



**Friends of
the Earth
Europe**



Sorting organic seeds © Young FoEE/Andrea Uherková

Agro-ecology: building a new food system for Europe

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Introduction

Over the past 50 years, our food system has become both more globalised and more heavily dependent on cheap raw materials, chemical inputs and mechanisation. Big business has moved in, with control of our food increasingly concentrated in a handful of multinational corporations operating throughout the food chain. The social and environmental impacts of this system are devastating: small-scale farmers and food companies worldwide are driven out of business; obesity and food poverty are rife; while taxpayers and citizens foot the bill as one food crisis follows another. Meanwhile, as consumers, we find it more and more difficult to know what we are buying, who it has been made by, and where it comes from.

Yet there are alternatives. Innovative projects seeking to re-connect producers and consumers by promoting short food supply chains and food produced in a sustainable way can be found in most European countries. These include short supply chains, alternative food networks, local farming systems and urban gardening.

Friends of the Earth Europe and other movements and organisations believe that control of food and farming needs to be put in the hands of local people and farmers, shifting to agro-ecological systems that work within environmental and equitable limits to achieve food sovereignty in Europe and the rest of the world.

What is agro-ecology?

There is increasing evidence which shows that “business-as-usual” for the food system is no longer an option. Agro-technologies, such as high-yielding crop varieties, agrochemical inputs and mechanization have mainly benefited large land owners and transnational corporations, at the expense of small-businesses, the most vulnerable and the environment. Unless challenged, the already-significant ecological footprint of industrial agriculture is expected to increase as a result of future global environmental change.ⁱ

There is clearly a need for a fundamental change. Instead of the conventional, monoculture-based industrial approach which relies on external inputs, we need to develop mosaics of sustainable, regenerative farming systems that improve the well-being of small-scale farmers, create diversity to make food production resilient to a changing and unpredictable climate, and produce sufficient food whilst enhancing biodiversity.ⁱⁱ Instead of marginalising sustainable local food producers, we need to put sustainable local food at the centre of our food supply, with small-scale producers feeding local communities, rather than being squeezed by industrial-scale global supply chains.ⁱⁱⁱ

Re-localising the way we produce, process, and distribute food can help shift our economy so that it addresses the problems of climate change and biodiversity collapse, as well as the rising levels of social and economic inequality. This means transferring power from companies and financial institutions to devolved democratic bodies that give local people a say.^{iv}

Friends of the Earth Europe believes that by shifting to agro-ecology, rediscovering and capturing local knowledge, and refocusing on local needs, our food systems can support local economies and the people using them to create a greener and fairer economy.

Agro-ecology is supported by a wide range of scientists, farmers and organisations. For Friends of the Earth Europe, agro-ecology involves looking at the whole food system, including food production, distribution and consumption. For farmers, this means recognising the value of local knowledge and using agricultural practices which seek to imitate natural processes, reducing the need for external inputs. Agro-ecology gives a stronger emphasis on supporting local food economies, supporting and building local businesses and creating highly skilled jobs and craftsmanship. Importantly, agro-ecology involves active citizens and communities, people are involved in making decisions about what food is produced and consumed and how natural resources are managed in their region.

Defining agro-ecology

Agro-ecology has been defined as a science, as a set of practices, and even as a social and political movement.^{v,vi}

Agro-ecology as a science in its simplest form is seen as the “application of ecological science to the study, design and management of sustainable agro-eco systems”^{vii}. This can apply not just at the farm-level, but also across the global network of food production, distribution and consumption,^{viii} including food production systems, processing and marketing, the role of the consumer, and the policy level. As such, it uses knowledge from a range of disciplines, including agricultural and ecological science, and traditional knowledge systems. It questions conventional approaches which are centred on the use of science to promote economic growth.

Agro-ecology as practice - seeks ways to enhance farming systems by mimicking natural processes, using biological interactions and synergies to support production.^{ix}

Agro-ecology as a social and political movement is about how individuals, communities and societies contribute to building sustainable, fair food models through what they buy, but also in the ways in which they shop and organise food distribution. Agro-ecological movements seek to influence national and international policies through grassroots cooperation, participation and action to create more sustainable management systems for food and seeds.^x

Agro-ecological farming

The core principles of agro-ecology include recycling nutrients and energy on the farm, rather than using external inputs; integrating crops and livestock; diversifying species (and therefore genetic resources); and focusing on the ways in which crops and livestock can mutually benefit each other, rather than on individual species. By using organic matter and improving the soil, farmers can promote better plant growth. It is an agro-ecology knowledge-intensive system, but the knowledge is developed by the farmer through understanding local conditions and experimenting.^{xi}

One of the key features of agro-ecology is improving productivity over time across the farm and across the food chain – rather than simply on increasing yields in a monoculture. This tends to benefit the farmer by providing different sources of income, reduces risk of crop failures, and provides a wider range of food, which can improve diets. Yields in rice production, one of the most important staple foods globally, have been transformed through the use of the System of Rice Intensification (SRI) which uses agro-ecological principles to increase productivity.^{xii} Devised in the 1980s, it has been demonstrated in over 50 countries, with increased yields of between 20%-100%, reductions of up to a 90% in the need to buy seed,^{xiii} and reductions in water use.^{xiv}

While in some cases organic farming, in many cases using agro-ecological approaches, has been shown to have 10-30% lower yields than industrial crops, depending on the crop and conditions, organic yields can match or even exceed conventional agriculture over time.^{xv} Additionally organic methods use 45% less energy and reduce greenhouse gas emissions by up to 40%.^{xvi} Agro-ecology methods, using locally-appropriate technologies, have been found to clearly increase agricultural productivity and raise incomes in developing countries.^{xvii xviii}

Across Europe there are a growing number of initiatives designed to create local food systems, with seed swaps, improve soil health support for local production and the development of food webs. These create more resilient systems that can adapt to and mitigate climate change. Resilient agricultural systems, that rely on diversity within the agricultural ecosystem rather than monocultures, are crucial as part of our response towards climate change.^{xix}

However, Friends of the Earth Europe believes that productivity and increasing yields is not the best indicator to measure the efficiency of the food system and its capacity to feed people in an ecological way.

Reclaiming the commons

Agro-ecology as a social movement looks beyond ecology and is based on shared ownership and responsibility for natural resources including land, seeds, livestock, water, and knowledge (the global commons). Friends of the Earth Europe believes that these crucial resources should be managed through collective, democratic control, framed through public policies.

Many resources in Europe already have communal management through user associations or community institutions. Examples include pastures, forests, irrigation systems, and other natural or man-made resources. Where this is not the case, local communities need to be able to access common resources and also participate in their management and control through democratic processes. Managing the commons demands a shift of power from private operators to local communities, recognising the long term needs of these communities, as well as those of future generations.^{xx, xxi}

This requires alternative models of **land** ownership, which recognise land not as a commodity, but as a common good. Solutions such as land sharing, collective ownership and other models are being explored in Europe^{xxii} to find ways of ensuring land is primarily used to meet local and regional needs for food, feed and fibre while protecting and enhancing ecosystems and biodiversity. Biomass may provide a limited source of local energy, if used as efficiently as possible and without compromising forests, carbon stores, food provision or biodiversity. Friends of the Earth Europe supports forms of land ownership that enable communities worldwide to feed themselves.

Seed sovereignty is also an essential element of agro-ecology. We need diverse seeds, crops and landscapes to make farming resilient. Seeds which are selected and multiplied on the farm are better able to adapt to the local conditions and climate. Seed sovereignty also protects farms from dependence on multinational corporations.^{xxiii} Seed sovereignty protects crop and genetic diversity, which are important for nutrition and for biodiversity. They can play a role in improving food quality and sustainability, as well as securing livelihoods in local small-scale agriculture.^{xxiv, xxv} These public goods should be supported by public programmes.^{xxvi} Genetically modified (GM) crops have no role in agro-ecology.^{xxvii}

Water should also be managed as a common good. Access to water for all is a social and human right. Water is neither a good that can be privatised nor a tool for market speculation and must be managed through public systems that are both collective and participatory. Such systems should be managed locally, be independent and autonomous, and serve the local population. They should respect the universal right of access to water, and preserve and sustain local ecosystems.^{xxviii}

Conservation and efficient water use are basic principles of agro-ecology. Agriculture has significant impacts on water cycles, and water must be recognised as more than an input for crop growth. Run-off and soil erosion can be reduced by maintaining permanent soil cover, using mulches and green manures for example. This helps water to penetrate into the soil, which together with a good soil structure can help prevent the loss nutrients into groundwater and streams. Organic farming practices can also improve drought tolerance.^{xxix}

Preserving **biodiversity** is also key for functioning agricultural systems. Agriculture covers about half of the EU land area, so Europe's biodiversity is linked inextricably to agricultural practices. As such, agro-ecology practices can create valuable agro-ecosystems across the whole of Europe.^{xxx} Community-developed agroforestry techniques can also play a key role, providing opportunities to increase yields in staple food crops through mixed cropping systems.^{xxxi}

Re-connecting farmers and consumers

Agro-ecology involves building vibrant local food economies by supporting local producers, processors and retailers, and building links between consumers, local farmers and local food businesses. This means creating decentralized short supply chains, diversified markets based on solidarity and fair prices, and closer links between producers and consumers locally. There is a need to ensure access to healthy food for everyone, including the poorest. Consumers should be able to purchase ecologically-produced food from small-scale producers. Short distance distribution models are also an important aspect for the closure of mineral cycles, a basic need in agro-ecological farming practices. To return plant nutrients back into the loop, back to the soil, on the right spot, in the right composition and in the right amounts, is a complex issue. This complexity increases significantly over distance. From the perspective of closing mineral cycles, the shorter the distance the better. In this way local food economies answer the basic need for plant nutrients in agro-ecological farming practices.

There are a myriad of different systems offering 'local food' and 'short supply chains' in Europe, including farmers' markets, 'farm-gate' sales, box delivery schemes, mobile shops, community-supported agriculture, consumer-producer cooperatives and collective catering and canteens. Short supply chains are not just about reducing the number of intermediaries,^{xxxii} but agro-ecology means distributing food through at most one intermediary, putting the consumer and the producer at the heart of deciding what is produced, how it is produced, and how to define the value.^{xxxiii}

Food distribution through short supply chains in local markets have been shown to increase income for producers, add value and generate greater autonomy for farmers, and to strengthen local economies by supporting more small businesses. This can improve the viability of small farms, reduces the carbon footprint from food distribution, and enhances household food security by giving people on low income access to good food and healthy diets, as well as encouraging customer loyalty.^{xxxiv}

Local food supply chains also create employment in rural areas and bring farmers into direct contact with consumers, enhancing social cohesion and making it more likely that they will stay in farming.^{xxxv,xxxvi} This helps foster a sense of community in rural areas, improving the quality of life. It can also provide a basis for education on sustainability and ethical issues in urban areas.^{xxxvii}

This model of agro-ecological based distribution is already a reality in Europe. In 2010 around 21% of French farms sold their products through short supply chains, and more than 50,000 families sourced organic products through Community Supported Agriculture groups. In Italy, some 1,400,000 schools and public buildings serve local or organic food.^{xxxviii} About a third of all farms in Austria sell direct to the consumer, while 5% of the money spent on food in Spain is on products sold through short supply chains.^{xxxix} These types of schemes, especially in peri-urban areas, are a key element of the agro-ecological movement.^{xl}

For example Queens Market farmers market in London has been shown to generate over 15 million euros for the local economy, including around 11 million spent on food, in one of the capital's most deprived boroughs. The market also provides twice as many jobs per square foot of retail as supermarkets, and because of the combination of low overheads and flexible business rates, it serves as a nursery in which a diverse range of enterprises can start, flourish and grow.^{xli}

Where local authorities support seasonal, local and sustainably-produced food, the benefits for the regions are visible. In Nottinghamshire and in Plymouth in the UK, where local authorities have been including local food in procurement practices for school meals, this has generated over 6 million euros in value each year. The proportion of spending on seasonal, local ingredients has risen by a nominal 2 million euros per year, returning 3.7 euros in social, economic and environmental value for every 1.2 euro spent.^{xlii}

Preserving local knowledge and supporting agro-ecological innovation

Agro-ecology requires seeds and livestock to be adapted to local conditions, through local selection and breeding, knowledge and collaborative working. Local farmers, gardeners and livestock breeders should be supported to share knowledge, as a basis for community-based participatory research which will facilitate the development of diversified seeds and ecological production systems, which together can contribute to increased food sovereignty.

International institutions and the scientific community have recognised that increased understanding and development of agro-ecological knowledge, science and technology will help address environmental issues while maintaining and increasing productivity. Public funding should be made available to support this, rather than private, which is less likely to be directed towards achieving environmental or social objectives.^{xliii}

We need to reframe our knowledge about agriculture by developing meaningful inter-disciplinary networks, involving a wide range of stakeholders which can integrate local and traditional knowledge with formal scientific knowledge, and also adapt institutions to be more responsive to stakeholder needs if we are to successfully address the global and regional challenges of our food system. Agricultural research and development must address the multiple functions of agriculture explicitly.^{xliv} Conflicts of interest must be recognised and outlawed in line with international standards and recommendations.^{xlv} Universities and research institutes receiving substantial private funding may need to introduce codes of conduct and procedures to protect their independence.

Special emphasis should be placed on the role of women and the use of their knowledge, skills and experience as this will help to create a more sustainable approach. Changes are also needed within education to recognise the relevance and importance of agricultural studies.^{xlvi}

Changing consumption patterns

Current food consumption patterns in the developed world are not sustainable. Increasing amounts of animal protein in our diet, highly-processed foods, and increasing food waste have increased our exploitation and pollution of natural resources. The growing middle class in emerging economies such as China and Brazil is adding to demand for richer diets, aggravating negative impacts. Over-consumption is creating pressure to expand and intensify our land use – often at the expense of forests, grasslands, indigenous communities, and vital ecosystems. The EU imports 45% of the land it needs to produce the food it consumes.^{xlvii}

Yet there is enough land to meet most of our needs and allow different uses and provide services - food, feed, fibre, healthy ecosystems and even some energy if we change consumption patterns. Agriculture uses also 70% of the world's available freshwater. We need to change our consumption patterns and our lifestyles, prioritising sustainable food production, scrapping industrial agrofuels and reducing the amount of land used for animal feed.

We need to reduce consumption levels primarily of meat and dairy products to more sustainable and healthy levels, and drastically reduce waste. Consumption should be driven by regional production, prioritising seasonally and locally produced food.

Putting theory into practice: Nekasarea (Building food sovereignty in the Basque Country, Spain)

Nekasarea is a network of community-supported agriculture groups launched by the Basque farmers' union EHNE Bizkaia in 2005, as part of a policy of shifting to an agro-ecological model of production which required changes in the way they produced and the way they reached consumers. Farmers, in alliance with civil society, determined their own production rules based on food sovereignty, local and seasonal food, the involvement of farmers and consumers, agro-ecology and social justice. The first groups started on 2007, and there are now 27, involving more than 700 families and 80 farmers. Nekasarea is linked to EHNE Bizkaia's broader aim of revitalising farming in the area through agro-ecology and enticing young farmers. A training and monitoring programme helps new farmers start out using an agro-ecological approach.

Source: <http://www.ehnebizkaia.org/index.php/es/nekasarea>

The role of public policies and authorities

Shifting to an agro-ecological approach to our food system involves policy changes at a European, national and local level. Policy changes are needed to support improvements in the supply and demand of local sustainable foods, including the production of appropriate foods for local markets, improved infrastructure, such as small-scale food processing facilities, farmers' co-ops and co-ordinated marketing initiatives. Support is also needed for more research into local agro-ecological production and local food economies.

At a local level, authorities can help through their own purchasing policies and practices; as well as providing support through planning policies, which can be used to revitalise local shops; fiscal measures to support local sourcing, and specific initiatives to develop farmers' markets, community-supported agriculture, fair trade schemes and other similar initiatives.

Trade and development policies need to be refocused on benefiting local communities. And there also needs to be changes to health and safety, food hygiene, environmental health, and labelling regulations so that they do not disproportionately affect smaller producers and enterprises. Changes are also needed to traceability and labelling regulations to include compulsory information about the origin of ingredients and distance travelled.

Policy makers need to develop appropriate national, regional, and local strategies to support the development of sustainable food economies, covering the whole food chain to encourage sustainable food economies.

Conclusions

There is increasing international recognition that the current industrialised food and agriculture system is unsustainable. We need a radical overhaul of our approach to food and farming if we want to feed a growing world population. By putting food sovereignty and agro-ecology at the heart of our approach, we can focus agro-ecology on re-localising the food system. Action is needed at all levels – locally, nationally, internationally – by consumers, communities, NGOs, government officials and politicians to bring about change.

Friends of the Earth Europe believes that a radical change is needed urgently to shift towards real solutions.

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