

The battle for the future of farming: what you need to know

By [Michel Pimbert](#) and [Colin Anderson](#)

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It is widely agreed that today's global agriculture system is a [social and environmental failure](#). Business as usual is no longer an option: biodiversity loss and nitrogen pollution are [exceeding planetary limits](#), and catastrophic risks of climate change [demand immediate action](#).



Image via [Fotolia](#)

Most concede that there is an urgent need to radically transform our food systems. But the proposed innovations for more sustainable food systems are drastically different. Which we choose will have long-lasting effects on human society and the planet.

Suggested innovations in food systems can be [broadly understood](#) as either seeking to conform with – or to transform – the status quo.



The future of farming is ours to decide. [Raggedstone/Shutterstock.com](https://www.shutterstock.com/image-photo/holding-globe-field-wheat)

A technological future

Some want to keep the agriculture industry as close to existing practices as possible. This is true of the increasing number of corporate and financial actors who seek to solve the food crisis by developing new technologies. These technologies are envisaged as being part of what is being called the "[fourth industrial revolution](#)" (4IR). The “answer” here is thought to lie in a fusion of technologies that blurs the lines between physical, digital and biological domains.

For example, the World Economic Forum is currently supporting agricultural transitions in 21 countries through its "New Vision for Agriculture" initiative. This initiative supports "innovation ecosystems" to re-engineer food systems based on "[12 transforming technologies](#)". In this imagined future, next-generation biotechnologies will re-engineer plants and animals. Precision farming will optimise the use of water and pesticides. Global food systems will rely on smart robots, blockchain and the internet of things to manufacture synthetic foods for personalised nutrition.

Like previous green revolution technologies in agriculture, this effort is designed by and for powerful agricultural giants. These technological innovations reinforce the concentration of political and economic power in the hands of a small number of corporations. Indeed, the latter have [a growing monopoly](#) control over the “12 transforming technologies” protected by patents.



Who needs humans? [Kung_tom/Shutterstock.com](https://www.shutterstock.com/user/Kung_tom)

Most notably, the spread of these technologies will expand the technosphere at the expense of the biosphere. Flying robots will pollinate crops instead of living bees. Automated machines will replace farmers' work on soil preparation, seeding, weeding, fertility, pest control and harvesting of crops.

These hi-tech innovations radically depart from most farming practices. They are moving us towards an increasingly people-less food system. Yet they show a remarkable continuity with the logic of capitalist accumulation – hence their [staying power](#) despite their significant risks.

The spread of automated, de-localised and digitalised production and commercialisation of food is part of the “financialisation” of the global food system. Financial markets play an increasing role in controlling food systems from a distance. This generates huge social and human risks. For example, the significant growth in the sale and purchase of financial products linked to food commodities was [one of the determining factors](#) in the 2008 world food crisis.



We could be seeing an extension of the megafarms we know today. [igorstevanovic/Shutterstock.com](https://www.shutterstock.com/user/igorstevanovic)

Another option

But there is [an alternative](#) to this future. Agroecology involves the application of ecological principles for the design and management of sustainable agroecosystems. [Our research](#) on agroecology focuses on how it can contribute to food sovereignty, which emphasises the democratisation of food systems. Agroecology's contribution to the Sustainable Development Goals [is now recognised](#).

In contrast to the technological vision described above, agroecological innovations promote circular systems that involve recycling, reuse and combining resources to reduce dependency on external inputs, in particular fossil fuels. They mimic natural cycles and the functional diversity of [natural ecosystems](#).



An organic coffee plantation in Ecuador. [Dr Morley Read/Shutterstock.com](https://www.shutterstock.com/user/DrMorleyRead)

Farming systems are designed in a way that is based on beneficial interactions between plants, animals and environments. Trees and shrubs might be planted amongst or around crops, say. Or two or more crops might be grown in proximity. Agroecology [reduces the dependence](#) of food producers on expensive external inputs, distant commodity markets and patented technologies. This is achieved by relying on appropriate biodiversity to ward off pests and increase farm yields.

At broader scales, agroecology involves circular systems that combine food and energy production with water and waste management. Pollution is minimised and synergies achieved by [carefully clustering industries](#) into functional wholes. The re-localisation of production and consumption within territories enhances local economic regeneration and sustainability.

Agroecological innovations in transitions to sustainable food systems are being driven largely [from the bottom up](#) by civil society, social movements and allied researchers. In this context, priorities for innovations are ones that increase citizen control for food sovereignty and decentralise power. This is in direct contrast to the monopoly control [enabled by 4IR technologies](#).



Growing multiple crops at once. [Katarzyna Mazurowska/Shutterstock.com](#)

A democratic debate

Government, civil society and private sector representatives will [soon meet](#) in Rome at the United Nations Food and Agriculture Organisation to discuss the future of farming. Who controls the global governance of innovation will be a hotly debated topic.

But given these highly contested views on innovations for food and agriculture, it is vital that everyone is able to exercise their right to have a say on the future of their food supply. Deliberative and inclusive processes such as [citizens' juries](#), peoples' assemblies and community-led [participatory processes](#) are urgently needed to [decide priorities](#) for food and agricultural innovations. This is all the more important in today's context of rapid global change and uncertainty.

So. Do you want to live in a world in which artificial food is produced by intelligent robots and corporations that put profits before people? Or one where agroecological innovations ensure we can nourish ourselves and our communities in a fair, ecologically regenerative, and culturally rich way?

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ABOUT THE AUTHOR

Michel Pimbert is a professor and director at the Centre for Agroecology, Water and Resilience at Coventry University.

Colin Anderson is a senior research fellow at Coventry University.

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