

The organic route to a resilient future

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At a glance

- As an agro-ecological approach with clear environmental and social benefits, organic farming has an important role to play in transitioning to more sustainable food production.
- Organic farming has a long history of strong regulation and policy support in Europe, but the post-Brexit policy environment in the UK presents specific challenges.
- There must be more investment in research and development of organic techniques to capitalise on their potential to improve resilience across the whole of the agricultural sector.

Introduction

There is a growing realisation that farming must move on from its current unsustainable model. From a global perspective, the farming and food system has contributed to transgressing the planetary boundaries of land conversion, nitrogen and phosphorus loading, biodiversity loss and climate change, creating dangerous levels of environmental degradation.¹ Food production is the dominant driver of habitat and biodiversity loss and accounts for approximately one quarter of greenhouse gas emissions. These issues will come under the spotlight at this year's Conference of the Parties (COP) meetings of the biodiversity and climate change conventions in Kunming (China) and Glasgow respectively. While the Green Revolution in the 1950s and 1960s achieved spectacular success in driving up agricultural production to meet the food demands of a burgeoning world population, a new greener revolution is now urgently needed to bring our food production within an 'environmentally-safe and socially-just space'.²

Organic farming and its benefits

Organic farming, as the most well-defined, established and regulated of all the so-called 'agro-ecological' farming approaches that have come to the fore, has an important catalytic role in this transition. With its roots in the early 1900s and Rudolph Steiner's development of the biodynamic agriculture concept, organic farming has evolved with the help of subsequent influential advocates in the US, Britain and Europe, as a response to growing concerns about the industrialisation of agriculture and over-consumption of finite resources. The [Organic Research Centre](#) has been an important part of this history. Founded 40 years ago as the Elm Farm Research Centre, it was

then, and continues to be today, the UK's only research organisation dedicated to the research of organic agriculture.

'Organic' describes a farming system working in harmony with nature. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects.³ Organic practices are circumscribed by the four principles of health, ecology, fairness and care.⁴ By adhering to them, a number of benefits to nature and society have been characterised, including [by our own research](#). They include improved soil, water and air quality, flood mitigation, climate change mitigation and adaptation, reduced environmental pollution, animal health and welfare, habitat and biodiversity, landscape values and our engagement with them. Some criticise organic farming because of its relative inefficiency and therefore greater equivalent land demands, compared to conventional production.⁵ Others, however, demonstrate that global food security can be achieved more sustainably under organic management if consumption and waste issues are addressed simultaneously.⁶ The yield gap can also be expected to reduce as conventional production is impacted by soil exhaustion, as crop varieties that perform better under organic conditions are identified, and as the resilience benefits of organic farming are realised with increasingly unpredictable weather patterns.

Organic farming in practice

What does organic farming mean in practice? With weedkillers and all but the most restricted use of certain naturally-derived pesticides being avoided, pests and diseases are controlled through encouraging natural predators (beneficial insects and birds), use of crop rotations and diversity, mechanical weed control, and natural ways of suppressing weeds, for example using living mulches. Building and maintaining soil health is at the heart of the agricultural operation and instead of chemical fertilisers, the fertility and health of soils is nurtured by bringing nitrogen-fixing leguminous plants into the rotation, as well as by using composts and animal and green manures. Organic livestock farming respects high animal welfare standards that meet species-specific behavioural needs. There is no preventative use of antibiotics and wormers since animal health management is based on disease prevention using appropriate breeds, production goals, housing conditions, husbandry practices and stocking

densities. Genetic modification does not have a place on an organic farm, where animal diets are based on natural, organic and non-GM feed. Finally, trees may be intentionally integrated into the farm system for enhanced economic but also agronomic benefits. Whilst this 'agroforestry' is not an organic practice by definition, it finds its natural home on an organic farm with its heightened attention to plant-plant and plant-animal inter-connections. Agroforestry, other mixed and organic systems are for this reason considered knowledge-intensive, rather than input-intensive, ways to farm.

Regulatory control

The long-standing success of organic farming partly owes itself to strong legislative and regulatory control. Organic minimum standards are strictly set down in law and in Britain this means an organic farmer must be certified by a certification body according to a scheme following standards set by the UK Register of Organic Food Standards (UKROFS), those standards in turn complying with European and international standards. Becoming an organic farm is a rigorous process in the first place, requiring a two-year monitored conversion period. Strong regulation extends to food processing, labelling and retailing (by law, products labelled as organic must display a certification number or symbol), ensuring that customers can buy organic food with confidence in its integrity. At the EU level, and especially after the implementation of Council Regulation (EEC) No. 2092/91 in 1993, recent decades have seen organic agriculture being strongly supported through regulation and agri-environmental financial support for conversion and maintenance. The latter continues to be applied in the UK, for example through Countryside Stewardship agreements in England.

Current status and future challenges

With clearly evidenced environmental and social benefits of organic farming, EU policy continues to drive the expansion of this sector; its Farm to Fork and Biodiversity Strategies include a non-binding target for 25% of farmland to be organic by 2030. In this respect, the UK is in danger of falling further behind in the absence of an equivalent ambition in the UK. At the end of 2019 there were 300,600 ha of organically farmed land, managed by 3,788 organic farmers and growers and representing 3.3 % of the UK total agricultural area.⁷ The English Organic Forum has quantified the environmental benefits of increasing this to 1 m ha or 10% of agricultural area. The benefits would include a reduction of greenhouse gas emissions of more than 9.4 Mt CO₂ equivalent, a 50 Kt reduction in nitrogen surpluses, a 5% reduction in total antibiotic use, a 1.7 Kt reduction in active

pesticide ingredient applications, and a 25% increase in biodiversity on the organically farmed land.⁸ The Soil Association has criticised the 'passive role of successive UK governments' in supporting the organic market in their report, 'The Lazy Man of Europe'.⁹ The Government's diffidence is despite a growing organic market; the year-on-year increase in sales of organic products in 2020 was 12.6% with an organic market value of £12.79m.¹⁰

A shifting policy environment in the UK poses two specific threats to the future of organic agriculture post-Brexit. On the face of it, the replacement of agricultural production systems by paying farmers for 'public goods' through the forthcoming Environmental Land Management scheme, a key policy scheme of the Agriculture Act 2020, speaks to the strengths of organic production. Yet, organic farming, as a bundle of inter-related practices that work at the whole-farm level and over a long period of time, is not easily accommodated within the current design for the entry-level 'Sustainable Farming Incentive' component: a menu-based selection of narrow options or 'standards'. Current support for organic farming risks being undermined as a result.¹¹ The second threat is posed by the government's proposals to deregulate gene editing, based on the premise that it is not fundamentally different to traditional breeding and therefore should not be subject to GMO regulation. This contravenes a Court of Justice of the European Union (CJEU) ruling in 2018,¹² and significantly risks the integrity and therefore viability of organic food production, both on farms through potential transgenic pollution, but also in the supply chain through product cross contamination.¹³

Conclusions

Investment in research and development of organic and agro-ecological techniques has been historically low compared to non-organic and biotechnological approaches, such as gene editing. At the same time, for decades organic farmers and growers have been a testbed and source of innovation for systems and techniques that have more relevance than ever across the whole of the agricultural sector, especially in the context of environmental change.

The current pandemic has tested and arguably increased the resilience of society and demonstrated the speed at which systems can undergo revolutionary change if the drivers are strong enough. Some argue that lessons need to be learnt about action to deal with other pan-global and complex problems, such as climate change and unsustainable food production. In our unpredictable and rapidly changing world, organic techniques offer possibilities for enhancing the resilience and sustainability of food

production and our own research at the Organic Research Centre is contributing to a greater understanding of that. No one farming system alone will safely feed the planet,¹⁴ but organic farming must be properly supported in policy and research investment to realise its full potential in helping to meet this goal.

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Endnotes

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