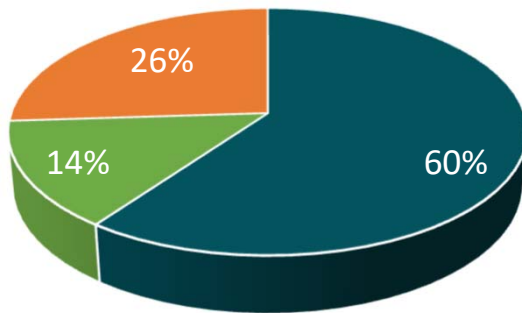


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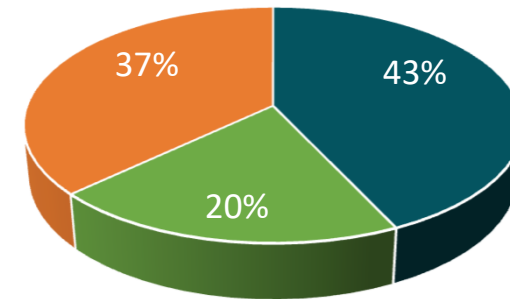


# Demand and supply of organic seed in EU and Switzerland in 2016

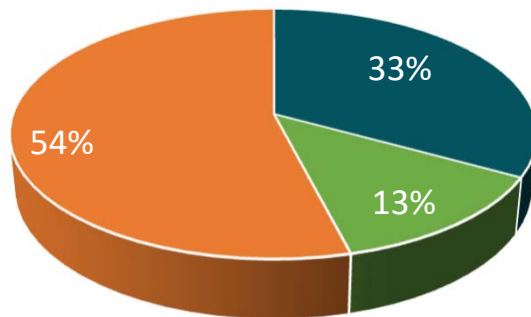
Northern Europe (23'887 t)



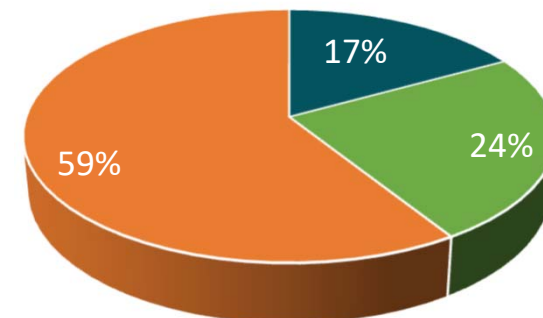
Central Europe (40'622 t)



Southern Europe (55'363 t)



Eastern Europe (24'692 t)



Total Seed supply for OF



<https://orgprints.org/38616/>



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# Demand and supply of organic seed in EU and Switzerland in 2016

	Organic seed supply (amount & percentage)	Organic farm saved seed (amount & percentage)	Non-organic seed supply (amount & percentage)*	Total organic seed demand (amount)
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## **CEREALS**

Barley (metric tons)	21.348	47%	12.466	28%	11.285	25%	45.098
Grain maize (metric tons)	1.521	51%	168	6%	1.309	44%	2.998
Oat (metric tons)	23.247	43%	18.765	34%	12.503	23%	54.516
Wheat (metric tons)	60.727	42%	37.201	26%	46.637	32%	144.564

## **FORAGE and GRAIN LEGUMES**

Lucerne (metric tons)	1.115	43%	249	10%	1.217	47%	2.582
Peas (metric tons)	5.638	42%	2.564	19%	5.149	39%	13.351
Soybean (metric tons)	4.549	46%	2.037	20%	3.374	34%	9.961

## **VEGETABLES**

Carrot (mio of seeds)	3.018	24%	106	1%	9.331	75%	12.455
Onion (mio of seeds)	2.277	55%	235	6%	1.648	40%	4.161
Tomato (nr. of transplants)	52.586.746	22%	22.952.357	10%	162.971.075	68%	238.510.179

## **FRUITS & BERRIES**

Apple (nr. of transplants)	1.629.674	36%	585.247	13%	2.280.694	51%	4.495.615
Strawberry (nr. of transplants)	35.984.450	21%	6.213.572	4%	129.035.509	75%	171.233.532

Peer-reviewed publication!



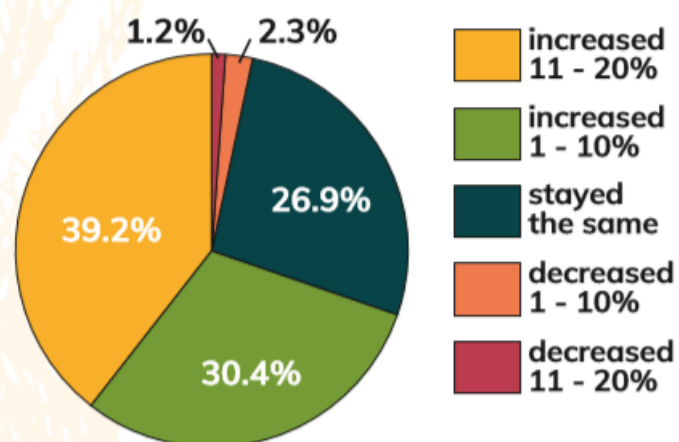
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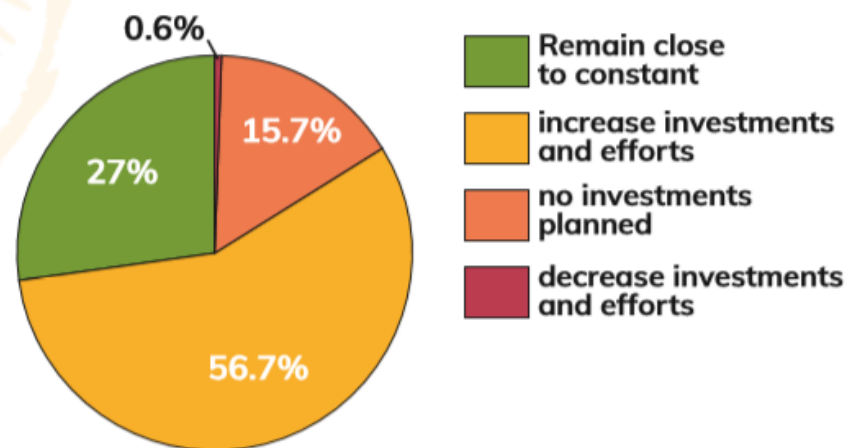
# Seed supplier and breeders survey - Organic seed market perspectives

## Organic Seed Sales Turnover Variation



**FIGURE 4.2** Yearly variation in organic seed sales gross turnover, based on a five-year period (2013-2017) (n=171).

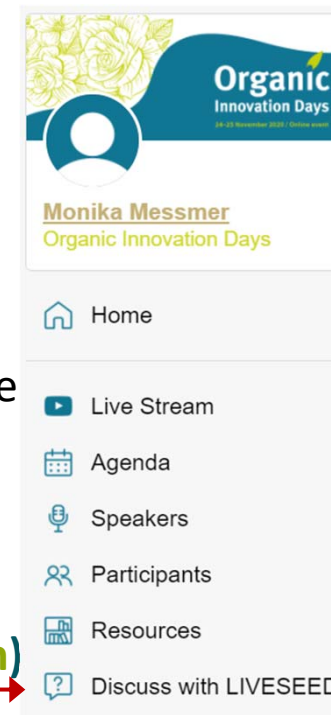
## Organic Seed Investment Prospects



**FIGURE 4.3** Planned investments in the organic seed sector by European seed companies over the next 5 years.

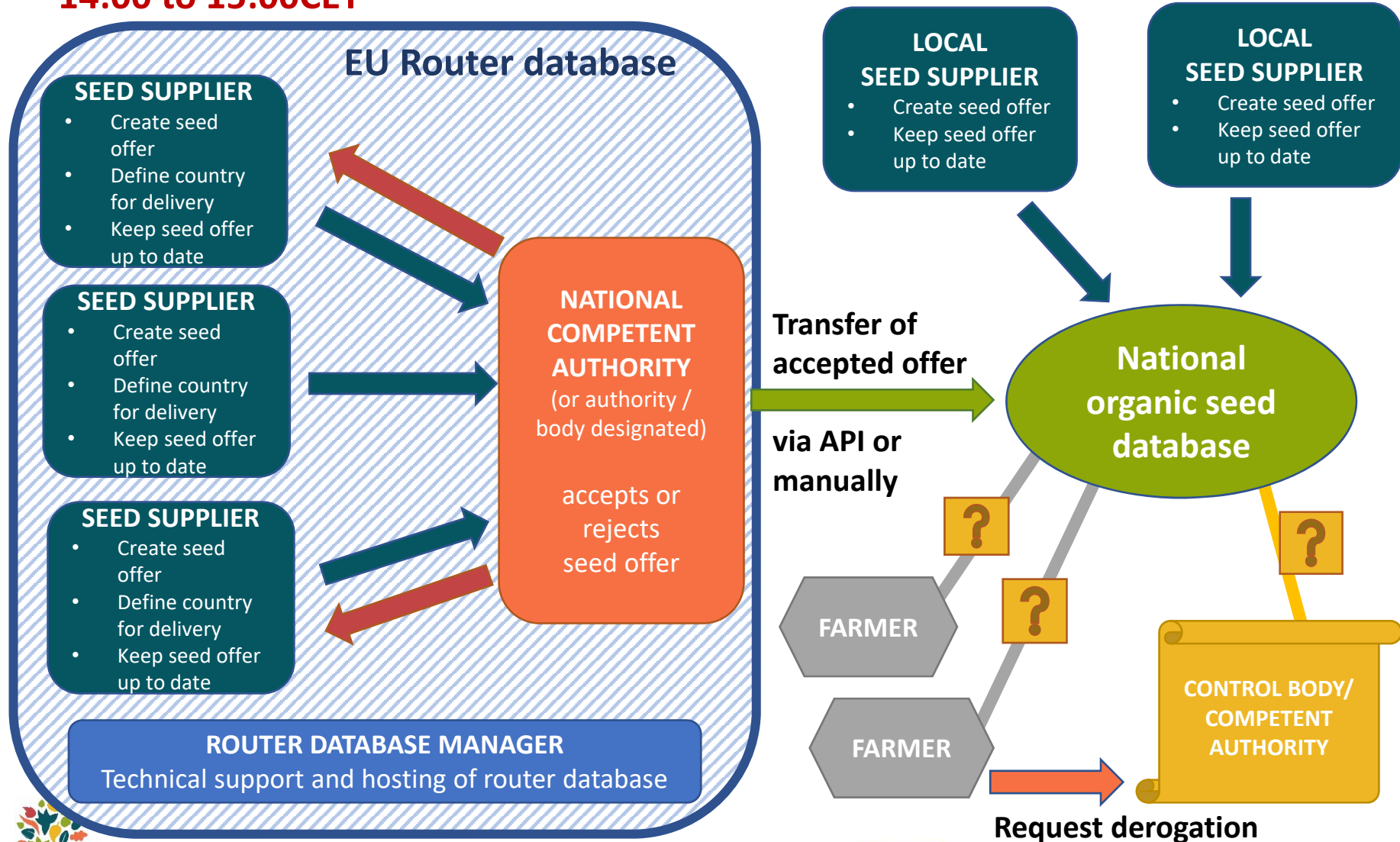
# Providing a level playing field across EU countries

- Extensive stakeholder consultation during visits to the **Latvia, Estland, Lithuania, Bulgaria, Greece, Hungary, Italy, Poland, Romania & Spain.**
- Resulting in 10 country reports and followed up by **8 national/regional workshops.**
- Resulting in **9 Declarations of organic seed** with concrete stakeholder actions to increase the production and use of organic seed in the respective country.
- Progress reports showing **initiation of new seed expert groups; improved seed databases; work on no-derogation lists; testing trials under organic conditions; workshops; demonstrational fields & more (see poster section)** →
- Additional workshops **for North-Western European countries** and **for Vegetative Propagating Material.** Resulting in increased cooperation and knowledge exchange between stakeholders and countries
- Join the **LIVESEED European Workshop on Organic Seed** tomorrow!



# EU Router database of organic seed

Launch during LIVESEED European Workshop on organic seed on 25th November  
14:00 to 15:00CET



# Development of EU wide router database

- Support transparency of available organic seed offers
- Simplify access to international organic seed markets
- Reduce administrative burdens for seed supplier
- Harmonize the use of databases in the EU
- Provide additional information (e.g. breeding process)
- With interface to national databases
- Pilot with organicXseeds which runs already in 8 countries (DE, CH, UK, BE, LX, SW, IR, DK)
- If required central database for notification of organic heterogeneous material notification could be implemented



# Policy recommendations

## New organic regulation 2018/848

- Phasing out of derogations to the use of non-organic plant reproductive material latest by 2036
- Regular update of national organic seed database
- In 2026 report on the availability of organic seed and reasons of a possible limited access of organic operators
- LIVESEED assessed present derogation reports, national organic seed database, and estimated use of **organic seed across Europe** and collected **best practice for policy implementation** from different countries [www.liveseed.eu](http://www.liveseed.eu) > tools > booklets
- **Recommendations to improve implementation of organic seed use** [www.liveseed.eu](http://www.liveseed.eu) > Results > WP1 > **D1.9 report on political obstacles**
- Developmet of a **EU wide router-database** with interface to national databases

# Policy recommendations for organic seed use

- Harmonized and **stricter implementation of derogation rules** for non-organic seed (national annex 1, expert groups, roadmap)
- Improved **interactive national databases** of available organic seed as basis for unbureaucratic derogations and monitoring
- **Eu-wide router database** linked to national databases of available organic seed promoted and financially supported by EU authorities
- **Improved data collection and monitoring** on production and use of organic seed → more transparency for seed producers
- **Wider choice of cultivars** adapted to organic production (Breeding and cultivar testing)
- Availability for **novel types of cultivars** like organic heterogeneous materials, organic bred varieties and populations, farmers' selections
- Improve **quality and health of seed** at similar price → seed health strategies, trainings, support in local infrastructure



# Policy recommendations for organic seed use

- **Harmonized and stricter implementation of derogation rules for non-organic seed**
  - National Annex without derogation defined in collaboration with seed expert groups
  - Standardized monitoring on all non-organic seed use and synthesis across countries
  - National categorization of all crops or subcrops into 3 categories (1 = no derogation, 2 = individual derogation per farmer, 3 = general derogation without application)
  - Develop roadmap with timelines how to move from Cat. 3 to Cat. 2 and Cat. 1 and monitoring of progress
  - Announcement of crops that will move from Cat. 2 to Cat. 1 2-3 years in advance

[www.LIVESEED.EU](http://www.LIVESEED.EU) > Results > WP1 > D1.9 Report on Political Obstacles and Bottlenecks on the Implementation of the Rules for Organic Seed in the Organic Regulation

# Policy recommendations for organic seed use

- **Improved interactive national databases as basis for derogations**
  - Interactive online frequently updated database with easy access to farmers and seed producers
  - Seed companies can update their offer without intermediaries
  - Farmers can apply for derogation via database
  - Farmers should notify use and quantity of non-organic seed for Cat. 2 and Cat. 3
  - National derogation reports need to be standardized to allow annual synthesis across Europe and proper monitoring
- **Eu-wide router database linked to national databases**
  - Seed companies can offer their seed to several countries in only one database → larger choice for farmers, higher transparency, less administration

# Policy recommendations for organic seed use

- **Improved data collection and monitoring on production and use of organic seed**
  - Assess amount of organic / non-organic seed during certification process at farm level including farm saved seed
  - Assess amount of organic seed produced in cooperation with European Seed Certification Association Agencies who already collect statistic data on certified seed per crop and country, but only few differentiate between organic and non-organic seed
  - Synthesis of standardized national derogation reports for all crops and countries
    - improved data source on organic seed across Europe
    - solid datasource to restrict derogations
    - allows proper monitoring to achieve 100% organic seed in reasonable time

# Policy recommendations for organic seed use

- Improve percentage of organic seed usage to 100%

## Perspective of farmers

- Provide broader choice of cultivars that are locally adapted, suited for organic farming and meet quality requirements → Breeding, cultivar testing
- Availability for novel types of cultivars like organic heterogeneous materials, organic bred varieties and populations, farmers' selections
- Improve quality and health of seed at similar price → Breeding, improved seed production and seed health strategies, seed treatments
- Accept farm saved seed as organic seed in all countries
- Support farmers or farmers cooperatives to engage in organic seed entrepreneurship → training, infrastructure, subsidies

## Perspective of seed companies

- National Cat. 1 and stricter implementation (and phasing out) of derogations rules provides security for seed companies to invest in organic seed as organic market is constantly growing in Europe
- Transparency on European organic seed market and implementation of organic regulation
- Enable and ease market access of novel types of cultivars

# Political Framework

## New organic regulation 2018/848

- Phasing out of derogations to the use of non-organic plant reproductive material latest by 2036
  - Regular update of national organic seed database
  - In 2026 report on the availability of organic seed and reasons of a possible limited access of organic operators
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- Development of a **EU wide router-database** with interface to national databases



# Policy recommendations on new cultivar types

- Temporary experiment on **heterogeneous population of cereal (2014-2021)**

- **New organic regulation (2018/848) put into force January 2022**

Commercialization of **organic heterogeneous material (OHM)**

- Definition of organic varieties suited for organic production
- **Temporary experiment of characterization of organic varieties (2021-2027)**

→ toolbox for characterization and proposal for adjustment in Seed directives in Milestones 2.8 (May 2019)

→ toolbox for identification and description of organic heterogeneous material (D2.8, Dec 2019) → commented delegated acts of new organic regulation (EU 848/2018)

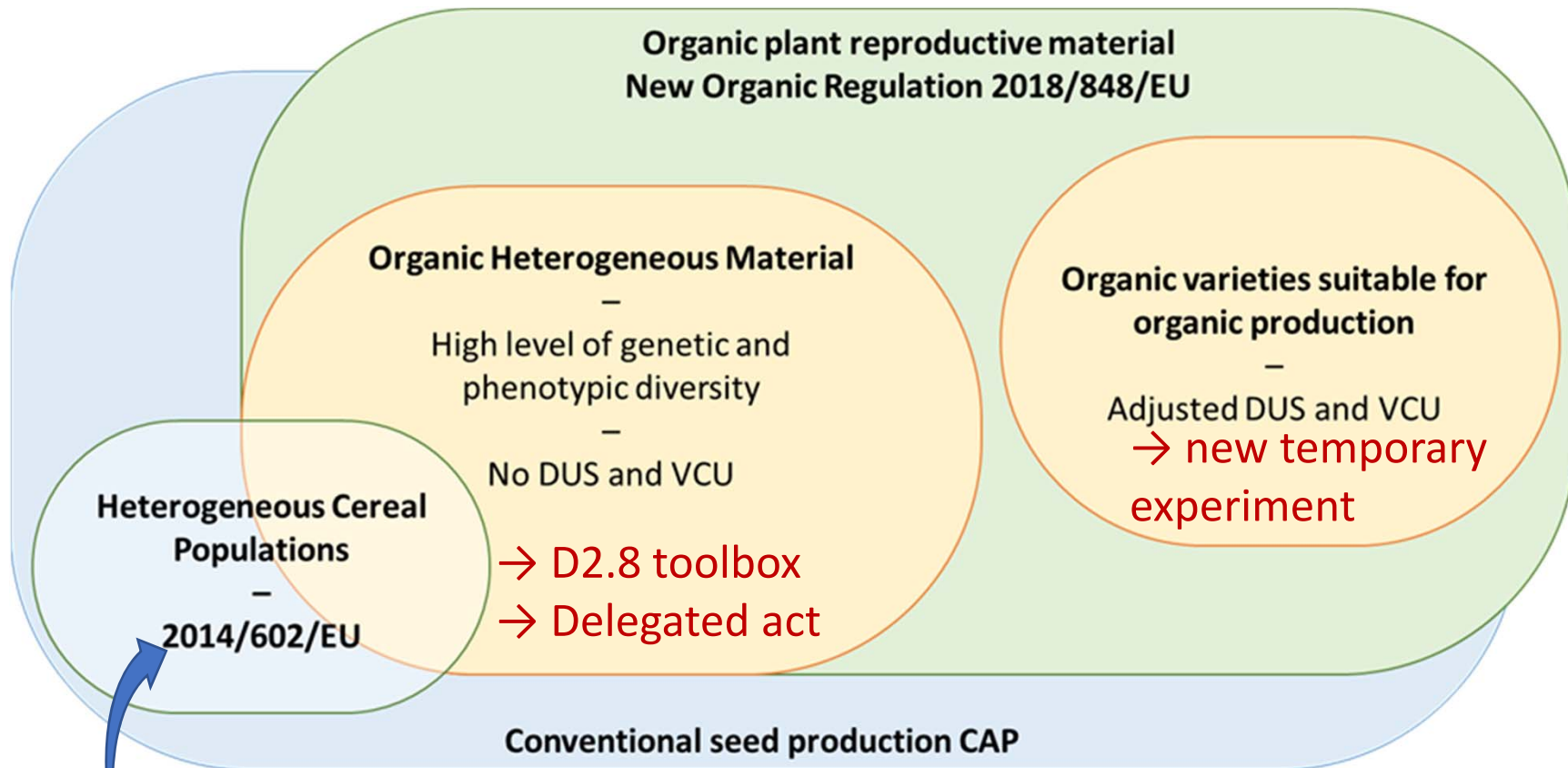
→ case studies on adjusted DUS for organic varieties

→ bottlenecks & recommendations on procedures to improve cultivar release to be tested in the scope of temporary experiments on organic varieties suited for organic production (2021 – 2028) **Join workshop**

**on organic varieties to provide your input** → Report in Jan 2021



# Novel Cultivar Types



- Definition of organic plant breeding
- Definition of organic heterogeneous material for all crops
- See **Liveseed Milestone Report M2.8** 'Main outcomes and SWOT of experiences from marketing populations under the **Temporary Experiment into the commercialisation of heterogeneous populations in the European Union**' for an update on 2014/150/EU

# Organic Heterogeneous Material

## Tools vary for different types of OHM

- **FARMER SELECTIONS:** selection by a farmer from a population or landrace. They have a lot of genetic and phenotypic diversity so do not comply with DUS.

Open list of elements to consider in order to describe 'farmers selection':

- Origin
- Region of development

- Phenotypic traits
- Traceability
- Breeding conditions and location

- **DYNAMIC POPULATIONS:**

developed from a mixture of large numbers of breeding lines and cultivars (understood in a broader sense than officially released varieties, landraces, less homogeneous populations, niche varieties...) cultivated together and seed saved. After a few generations, the mixtures outcross and adapt to local conditions. The process is important for the definition.

Open list of elements to consider in order to describe 'dynamic population':

- Parents
- Breeding process
- Phenotypic traits when

- possible
- Traceability
- Breeding conditions and location
- Breeding objective

- **Composite Cross Populations**

**(CCPs):** the result of targeted crosses that are then left to evolve together under natural conditions. This category is different from synthetic varieties/populations which are reconstructed to be stable.

Open list of elements to consider in order to describe 'CCPs':

- Parents
- Breeding process/methods, selection methods

- Traceability
- Cultivation Environment
- Breeding conditions and location
- Breeding objective



# Proposal for adjusted protocols for DUS

- Proper implementation of DUS for open pollinated varieties, correct references, own category for testing
- Take more emphasis in D and S instead of Uniformity
- **Restrict the uniformity levels to a minimum required for product quality and use** to allow higher adaptation and yield stability
- Use less parameters for assessment of US
  - restrict to only morphological traits with no effect on yield stability
  - Restrict homogeneity to only xx % of the defined traits
- Accept higher tolerance levels for U
  - Defined standard deviation or frequencies of traits for OPV that allows for certain variability
- Allow more parameters including marker analysis for D

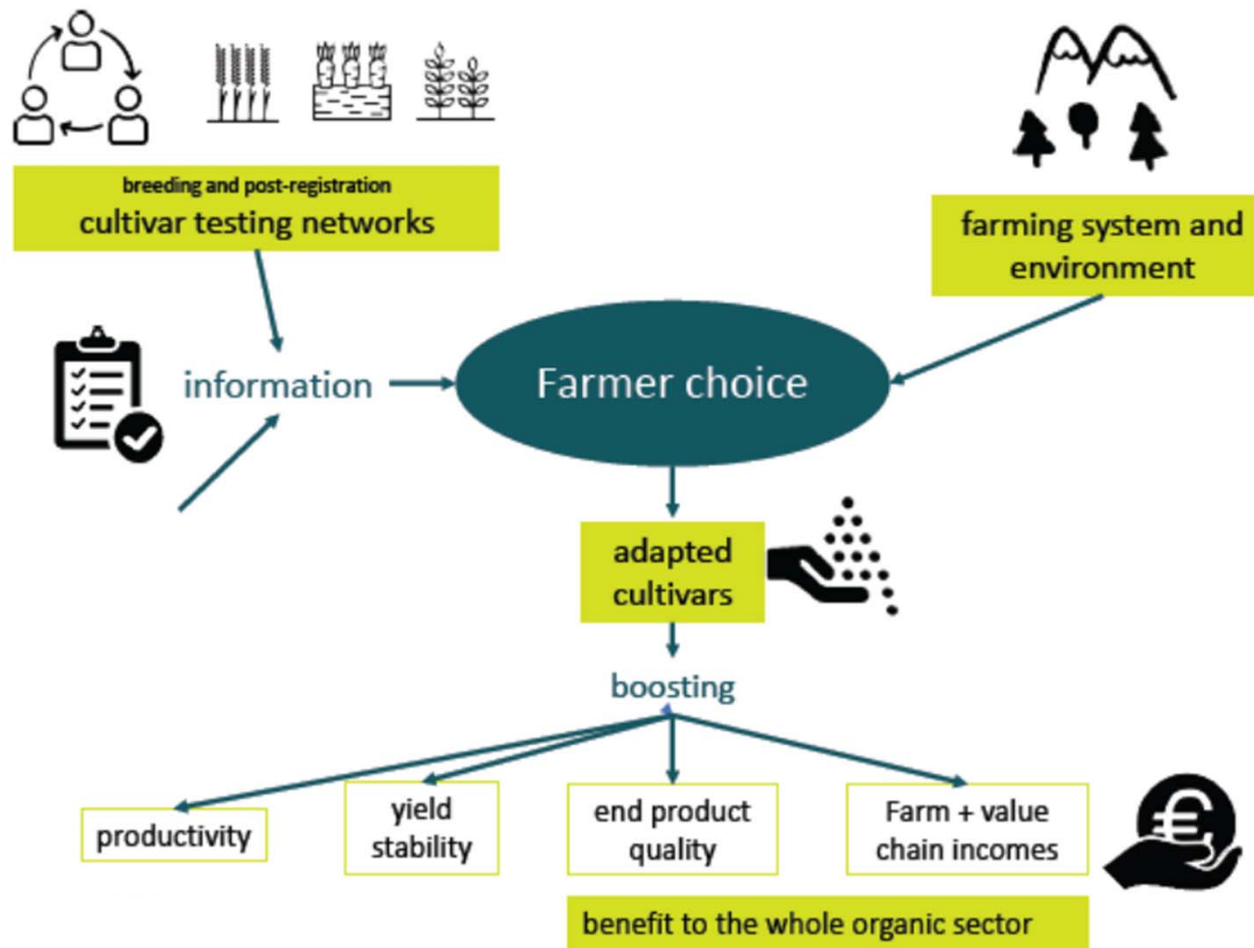


# Adjusted protocols for VCU

- Option to test organic bred cultivars **under organic farming** systems (=target environment)
- Also allow for testing under **mixed cropping systems** e.g. pea – cereal which is very common in organic agriculture
- **Adjusted parameter & thresholds** assessed under organic VCU that reflect specific traits needed in organic farming (e.g. weed competition, seed born diseases, early vigor)
- Seed of all cultivars should be organically propagated to avoid bias due to different seed source (e.g. untreated conventional seed versus organic seed)
- Optional VCU for arable crops for speciality / niche markets (e.g. triticale for breadmaking)

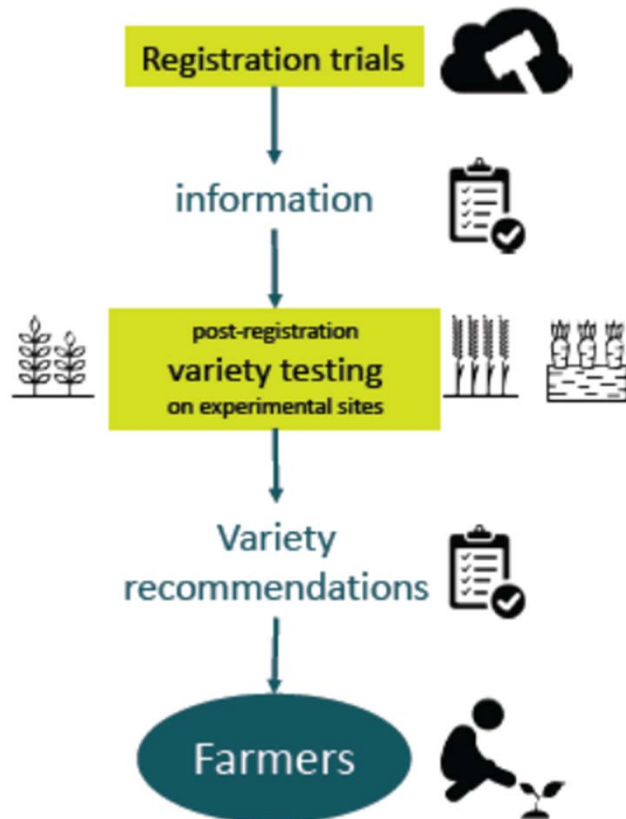


# New models for post-registration on-farm cultivar testing

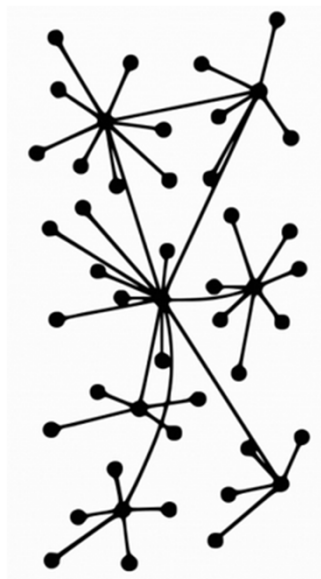


# New models for post-registration on-farm cultivar testing networks

“conventional” variety testing



**Decentralized on-farm cultivar testing networks:** multiactor – simple - cost efficient - interactive – shared data



→ Join workshop on cultivar testing  
→ Report in Jan 2021

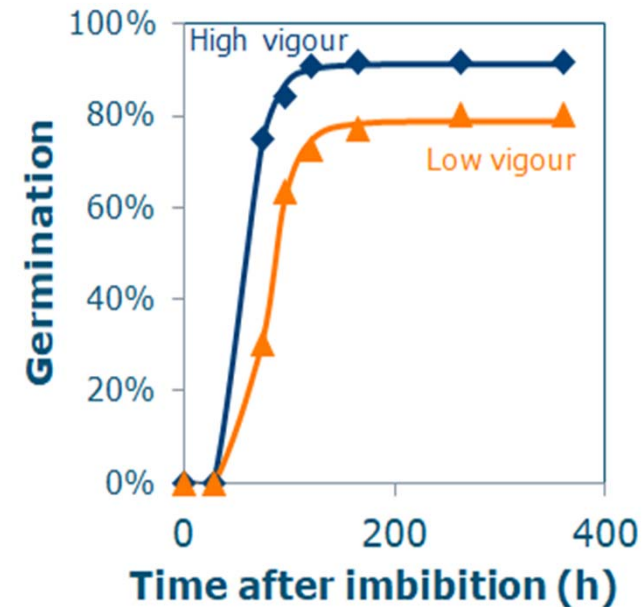
<https://wiki.js.diglife.coop/decentralization>

# New models for post-registration on-farm cultivar testing

- Testing under practice conditions covering different environments and farming systems
- Decentralised + Multi-actor + Simple + Cost efficient
- Combine data of different networks For many constraints, there are statistical methods that can generate robust and useful data for decision-making:
- Examples range between “in-depth, quantitative data on few pilot farms” and “qualitative data from a wide base of participation through citizen science”
- Protocols as open platforms to identify key common metrics
- Perspectives: adding value through an open system of data integration based on simplicity integrated into the value chain
- Overcome barriers to collaboration
- Distribute ownership of information
- Testing innovative business models

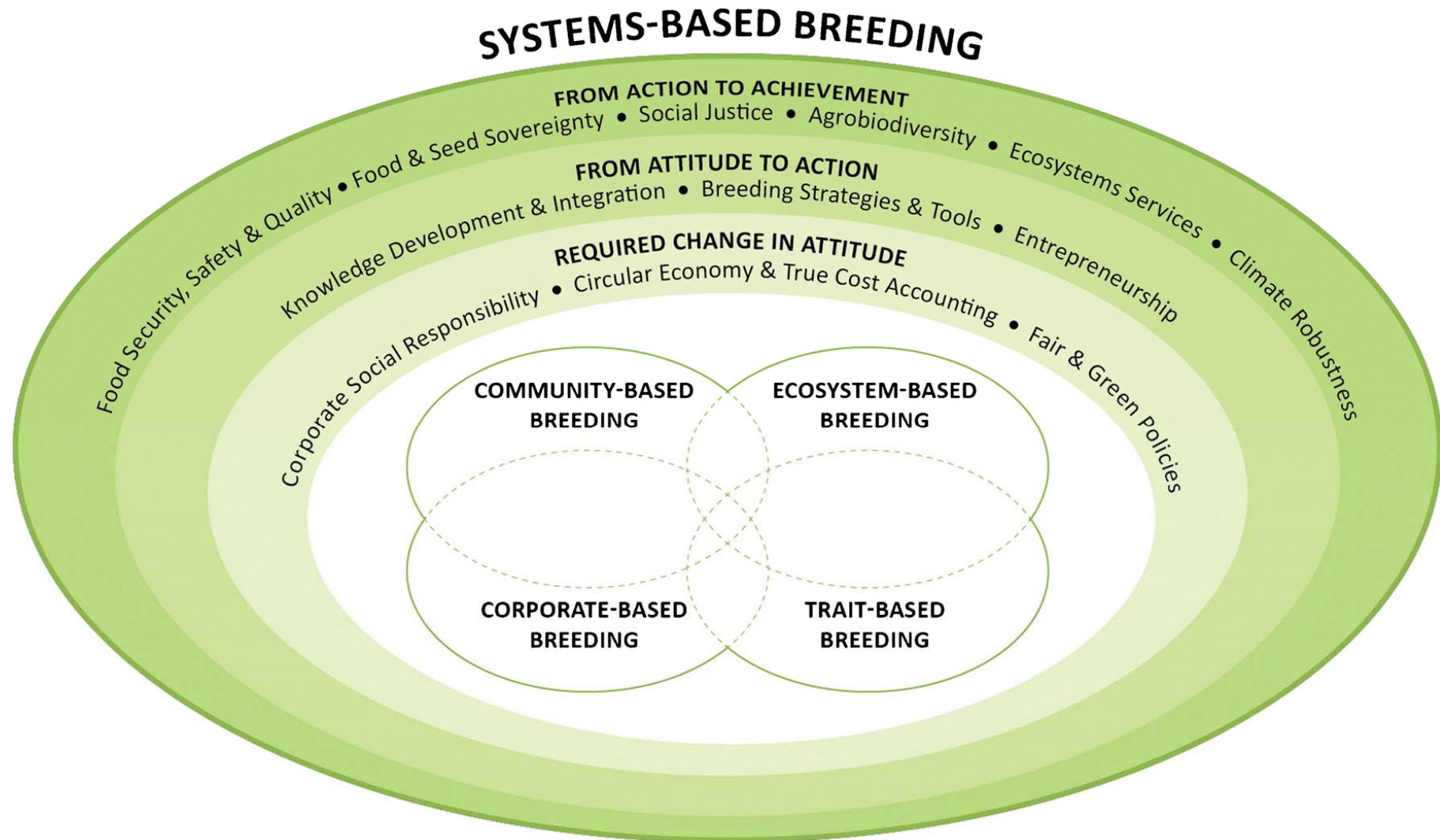


# Seed vigour for resilient crop production



- Lower vigour carrot seeds are more sensitive to attack by Alternaria
- High seed vigour maintenance is important for resilience
- Seed production, seed microbiome, seed treatments

# Systems-based breeding beyond direct benefit of value chain



# Breeding for diversity

- Develop concepts, strategies, and tools for the development of cultivars with improved resilience:
  - Genetic diversity within cultivars e.g. composite cross populations and dynamic populations that can adjust to multiple stresses (cereals, legumes)
  - Develop concepts for optimized cultivar mixtures (cereals)
  - Breeding cultivars suited for species mixtures (legume – cereal mixtures, Lucerne – grass species, agroforestry)



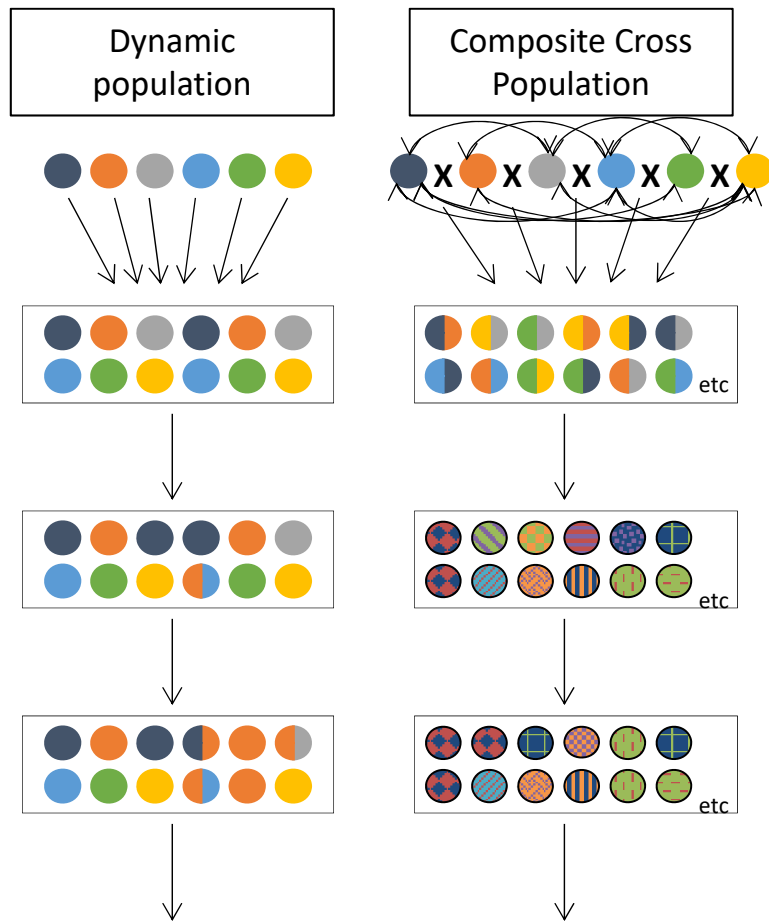
**Join workshop on innovative breeding approaches**



This project received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 727230.



# Exploring and comparing breeding methods for diversity



Started in 2014 to study influence of :

- 2 Sites in France
- Selection strategy: Dynamic vs. CCP
- Human selection : natural vs. Human (farmer and two bakers)

Each year, phenotypic characteristics and yield components are observed on all the populations (10 populations in 2019)

- Human selection mainly determines crop traits (phenotypic characteristics and yield components). The farmer's and bakers' selection have conserved the overall diversity.
- Other determinant factor is the location
- No significant differences between the two selection strategies after 5 generations

# Participatory Breeding for bread making in Portugal – Selection traits



## General traits

- Root and Stalk lodging resistance;
- Pest and diseases resistance

## Pigarro, Verdeal Regadio & Sequeiro

- First ears' height – 165-185 cm;
- Ears' large length, fasciated and indeterminated;

## Fn 2014

- Plant height - >250cm;
- Reduce first ears' height – 190-200cm;
- Earliness to fit the cycle (dry bracteas at harvest);

## Amc397

- Selection for high stand;
- High lenght ears



# Participatory tomato breeding in Spain and Italy

## CATA DE TOMATES ECOLÓGICOS

CUÁNDO:  
31 de julio de  
2019 a las 11 h

DÓNDE:  
Centre d' Educació  
Ambiental de la CV Marjal  
dels Moros (Sagunto)  
<http://www.agroambient.gva.es/va/web/ceacv>



Organizan y colaboran:  
**LIVESEED**

Funded by the Horizon 2020 Framework Programme of the European Union

20 anys  
CENTRE D'EDUCACIÓ AMBIENTAL

LA UNIÓN DE LAURADORES I RAMADERS

SEAE



Tomato PPB-social activities with general public and consumers' evaluations. Posters for announcements of activities in summers 2018 and 2019 in Valencia (left and right) and consumers evaluations in Mercado de los Toruños (Puerto de Santa María, Cádiz, August 2018, La Verde Coop selling point)



Tomato PPB activities in Italy. Locations of farms (left) and groups or evaluators coordinated by RSR and Arcoiris  
Figure 6. Tomato participatory trials and social activities in Italy and Spain.

# Breeding for mixed cropping of perennial crops: Lucerne (*Medicago sativa*) and *Festuca* spp.



Pure stand of lucerne



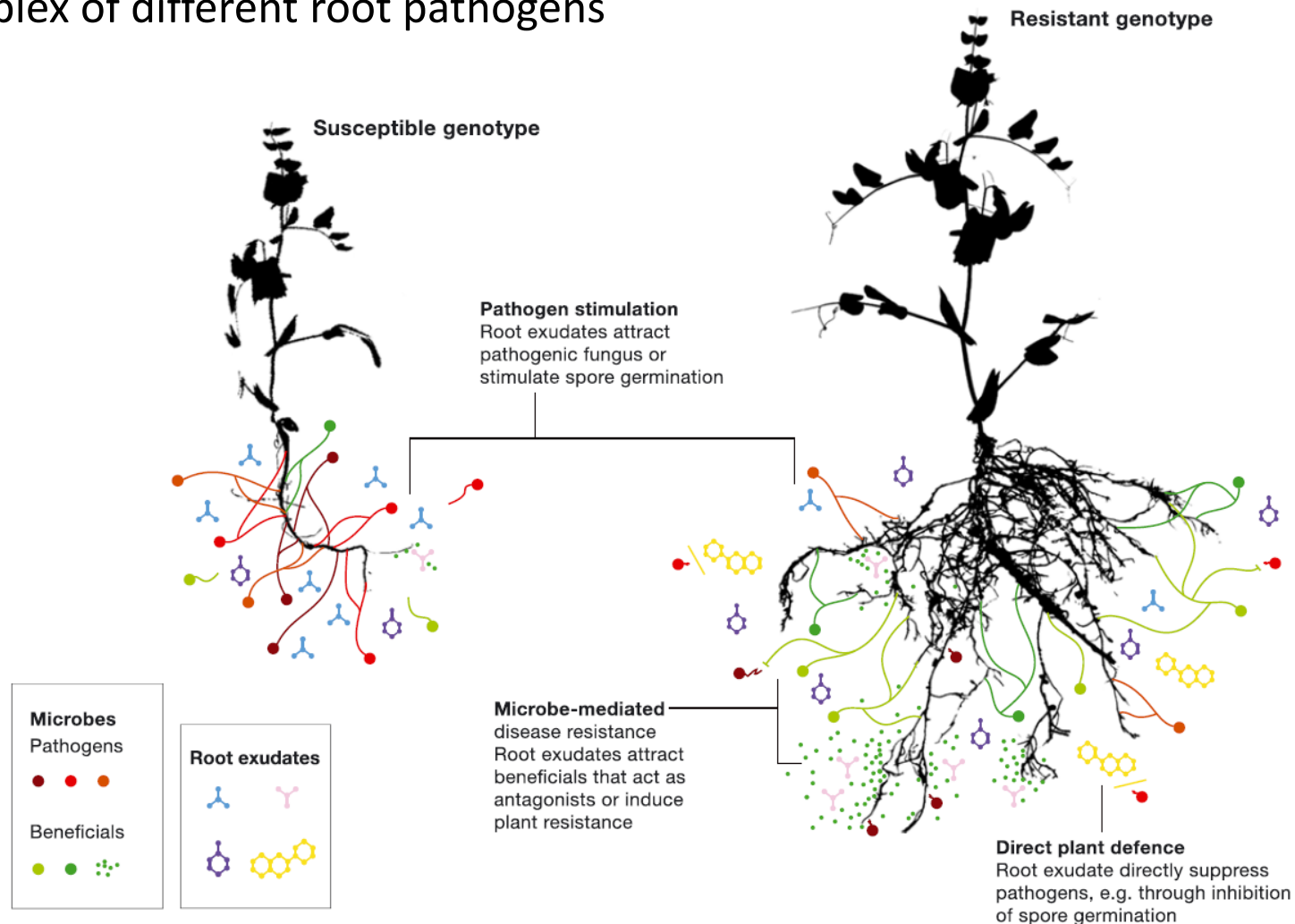
Lucerne with tall festuca grasses



Lucerne with low festuca grasses

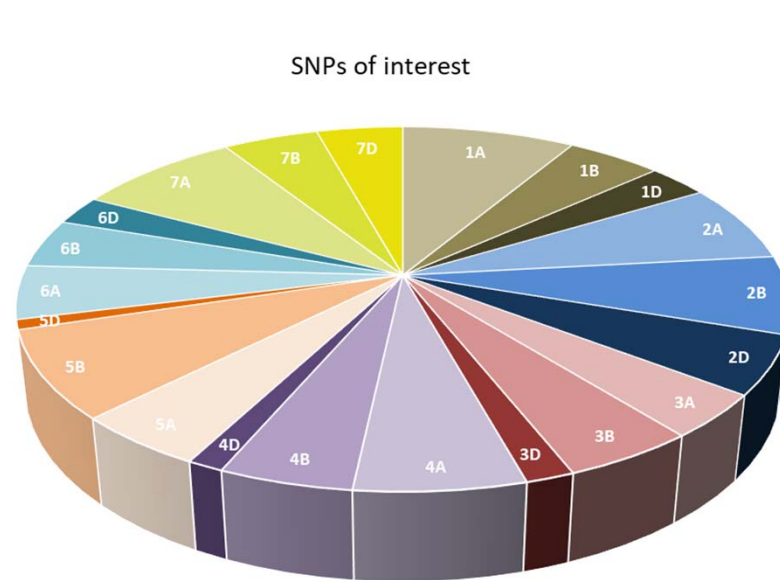
# Breeding on the holobiont: soil microbiome community -mediated disease resistance

A high-throughput screening system was developed for pea that successfully differentiates various resistance parameters against soil fatigue caused by a complex of different root pathogens

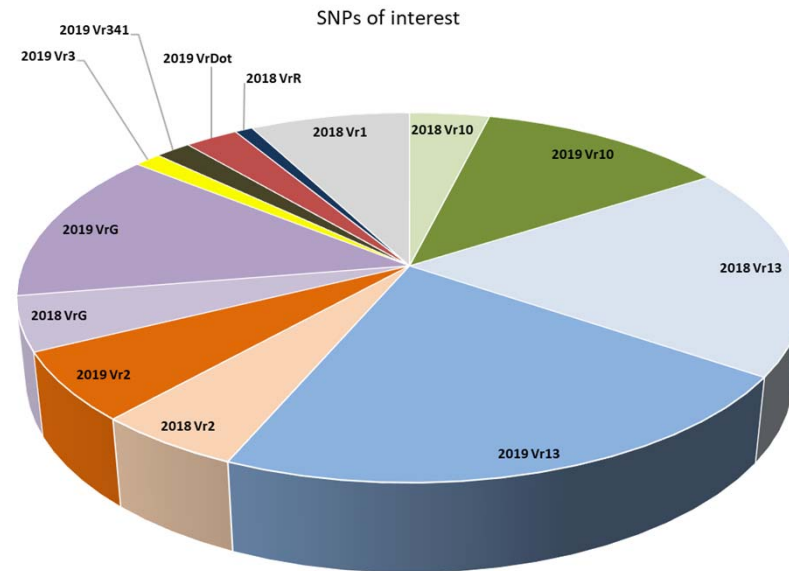


# Identification of molecular markers (SNPs) linked with resistance gainst different virulence strains of *Tilletia caries* (common bunt)

## GWAS analyses – SNPs of interest (strong signals, filtered $r^2=0.20$ )

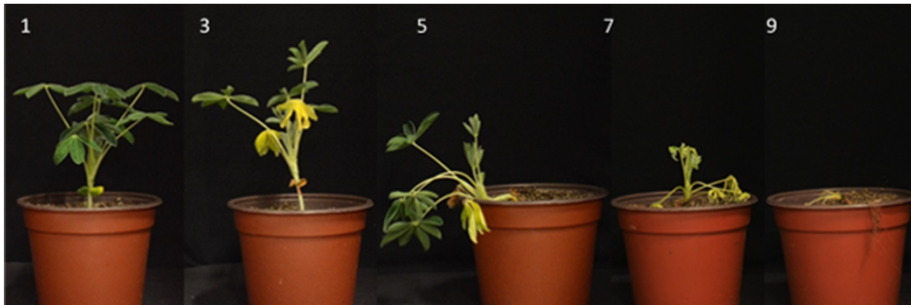


Distribution of SNPs of interest on chromosomes

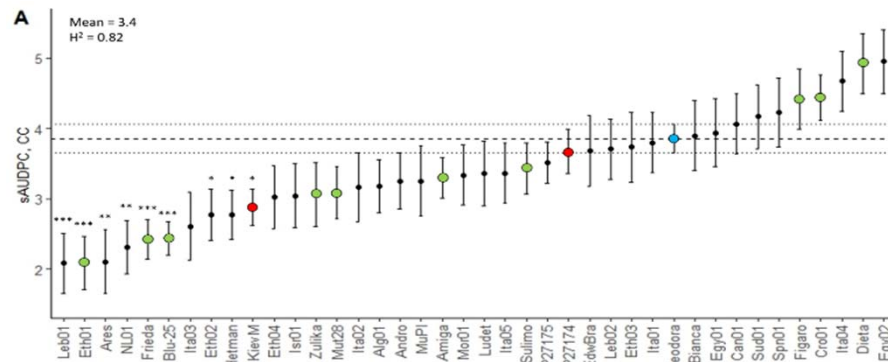


SNPs of interest and races : environment

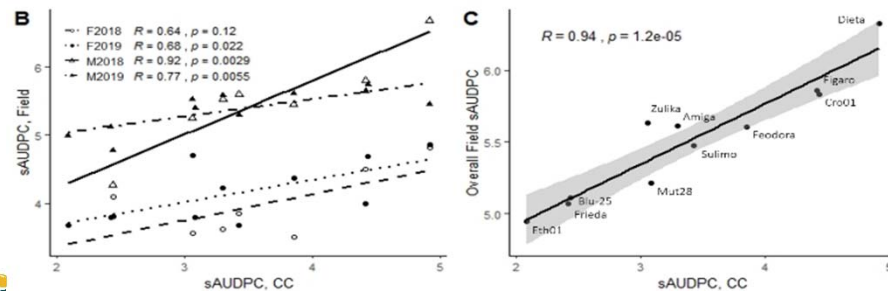
# White lupin breeding for anthracnose tolerance, low alkaloid content, calcereous soil and drought tolerance



Development of screening test for anthracnose tolerance in white lupin under controlled conditions



Large genetic variation suitable for



Validation with observed tolerance in the field

→ Genom wide association study to identify different resistance



Alkemade et al. 2020 submitted sources



This project received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 727230.

# Farmer survey

- Online survey in 17 countries to explore farmers' motives to use/not use organic seed
- Network sampling with **763 farmers** who completed the survey
- First study investigating organic seed use from the farmer's point of view in several European countries
- Results provided the basis for the estimate of organic seed demand in Europe
- One scientific paper published on *Sustainability*



sustainability



Article

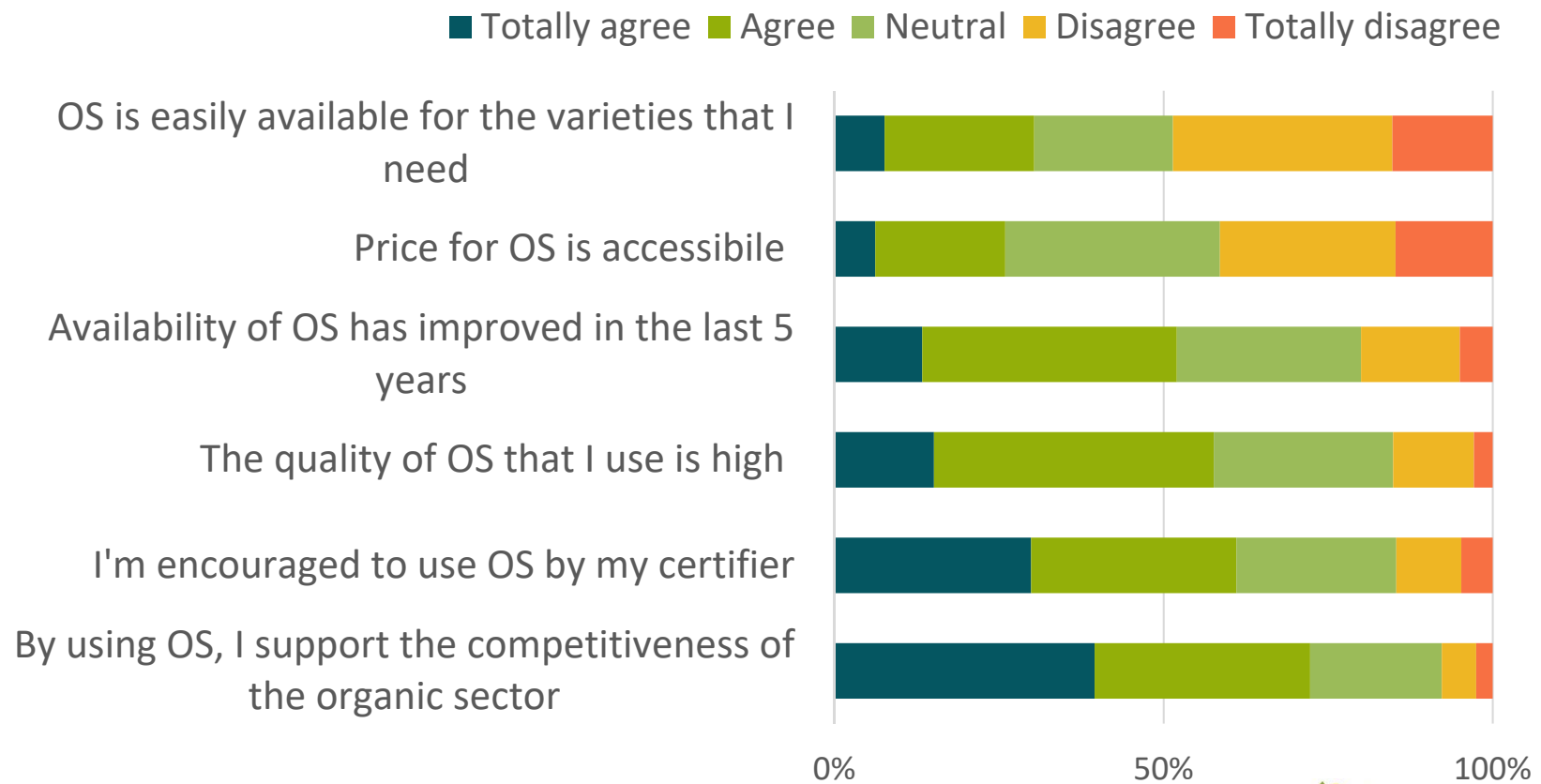
## Factors Affecting the Use of Organic Seed by Organic Farmers in Europe

Stefano Orsini <sup>1,\*</sup>, Ambrogio Costanzo <sup>1</sup>, Francesco Solfanelli <sup>2</sup>, Raffaele Zanolli <sup>2</sup>, Susanne Padel <sup>3</sup>, Monika M. Messmer <sup>4</sup>, Eva Winter <sup>4</sup> and Freya Schaefer <sup>5</sup>



# Farmer survey

## Attitudes of farmers towards organic seed use



# Crop sector case studies: most promising financing models for organic breeding identified

## Financing strategies for organic breeding by crop sector

(based on interviews with stakeholders)

	Vegetable	Arable	Forage
Pre-financing by value-chain actors	X	X	–
Pre-financing by public-private partnership	X	X	X
Donations	(X)	(X)	–
Royalties	(X)	(X)	(X)
Re-financing through seed sale	(X)	–	–

X = Already in place and successful;

(X) = Mixed picture (not sustainable in the long term and to scale-up);

– = not relevant



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# How to smooth transition and find long-term solutions to obtain 100% organic seed ?

- Innovative modelling technique to assess possible market scenarios
- **Ex-ante assessment → simulation model.**
- Heterogeneous landscape of value chain processes, different business models and possibilities, interactions among actors → **multi-agent system.**
- **At farm level:** Innovation diffusion → Willingness to use organic seed  
Network thresholds according to Rogers.
- Timeframe → Presenting future scenarios for the next 8 years
- Case study late organic carrot production for the fresh market in Germany
  - Which interventions are promising to increase organic carrot seed use and production?
  - What are the impacts of the different policy interventions along the organic carrot seed value chain with respect to:
    - Organic seed use and production
    - Gross margins

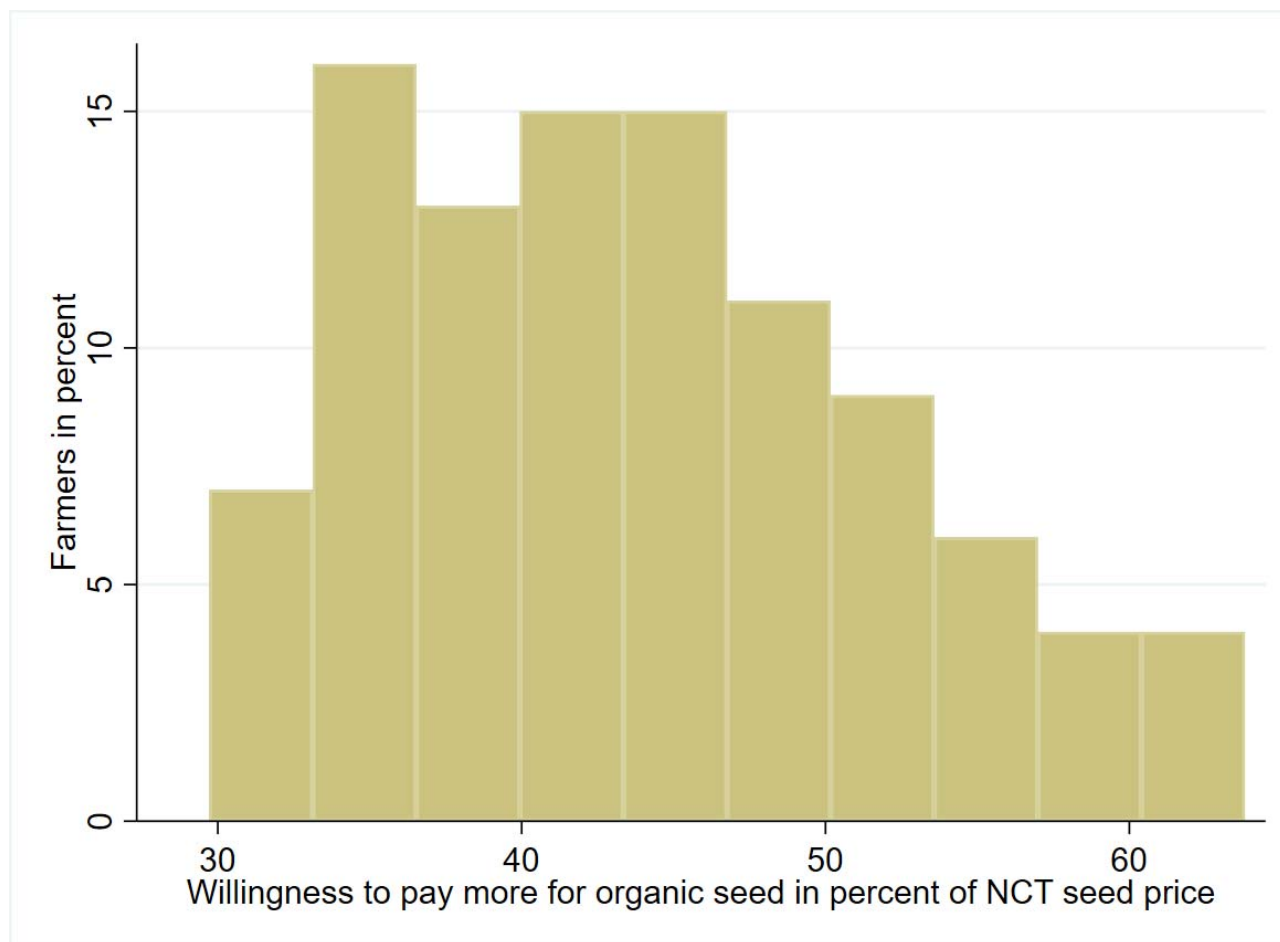


→ **Join workshop on strengthening organic seed markets and business models** → **Report in Jan 2021**

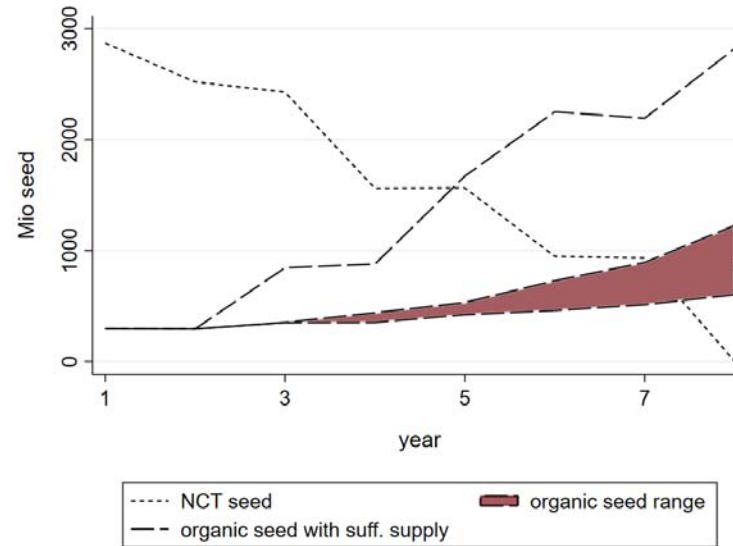
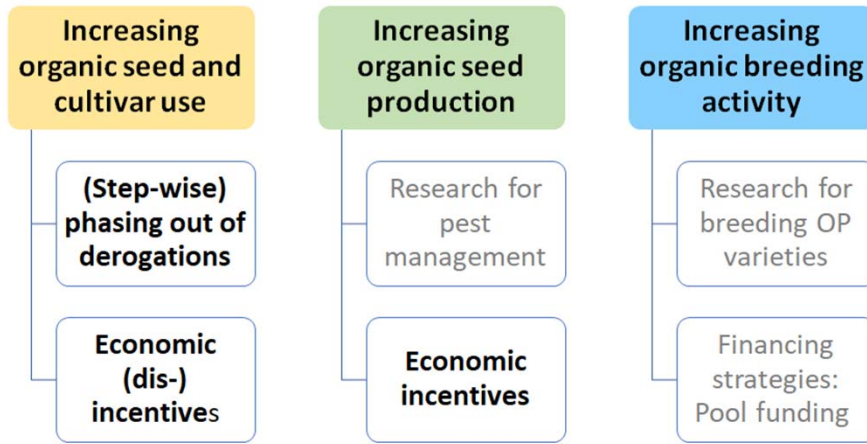


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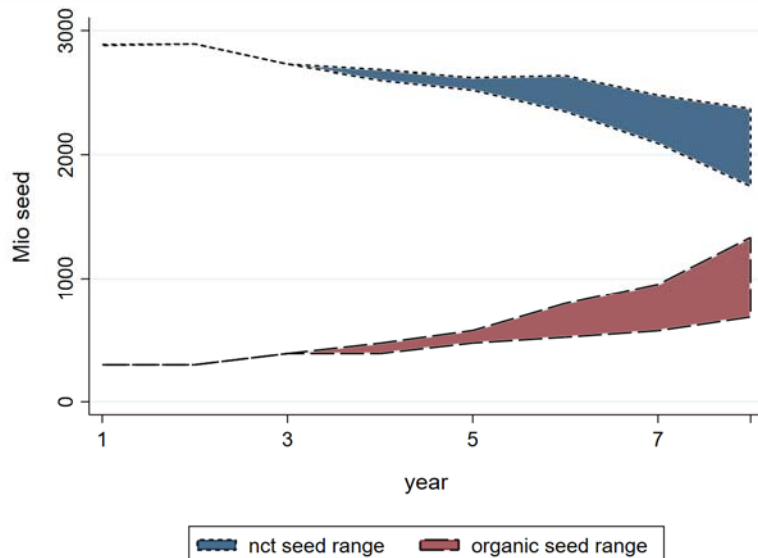
# Innovation diffusion: Farmers' willingness to pay more for organic seed



# Potential interventions of multi-agent simulation model on carrots in Germany



Effect of phasing out derogations



Effects of Hectare bound subsidy 500 Euro per ha or higher product price of 15 Euro



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# A real case study example of organic seed use and breeding

- **ConMarcheBio** cooperative, ~300 farmers, 15000 ha UAA, selling to specialised retailers in Italy and multiples in other countries:
  - **Use of organic seed** important element of the production and whole supply chain
  - Higher farm-gate price paid to farmers for the use of **organically bred varieties** to produce some finest pasta
  - RDP measure supporting for the valorisation of organic seed of ancient varieties of wheat and legumes, from production to final product (pasta)



## **Strengths:**

- Breeding and supply chain approach rather than focus on seed only
- Does not need to be either local or supra-local (international)



# Survey of organic consumers on their attitude towards new plant breeding techniques

- **The majority would not buy** organic foods derived from New breeding techniques.
- Main **motivations to buy** are: **productivity** and **social aspects** (e.g. producing enough food, reducing anger in the world), **reduction of costs and prices, using new technologies, protecting health and environment.**

## Reasons' for rejection:

- Use of genetic manipulations;
- Ethical and social aspects (*"Then you are going to play for God"*);
- Lack of knowledge among consumers;
- Unpredictable impacts on society and environment;
- Sceptical due to the economical and political purpose.

**For all participants the use of specific and clear labels is necessary.**

- → Analysis is ongoing, report expected in Jan 2021



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# WP2 Seeds

Seed  
production

T2.2.2  
Promotion of  
smart practices  
*RSR*



[www.organic-farmknowledge.org](http://www.organic-farmknowledge.org)

Exchange knowledge, enhance organic farming



## Organic Farm Knowledge



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# International Conference on BREEDING AND SEED SECTOR INNOVATIONS FOR ORGANIC FOOD SYSTEMS

by EUCARPIA

Section Organic and Low Input Agriculture jointly with  
LIVESEED, BRESOV, ECOBREED, FLPP projects and ECO-PB

## TOPICS:

- ◆ Exploring underutilized genetic resources
- ◆ Breeding for diversity
- ◆ Breeding for culinary and nutritional quality
- ◆ Living soil – plant interactions
- ◆ Organic production of high quality & healthy seed
- ◆ Multi-actor & participatory approaches
- ◆ Socio-economic analysis of seed systems
- ◆ Market & consumers aspects
- ◆ Regulatory & policy opportunities
- ◆ Sustainability assessment

ONLINE

08-10 March 2021

E:organizing.eucarpia@arei.lv



<https://www.eucarpialiveseedconference2021.lv/>

Abstract submission extended till 11th December 2020



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# LIVESEED

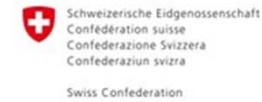


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