Europeans deserve a better agricultural and food policy

The Greens | EFA
in the European Parliament

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Conventional agriculture has a massive problem. Never before has so much food been produced. Yet despite this, there are more than 800 million people who are malnourished today. Hectares of monocultures adorn our countryside, which itself brings about problems like diseases and pests needing intensive short term unsustainable 'solutions'. The soil has been deteriorating after many years of this intensive practice: now that natural fertility is so exhausted, increasingly costly synthetic fertilisers prop up productivity. Meanwhile, agro-chemical inputs – replacing functions like defence and nutrition provided by a healthy soil and a living agro-ecosystem – have become big business for only a few mega-companies that run the show. This "agro-chemical-food complex" has become entrenched as the unsustainable status quo. At the same time, even the European Commission admits biodiversity is fading rapidly, and the effect of agriculture on climate change can no longer be denied.

The question is: **who benefits from this business model?** It is not the environment. Nor is it the farmers. Neither is it public health. We definitely need another way of producing our food.

Knowledge is power

Yet there are plenty alternatives. Organic farming is one of them. We note that **the demand for and consumption of organic food is rising every year, but the European production and supply falls short of the demand.** What is wrong?

Something is preventing organic farming and food systems from scaling up/growing outside of its niche and becoming mainstream agriculture.

To explore these reasons, the Greens/EFA group in the European Parliament asked the Université Catholique de Louvain (BE) and the Organic Research Centre (UK) to carry out a study on **how the available EU research funds are spent in the agricultural sector**. Research is a key element in the exploration and development of new pathways in farming systems. After a thorough search for figures, it became clear that statistics are neither precise nor comprehensive, while billions of euros are spent. Where is this money going?

The benefits of organic farming

Despite the relative lack of statistics, the researchers found a clear imbalance between funds spent on research in organic farming and funds spent on research in so-called "green" biotechnology in the agronomic sector. As we consider these green biotechnology techniques expensive, unnecessary, risky, not transparent, undemocratic, locking farmers into expensive chemical input dependency and simply further empowering the dominant agro-chemical complex which promotes the same old fashioned chemically intensive business model dating from the 1950s. But as long as Europe's policymakers remain too cosy with (the lobby of) the agrochemical complex, and as long as at the highest levels of the Commission, the sloppy economic shorthand is used that "chemicals are good for business", things will change far too slowly. Indeed, ignoring the massive environmental and health costs of the intensive industrialised agro-chemical-food complex means that they will continue to be covered by taxpayers via the public purse.

Yet there are alternatives: organic farming methods – and by extension agroecology – have proven to be the most sustainable, not only on farm level but also for society as a whole. In organic farming, the use of synthetic fertilisers and pesticides is prohibited, the use of antibiotics in stock breeding is restricted, animal welfare is markedly better and soil health and the organic matter content is significantly higher, with lower soil erosion and higher resilience against floods and droughts. Because organic soils are healthier and full of life, plants grown in soil from an organic system are better fed with nutrients and better defended, meaning the organic food we eat is more nutritious. Furthermore, the quality of organic food is better (fewer pesticide residues), ground and surface water quality is better, and there is much more biodiversity in organic fields. In addition, farmers do well from organic: a recent comparative study across the world shows that the profitability of organic farming is 19% higher on average than conventional farming.

What are we waiting for?

The European Commission has recently paid lip service to these many benefits of organic farming. For example, in the Common Agriculture Policy (CAP) reform, organic farming was given its own measure instead of being a subset of the agro-environmental schemes. Furthermore, the Commission exempted the organic farmers from the so-called Greening obligation, normally a condition to receive the whole of the CAP direct payments as they were considered "green by definition". But this is too little.

If we really want a paradigm shift and set agriculture on the right track for the future, we need to completely reverse the current situation where organic farming finds itself in a niche - where chemical-dependent agriculture is the rule and organic the exception. Organic methods and sustainable agriculture have to become the dominant system if we stand a chance of surviving the challenges the whole of society currently faces.

Why is it that traditional seed varieties or animal breeds adapted to the needs of the organic sector are often not available on the market? Organic breeding should be stimulated using EU research funds, instead of supporting the agro-chemical complex in its necro-technological agenda and its business model. This model i) sterilises the agro-ecosystem, destroys natural fertility and free delivery of plant nutrition and defences from beneficial organisms in the wider agro-ecosystem, ii) hooks farmers on replacements for those free services, while iii) the more you use, the more is sterilised, the more you need to use and pay for replacement inputs. Instead of stimulating agro-chemical dependency of farmers via this "lock in", EU policy makers should simply chose life over death and fund research on systems that allow natural, self-enriching processes in vibrant and resilient agro-ecosystems to protect plants and ensure natural fertility and long term productivity and food security.

Such an approach would entail only collateral benefits, not damage and costs, for the environment and human health, while offering high levels of employment, fair remuneration for farmers' work and fair prices, animals kept in humane conditions, and vibrant rural communities.

This following executive summary shows the paradox we are experiencing: despite the clearly good performance of organic farming, the funding of research in this field is plainly poor. Europe and its citizens ask for much better and deserve much better, and policy makers must respond to these demands.

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→ **The extended version of the study can be downloaded at http://www.bartstaes.be/nl-BE/artikel/publicaties/research-for-transition/26266.**

Executive summary of the research and organic farming report by teams of the Earth & Life Institute (Université catholique de Louvain) and the Organic Research Centre (UK), available on www.bartstaes.be.

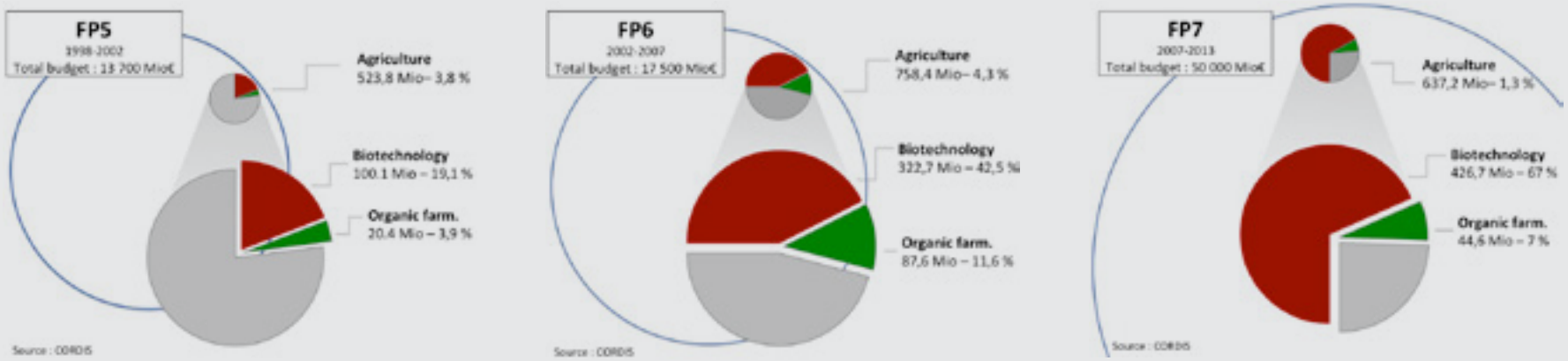
Research is a key element in the exploration of new pathways in farming systems. Organic farming relies on specific methods and a strict regulation. By design, organic farming harmonizes the environmental and productive dimensions of farming systems.

1. Funding of organic farming research is low both at EU and national levels

At the EU and national levels, statistics on the financial support to the different models of agriculture are neither precise nor comprehensive. This lack of transparency impairs any comparative analysis.

In order to assess the investment in research into organic farming, data has been collected at the EU level (Cordis database) and at a national level for four countries: France, Belgium, Germany and the Netherlands. The analysis of the CORDIS database showed a serious imbalance between agricultural biotechnologies and organic/low input farming. The total funding for European FP5, FP6 and FP7 research programmes amounted respectively to 14, 18 and 50 billion Euros. The share of research in agriculture is between 3 and 4% of this total budget. Between 1998 and 2013, the amount spent on biotechnology increases from 20 to 70% of the total agricultural research budget. In comparison, funding for research into organic farming does not exceed 12%; spending was highest in FP6 and has declined during the most recent years.

FIGURE 1: Share of organic farming and biotechnologies in the agricultural research budget of FP5, FP6 and FP7 research programmes (own calculations based on the Cordis database)



In the four countries studied in more detail, an estimate of public and private expenses on biotechnology is not available, making a comparative assessment of the investment in organic farming and biotechnology impossible. Estimates of the share of public agricultural research budgets allocated to organic farming point to an overall investment of less than 5%. The Netherlands and Belgium devote respectively 3 and 5% of the total agricultural research budget to organic farming. France and Germany lay behind with a share of only 1% for organic farming research. But data for France are only based on additional costs and are not taking into account the salaries of INRA and other research institutions implied in organic farming research projects. Funding of research into organic farming remains the exception both at EU and national levels.

TABLE 1: Synthesis of information by country

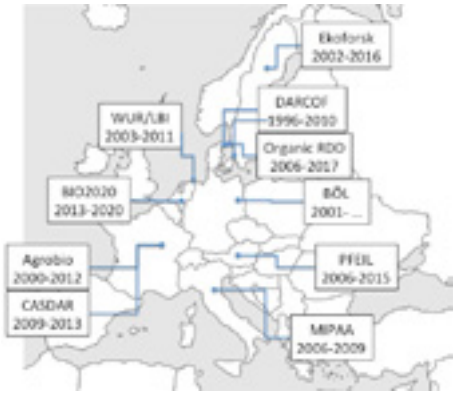
	FRANCE	BELGIUM	GERMANY	THE NETHERLANDS
Gross Value added by Agriculture to GDP (A)	1.70%	0.70%	0.90%	2.00%
Share of area in organic (2013)	3.90%	4.60%	6.40%	2.60%
Estimated spending in agricultural sciences (Mio €) (B)	313	35	718	163
Estimated spending in organic farming (Mio €) (C)	3.6	1.7	6.4	5.0
Share of spending for organic (%) (D)	1.15%	4.85%	0.90%	3.06%

(A) In 2010
(B) In 2010 Average of the five last available years (Mio €)
(C) Average of the five last available years (Mio €)
(D) Average of the five last available years

2. Several countries have specific programmes for organic farming research

In different countries, specific programmes are devoted to organic farming. The total amounts of money are limited but in most cases the programmes are multi-annual and help to build long-term expertise for the sector. Countries with long-term programmes include Denmark, France, Germany and Sweden (see figure 2).

FIGURE 2: Examples of national research programmes for organic farming



3. Organic farming provides better answer to sustainability challenges than conventional farming

Funding of organic farming research is important because organic farming represents an efficient pathway to sustainable agriculture.

A comparison of organic and conventional farming for the different dimensions of sustainability has been compiled based on scientific publications. This assessment does not claim to be fully comprehensive in all areas but it may serve to illustrate the potential of organic farming.

Environmental issues

Organic farming clearly performs better than conventional farming in the case of biodiversity, both in terms of number of species and diversity of habitats and landscapes.

The conservation of soil fertility and system stability is helped by higher organic matter contents and biological activity in the soil of organic farms. A review paper found that the median soil organic matter was 7% higher in organic farming than in conventional farming, and this is directly linked with the use of organic fertilizers (manure, compost and the use of fertility building/green manure crops) in organic farming. Organic farming also has a high erosion control potential. In top soils under organic management, the soil organic carbon concentrations and stocks of C per ha are higher.

The absence of synthetic pesticides has an obviously positive impact on ground and surface water pollution and organic farming is the first choice agricultural system for water reclamation areas.

Nitrate leaching and greenhouse gas emission per ha are up to 60% lower in organic farming. However, when assessed by unit of product, impacts of both organic and conventional farming on greenhouse gas emission are very similar.

Quality and quantity of food

In terms of quality of food, results for mineral contents, proteins, vitamins are either better or equivalent in organic farming depending on studies and type of production. Organic farming products are richer in healthy fatty acids and phenols.

By design, contamination by pesticide residues, nitrates and cadmium is lower in organic products. The difference is substantial for pesticide residues. The positive impact of the absence of synthetic pesticides in organic farming is both direct and indirect. A direct beneficial effect occurs on the health of the consumer through the reduction of the ingestion of toxic substances such as pesticide residues or cadmium (assigned a group 1-human carcinogen by the International Agency for Research on Cancer) and there also is an indirect effect on the citizens by a decrease of harmful substances in ground and surface water.

The health status of animals bred in organic farming is better than in conventional livestock systems: less metabolic disorders, a lower prevalence of lameness and fewer respiratory problems in pigs. The enterprises participating in organic farming are more likely to comply with welfare legislation and animals in organic farms have more living space. The use of chemically synthesized allopathic

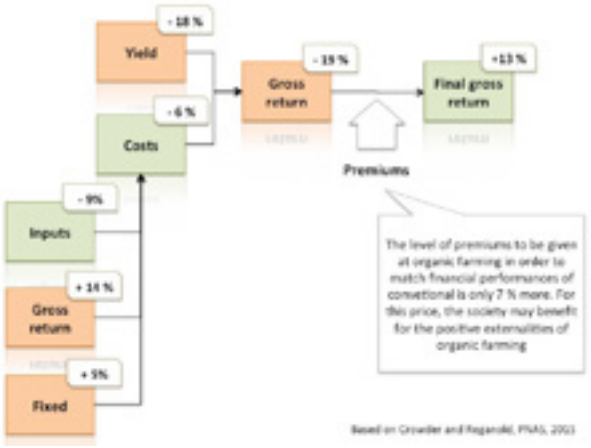
veterinary medicinal products or antibiotics for preventive treatments is prohibited in organic farming, it being at the forefront of a postantibiotic era recommended by the WHO to avoid the significant impacts of an increase in antibiotic resistance.

Most of the comparisons between organic farming and conventional farming are based on yield as the main indicator. The average organic yield is estimated at about 75 to 80% of conventional with variations according to regional conditions and crop types. However, the purpose of organic farming is the optimisation of production within the limits of natural constraints and not its maximisation by the use of external inputs. When other dimensions of productivity such as cost or externalities are considered the picture becomes more complex.

Farm profitability and labour

A recent comparative study across the world shows that the profitability of organic farming is 19% higher on average than conventional farming. This is explained by a compensation of lower yield by lower input costs and higher premiums (see Figure 3).

FIGURE 3: Comparison of financial performances of organic and conventional farms based on a meta-analysis of 44 comparisons across the world.



Considering the benefits for health and the environment of organic farming, it is noteworthy that raising premiums by just 7%, ensures an equivalent income to organic and conventional farmers.

Labour use is higher on organic than non-organic farms. More labour is needed for recycling of nutrients (e.g. composting), more diverse crop rotations with legumes for biological nitrogen fixation (such as green manures or leys), greater diversity of crops and enterprises including a higher share of more labour intensive crops (e.g. vegetables, potatoes) that require hand weeding. Organic farms use less family labour and more paid labour. More research is needed concerning questions such as: labour use by farm-type and influence of particular crops or activities, labour productivity (i.e. financial output per worker), breakdown of labour type (e.g. seasonal versus permanent) by farm type, gender of employees, analysis of processing and direct sales activities separate from production, salaries and quality of work provided (e.g. skilled versus unskilled labour).

Cross-cutting issues

In the debate between organic farming and conventional farming, the lower level of yield in organic farming is often put forward as a drawback. In fact, the productivity of food systems has exceeded the needs of the world population since the 1960s. If more than 800 million people are still hungry it is a matter of poverty and inequity and not a production related issue. A better balance between environmental and social dimensions (including human health) vs. quantity of food is possible and would favour organic farming. Moreover, as the productivity of conventional farming systems is reaching a limit despite huge investment in research and the intensive use of fossil energy and non-renewable inputs, the potential of the productivity of organic farming has still to be explored. More research into organic farming will probably increase the productivity through the development of new technological and organisational practices.

Competitiveness is often put forward in favour of maintaining conventional farming systems. This strategy is inappropriate for two reasons. First, competitiveness is exclusively defined in economic terms and doesn't include other relevant dimensions such as environmental and social impact. Second, competitiveness is by definition a distinction between winners and losers and the comparative advantages of European agriculture in a competition between industrial farming systems are limited due to the high cost of land and labour, high level of urbanisation, In contrast, it appears promising for European farms to establish themselves as leaders in biological and social diversity with pioneering farming systems based on organic and agroecological principles.

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4. Inspiring case studies

By design, organic farming is multifunctional and based on an ecosystem approach rather than the use of artificial and expensive inputs that boost production.

This is also reflected in the organisation of knowledge exchanges. Most organic farmers are in favour of a participatory vision of research, with active exchange of experience between scientists and practitioners, a collective assessment of problems and a co-design of solutions. Programmes such as the European Innovation Partnership are in line with this research and innovation process. Experience in organic farming shows the potential of such an approach.

Case studies at meso and micro levels illustrate new ways of producing knowledge in a participatory way.

Coordination of organic research programmes favours partnerships and long-term strategies

CORE Organic is a transnational partnership of 24 countries collaborating to enhance the quality, relevance and utilisation of resources in European research in organic food and farming. The total budget of three stages (from 2007 to 2015) exceeds 35 million € comprising of national contributions of partner countries and some budgets from EU. This budget is allocated to projects after a common call and selection. All research conducted under CORE is documented in Organic Eprints, an open source archive for research in organic farming (www.orgprints.org).

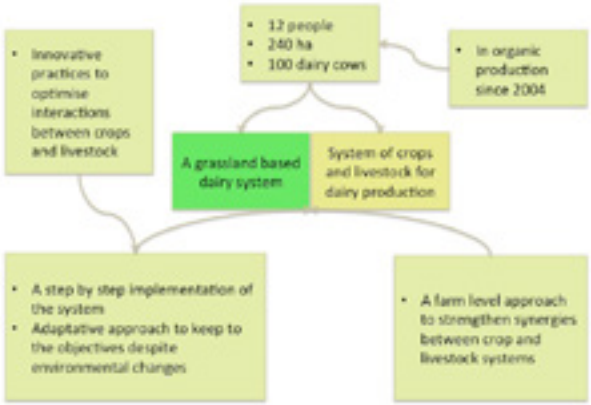
ICROFS is a Danish centre without walls with the aim to make "the principles of organic agriculture become a global reference for sustainability in agriculture and food systems due to evidence based on research and adaptive management." ICROFS coordinates the ERAnet CORE Organic. The development strategy of ICROFS is defined by farmers, researchers, consumers and politicians. A total of 63 million € has been spent since the centre started and the share of organic farming in Denmark increased from 1.8% of land area in 1996 to 6.7% in 2010).

For more than ten years, the experiences of conversion to organic farming of the Hessian State Domain Frankenhausen (Germany) and the farm at Mirecourt (North-East France) are particularly successful examples of new research design and project governance at the farm level.

The Hessian State Domain Frankenhausen, an experimental farm and research project of the University of Kassel, aims to serve as a model for ecological, economic and socially sustainable management. Intense exchange between farmers and scientists via joint manufacturing and marketing guarantees the knowledge exchange about scientific findings with praxis. Amongst other things, new alternatives have been developed to increase the potential of winter peas as a harvest crop by increasing winter hardiness and endorsing their value for cultivation in organic farming. The propagation area of the winter pea has tremendously increased from 2 to 270 ha in ten years.

Each year, 800 to 1,000 people (farmers, scientists and institutional actors) visit the organic and self-sustaining crop-livestock farming system in Mirecourt that has been piloted by INRA for 10 years. Numerous interactions with researchers have demonstrated that agricultural models given preference to autonomy and resilience, and taking into account environmental impacts can achieve profitability. Organic agriculture is redefined as a driver for socio-technical innovations and a field of opportunities rather than a set of restrictive norms.

FIGURE 4: Key elements in the success of the experimental INRA station in Mirecourt (France)



The developing of alternative models favouring self-reliant agro-systems remains a difficult political choice in a context in which conventional agriculture is overwhelming dominant. For example, among the 50 experimental projects within INRA in France, the Mirecourt experiment is the only one which is 100% organic.

The potential of funding research into organic farming

The conclusion of this report about research into organic farming is paradoxical. On the one hand, scientific evidence points to the potential of organic farming as an alternative to conventional farming and research projects based on organic farming as a paradigm are successful. On the other hand, funding of research into organic farming is very low both at European and national levels.

Organic farming is relevant and profitable at both the farm level and for society as a whole. Increasing investment in research into organic farming will help to provide some answers to many environmental and social issues of our farming systems.

This report was written by Philippe Baret, Pascal Marcq, Carolin Mayer, and Susanne Padel and commissioned by the Greens/EFA in the European Parliament.

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