**Scalability of organic agriculture (OA): insights from Europe**

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Stéphane Bellon1, Dominique Desclaux2, Cécile Detang-Dessendre3, Françoise Medale4, Servane Penvern5

1Ecodéveloppement, INRAE, 94914 Avignon, France

2 DiaScope, INRAE UE 0398, 34130 Mauguio, France

3Direction Scientifique Agriculture, INRAE, Paris, France

4UMR 1419, INRAE 64310 Saint-Pée-sur-Nivelle, France

5UMR INNOVATION, INRAE, Institut Agro, Montpellier, France

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This introductory presentation addresses recent dynamics of the organic sector in Europe, with special reference to the French situation. In a first section, we relate trajectories that led to the current situation of organics, characterised in France by an exceptional growth during the past ten years and a recent slowdown. Secondly, we report on research initiatives at French and European level. Finally, we draw perspectives framed both by European Union (EU) targets and research contributions regarding the scalability of organics.

**From niche to plateau or further extension : dynamics of OA in EU**

Mid-term development trajectories of organics have already been addressed, displaying different sequences of key stages as well as discrepancies between western European and western Balkan countries. . In six western European countries, the following stages were identified: establishment of an organic community, political recognition (and regulations), financial support to value chains, acceptance by general farming community, established organic food market, institutional setting underway (Michelsen, 2001). While OA has become institutionalised through standards and certification, forms of collective commitment have also emerged, contributing to the development of organics (Allaire, 2016).

The organic sector has been strongly extending during the recent years, with the growing interest of farmers, economic organisations, public agencies, consumers (Willer et al., 2022). This entails greater diversity of organic models and arrangements at different scales. As a result, some countries or regions in Europe made organic shift out of what was previously considered as a “niche” regime. Conversely, such an extension is also questioned by various agents and institutions who consider that a “plateau” is achieved in terms of organics growth, whereas others consider that there is still room for development. A third movement can be considered, by which organic agriculture would be widespread or likely to inspire significantly other forms of agricultural regimes. Beyond quantitative objectives, the issue of organic development patterns is still at stake. New targets are set at EU level, in particular with the Green Deal and CAP, including quantitative ambitious objectives (EC, 2019; EC, 2020) while acknowledging differences between EU member states that can define their national plans (PSN-MASA, 2022). Such framing widely determines the future of organic food and farming.

**Research contributions and agendas**

In France, INRAE's formal commitment to organic farming began in 1999, based on three premises: interdisciplinarity, partnership, and system approaches (Bellon et al., 2000). This programme enabled various activities and specific support to research projects. In 2020 INRAE launched a new metaprogram (Metabio) “Moving to predominant organic agriculture”. It aims to explore the hypothesis that the domestic supply of organic products becomes predominant, which would entail a radical change in the entire value chains within the context of a strong demand and wider agroecological transition. Its objectives are to develop proposals, scientifically substantiated, to anticipate the consequences of and support the development of organic agri-food systems. Accordingly, four topics were prioritized: (i) Conditions for a large scale transition and its support measures, (ii) Resources to be mobilised for sufficient and sustainable production, (iii) Processing, storage, and product qualities, (iv) Coexistence of production systems. The first outcomes of this metaprogram are available ([www.inrae.fr/metabio](http://www.inrae.fr/metabio)). And INRAE was subsequently in 2022 the leader organisation in terms of publications on OA.

In Europe, the ERA-NET CORE Organic (CO for ‘Coordination of European Transnational Research in Organic Food and Farming Systems’) was established in 2004. In 2020 it included 27 ministries and research councils from 19 countries and regions whose main purpose is to fund and support transnational organic research. These partners have been working together to increase innovation potential, knowledge accessibility, alignment of national research and international outreach. By joining forces, the network sustains focused and coordinated research and innovation efforts, covering the most important challenges at every link of the organic value chains. All together more than 50 projects were funded during the entire period, with an average contribution of 1M€/project (Grando et al., 2020). The network continues as CO Pleiades (<https://projects.au.dk/coreorganicpleiades/about>) and a possible integration in the uprising European agroecology and food systems partnerships. As a new approach under Horizon Europe, partnerships aim to deliver on global challenges and industrial modernisation through concerted research and innovation efforts, alongside EU and associated countries, the private sector, foundations and other stakeholders.

**European challenges in R&D: contribution of foresight exercises**

The EU’s Farm to Fork Strategy target of a 25% organic share of agricultural land by 2030 is ambitious given that organically farmed land was just under 10% in 2020. With an amplification of OA in view, both knowledge syntheses and foresight exercises are used to assess possible benefits if the 25% target can be achieved (Sautereau et al., 2016; Lampkin & Padel, 2022).

Foresight exercises such as Ten Years For Agroecology (TYFA) in Europe is an on-going project which started in 2014. A quantitative model simulating the agricultural functioning of the European food system was designed in order to develop an agroecological scenario for Europe in 2050 (Poux & Aubert, 2018). Due to the lack of data in agroecology, references from the organic sector were used to explore pesticide-free farming and extensification of crop production. Other hypotheses explored in this exercise refer to: fertility management at a territorial level; redeployment of permanent grassland; livestock extensification (phase-out of industrial modes); healthy and sustainable diets; food first, then feed, then biodiversity, then non-food use. Other on-going projects also use scenarios. The CLINORG flagship project (as part of Metabio programme) aims at exploring to what extent organic farming expansion in Europe, combined with changes in food and feed consumption, may affect land use worldwide and related GHG emission, based upon the combination of two spatially-explicit models. In the OT4EU project (EC funded) the EU targets are taken for granted (backcasting) and the focus is on development pathways and knowledge systems enabling their achievement.

As a whole, we stress (i) the importance of both demand for organic products and public supports, (ii) the need to modify diets to address the food security debate (balance between animal and vegetal protein sources), (iii) the necessary links between various agricultural models (synergy and trade-off)

**Key words:** research program, development, trajectories, foresight, scaling

Co-responding author: Stéphane Bellon

Position: Scientist

Affiliation: INRAE – Ecodéveloppement, Site Agroparc, 84914 Avignon Cedex 9

Country : France

E-mail: [stephane.bellon@inrae.fr](mailto:stephane.bellon@inrae.fr)