

# A roadmap and vision towards **100% ORGANIC SEED IN EUROPE** – Recommendations from the LIVESEED project

**Ambitious targets have been set out by the European Union's Farm to Fork Strategy to upscale from 8.1%<sup>1</sup> in 2019 to 25% of all agriculture land under organic by 2030 in the EU, while the new EU Organic Regulation (EU 2018/848) is also to phase out derogations for non-organic seed currently allowed when organic seed is unavailable by 2036. Both imply that the current availability of organic seed must be significantly increased in the coming years.**

To evaluate the status quo, the Horizon 2020 project LIVESEED carried out for the first time a comprehensive data collection and analysis on the current supply and demand of seed used in organic farming in the EU and Switzerland (Solfanelli et al., 2020<sup>2</sup>). This exercise revealed several bottlenecks in data availability and transparency: a lack of resolution on crop-wise data on EU organic crop land, incomparable and incomplete reporting on derogations of non-organic seed use at EU Member States with diverse availability, accessibility, formats of publications, data reliability and validity and a lack of harmonisation of crop classification and units of measurement. In many cases no data is available for the use of non-organic seed of species that fall under general derogations. Furthermore, important datasets do not currently differentiate between certified organic and certified non-organic seed (e.g. data from the European Seed Certification Agencies), and no reliable data could be obtained from seed suppliers and retailers on the amount of marketed certified organic seed in Europe. There is also no reliable data available on the percentage of organic farm-saved seed, purchased certified organic seed and non-organic seed usage at farm level. The first recommendation of LIVESEED, therefore, was to increase the quality of the data collection on organic seed production and use in the EU from these sources.

A very important source of information on organic seed availability for farmers should be the national organic seed database, which is obligatory for Member States. A study by LIVESEED (Solfanelli et al., 2019<sup>3</sup>) on the functionality of the current EU national databases showed large differences across the EU, but common shortcomings are the lack of real-time updates, lack of direct access by seed suppliers, the lack of history/traceability of seed offers, and the general lack of information on varieties and cultivar trials. To increase the transparency and the access of seed suppliers to national seed databases, LIVESEED developed an EU-wide Router Database (seeds4organic.eu), where national authorities can



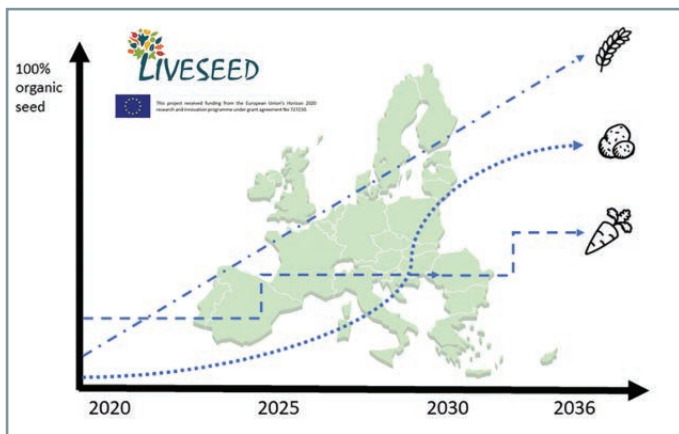
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evaluate seed offers from abroad and export them to their national databases, while seed suppliers can place offers in many EU countries using a single entry.

The project, furthermore, organised extensive consultations, national visits and workshops involving twenty-one EU Member States to learn about the national implementation of the EU Organic Regulation. Collecting transferable good policy practices (Raaijmakers et al., 2019<sup>4</sup>) that support the production and use of organic seed and gaining insight into political obstacles (Raaijmakers & Schaefer, 2019<sup>5</sup>) showed that to succeed, it is crucial to limit the derogations for the use of non-treated conventional seed, and, at the same time, invest in organic seed production, variety trials and organic breeding.

National organic seed expert groups are cornerstones for Member States in successfully responding to the challenges of the organic seed sector. They usually advise the competent authorities on which crops can be placed on the national non-derogation list and can, for instance, initiate demonstration fields to show how the different varieties perform under organic conditions. Across the EU, these groups should be established and/or extended to include more stakeholders (e.g. processors) who often play an important role in which varieties the farmers use. Preferably they are organised around different crop groups (e.g. for vegetables, arable crops and vegetative propagating material). These groups could also be drivers to stimulate public research and breeding programmes of organic varieties, and cultivar testing under organic conditions. Seed companies need clear targets on actual demand and deadlines of derogations to invest in organic seed production in advance. LIVESEED recommends that seed expert groups jointly develop a national roadmap which outlines the intermediate steps or interventions (e.g. defining the year when changing from general to individual derogations, defining minimum percentage of organic seed per farm which will increase stepwise, promoting organic seed production or introducing more adjusted cultivars) to reach eventually 100% organic seed use (defining the year of no-derogation) for a specific crop (see Figure 1). This needs to take into account that the starting point differs in the Member States and that the multiplication rate, challenges and obstacles differ per

crop. Therefore, the involvement and commitment from all stakeholders is essential.

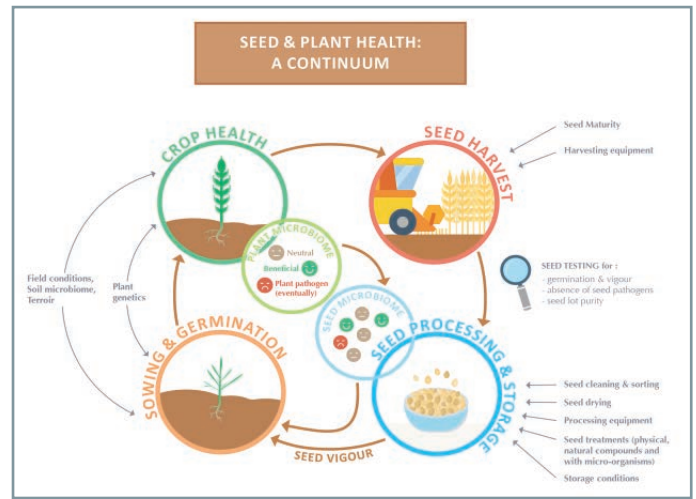


**Figure 1: Roadmap to reach 100% organic seed for different crops on national level**

Increased availability of organic seed then needs to come hand in hand with the uptake of it by farmers. Research in LIVESEED involving 800 farmers across the EU showed (Orsini et al., 2020<sup>6</sup>) that organic breeding of locally adapted varieties and in general, breeding for organic farming, was considered the most important by farmers to boost organic seed use.

To upscale organic plant breeding in the EU, the genetic resources of many crops would still need to be characterised to see if they are useful for organic farming, as well as the current work with new cultivar types and concepts for increased diversity (Composite Cross and Dynamic populations, variety mixtures, species mixtures, agroforestry) needs to continue. The marketing and commercialisation of organic heterogeneous materials and the upcoming EU temporary experiment on organic varieties (Art.39, EU 2018/848, Pedersen et al., 2021<sup>7</sup>) are also great opportunities to adjust and speed up the process for release of organic varieties. Participatory approaches at the local level creating partnerships between breeders, farmers, value chain actors, consumers, and society remain also key to supporting organic breeding. Diversified financing models for organic breeding are urgently needed. Private foundations, labelling organisations and value chain stakeholders can contribute to increasing the scale of organic breeding and reaching more consumers. To meet the requirements of traders and retailers, supply chain collaborations between downstream and upstream players and the sharing of the costs of breeding is necessary. Public funding through rural development measures and public-private partnerships would increase access to funding for mixed cropping systems, pre-breeding for neglected crops, research for traits for organic, and cultivar testing under organic conditions. Conventional breeding converting to organic plays a crucial role in contributing to the investments needed for the sector.

Resources are needed, furthermore, for the promotion and professionalisation of organic seed production by farmers (both for certified and farm saved seed) including training of farmers on seed management and seed health. Investments at the national level in research to improve the quality of organic seed to respond to the remaining challenges of seed-borne pathogens and seed production and quality issues are also important. To that end, LIVESEED's results suggest that a more holistic seed health strategy is needed in the long term (Groot et al., 2021<sup>8</sup>). Such strategy takes into account the broader environment and looks beyond resistance breeding and seed disinfection measures. It would include steps in the entire cycle, and include recommendations for seed vigour, plant and seed microbiome, seed maturity and seed pathogens and several aspects related to seed processing and storing (see Figure 2). Future seed health research would need to look at the soil-plant microbiome interactions and what influences the seed microbiome



**Figure 2: Elements of a holistic seed health strategy covering the entire cycle. Image by Dr. Stephanie Klaedtke (ITAB, France) and Dr. Steven Groot (Wageningen Research, Netherlands)**

(e.g. local adaptation, seed harvesting conditions, treatments or storage, etc.) and what role the microbiome could play in seed management and seed vigour:

At the EU-level, cooperation between Member States could involve the exchange of structural knowledge and policy interventions, exchange on specific technical issues e.g. seed mixtures, and coordinated placements of selected crops on the national non derogation lists, where this system is already in place. On-farm organic cultivar testing models explored by LIVESEED, for instance, recommend the establishment of locally adjusted pilot trials connected by a European digital platform for data sharing, allowing farmers to make informed choices (Rey et al., 2021<sup>9</sup>). These recommendations are all important elements of a roadmap towards 100% organic seed in Europe, the implementation of which will require dialogue building in the sector and larger investments from the value chain and national governments.



LIVESEED is funded by the European Union's Horizon 2020 under grant agreement No 727230 and by the Swiss State Secretariat for Education, Research and Innovation (SERI) under contract number 17.00090.

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