THE TRUE COST OF FOOD

GREENPEACE
Soil Association
Agriculture is at a crossroads. After 4000 years of farming, agriculture has become industrialised in just 50 years - its yields increasingly reliant not on management of local resources, but on pesticides, factory farming of animals, and other intensive farming practices that damage the countryside.

This industrialisation has come at substantial cost to both human health and the environment. And the same agrochemical companies that made their name through the production of the chemicals sprayed on our fields and the hormones fed to our animals are now proposing a ‘solution’ to the problem of their own creation: it has been called the Gene Revolution. They argue that GM crops will reduce dependence on their own damaging pesticides.

In truth, far from liberating us from this destructive dependency on chemical inputs and their side-effects, genetic engineering represents an escalation of industrial farming practices. Seventy percent of GM crops are engineered to make them dependent on the agrochemical companies’ own-brand herbicides. This reinforces the agrochemical companies’ control over the future of agriculture, while tying farmers into tight contracts. The market for GM research is dominated by five major transnational agrochemical companies - Monsanto, Novartis, DuPont, Aventis, and AstraZeneca; they also sell the seeds and agricultural chemicals and fertilizers.

What genetic engineering denies us is the choice of genuinely sustainable agricultural techniques which modern organic farming represents. Genetic engineering and organic farming are incompatible. For the Government to allow GM crops to be grown is a clear judgement in favour of this technology - they have admitted...
that cross-pollination with non-GM crops is inevitable. GM crops are living organisms: they replicate, interbreed with relatives, mutate, adapt to new environmental conditions, and struggle for their survival as do all living creatures. There is no protection against this. Once released, genetic pollution will contaminate all our food - even organic.

With genetic manipulation there’s a huge new evolutionary risk and what’s been proved safe today may change into something different tomorrow. [...] Exposing genes to nature is to expose them to evolution and evolution has no designer. It is impossible to know what it is going to do next.

Professor Steve Jones, geneticist

Today we are faced with one of the most urgent choices of our time:

- Do we want industrial farming and GM food?
- or
- Do we want sustainable farming and organic food?

The choice is stark.

British people have made their opinion clear: a recent Taylor Nelson poll showed that 81% of those questioned want food producers to spend more money on developing organic food and not GM food.

Pesticide use

Soya, cotton, and maize are the largest users of pesticides. Soya and maize account for the highest percentage of world-wide herbicide sales. Cotton accounts for 24% of the global insecticide market. All three crops have been genetically engineered to be resistant to herbicides or to produce their own insecticides.

While Monsanto calculates that the amount of active ingredient used now on GM soya is one-third lower than in 1993-94 on non-GM soya, this figure does not account for the fact that its new ingredients are more potent: lower weight of active ingredient is not the same as less herbicide.

Disruption of the food chain

Crops designed to kill insect pests can also kill off the beneficial insects that either eat the insect pests or that play other important roles, like pollinating the crops.

Ladybirds fed on aphids that had eaten GM potatoes lived half as long and laid 38% fewer eggs, which were four times more likely to be unfertilised and three times less likely to hatch.

Unforeseen ecological problems

Industry and science have been wrong before - DDT, thalidomide, BSE ...

GM food is unpredictable, uncontrollable, unnecessary, and unwanted.
The real cost of industrial farming

Industrial farming is characterised by artificial chemical inputs, factory farming of animals, and destruction of habitat. The consequence is that we pay three times over for increasingly contaminated food and water - as consumers, as taxpayers, and as potential victims. But the environment bears the brunt of the cost.

Synthetic chemical pesticides
In 1997, 25,200,000 kilograms of synthetic chemical pesticides were sold in the UK. Most of these were sprayed on Britain's fields. Since the mid-1970s, three-quarters of farmland skylarks have vanished as a consequence of pesticide use and industrialised agriculture: that's 4,600,000 skylarks. A supermarket apple may have been treated 40 times with any of 100 chemicals. A US study revealed that one in ten apples has residues of organophosphate insecticides that exceed permitted limits. The risk of eating an apple with a very high residue (that may cause severe health effects) is one in 1000. So if you eat an apple a day, once in every three years you are likely to eat one of these. The UK Government's advice is that fruit should be peeled before children eat it.

Synthetic fertilizer
Up to two-thirds of synthetic fertilizer leaches away from agricultural land, and into groundwater, lakes, and streams. This can result in blooms of blue-green algae and the de-oxygenation (known as eutrophication) of water: the consequence is fish death. In March of 1998, 150 tonnes of factory-farmed trout and hundreds of thousands of coarse fish were suffocated in the Kennet and Avon Canal and on the River Dun as a consequence of algal growth.
Factory farming
The use of antibiotics has increased 1500% in the last 30 years. There are 32,000,000 battery hens in the UK. Virtually all factory-farmed chickens are fed antibiotics every day of their lives as growth promoters and to counter the disease caused by the unhealthy, cramped conditions in which they live.24 These hens live five to a cage, each allocated a space smaller than an A4 sheet of paper.25

There is a clear link between disease and factory farming - BSE is the obvious example. But salmonella, for instance, was virtually unknown in the 1940s. Food poisoning has increased 400% in the last ten years, and is now estimated to cost the taxpayer somewhere between £1 billion and £3 billion every year.26

There is widespread concern that the use of these antibiotics has led to the emergence of antibiotic-resistant strains of bacteria in humans.27

Destruction of habitat
In the last 50 years, half Britain’s natural woodlands have been destroyed,28 and 40% of its hedgerows29- enough hedgerow to stretch four times round the world - and it is still disappearing at the rate of 10,000 miles per year.30

The equivalent of 100 football pitches of grassland is lost every day in the UK. These wildflower meadows are an important feature of the English landscape and some of England’s most important wildlife habitats.31

The shorthaired bumblebee is now extinct in the UK because of loss of hay meadow habitat. The brown fritillary butterfly is also at risk.32 The corncrake, which used to be found all over the UK, has dwindled to 250 pairs in the UK, 90% of them in the Hebrides. Loss of meadow habitat and early silage cutting are blamed.33

BST milk - unwanted technology
BST, also know as rBGH, is a GM hormone injected into one-third of dairy cows in the US to increase milk production. It is currently banned in Europe. There is the real threat that the US Government and Monsanto, the agrochemical company that manufactures the product, will use the World Trade Organisation to force the product into the EU. Yet, in the US, sales of organic milk have more than tripled between 1996-1998 as a result of much-publicised reports on the use of BST.34

The BST hormone causes a five-fold increase in a protein called IGF-1, which makes its way into the milk. An EU Scientific Committee report links IGF-1 to breast and prostate cancer.35 It causes increased infection and disease in cows, making them produce more pus, and causing a substantial increase in mastitis, sores, foot problems, and reproductive disorders.36 This increases use of antibiotics.

We already produce surplus milk. The average cow’s milk yield has increased from 3000 litres per year twenty years ago to 5810 litres today. This increased production has led to surplus milk powder and butter mountains.37
The real value of organic farming

Unlike industrial agriculture, modern organic farming does not set itself in opposition to the natural environment. Nor does it expect society or the environment to shoulder responsibility for its production methods. It relies on sound management of local resources rather than artificial inputs. Modern organic farming not only produces healthy food we can trust, but it contributes significantly to the environment, society, and local community development.

PESTICIDE - AT WHAT COST?

Each time a farmer applies a kilogram of pesticide active ingredient, it costs £7.57 to clean it up. As consumers, we pay for this through our water bills. And this is simply the direct cost of cleaning up our water supply. It does not incorporate the other costs of pesticide use:

Wildlife
Water voles have virtually disappeared due to pesticide use.

Wildflowers
Since 1960, there has been an 87% reduction in distribution of the cornflower.

Birdlife
Tree sparrows, grey partridges, corn bunting, bullfinch, skylarks, and spotted flycatchers have all declined by between 70-89% in recent years.


**Chemical and GM free**

Organic farming makes no use of synthetic chemical pesticides, synthetic fertilizers, or genetic engineering. Thus, pollution of air and water is reduced, and nutrient losses are less.\(^{42}\) In Germany, some water companies have realized it is cheaper to pay farmers to convert to organic farming than to clean up the water pollution of industrial farmers.\(^{43}\)

**Improved landscape**

The traditional British landscape is characterized by woodlands, hedgerows, stone walls, orchards, mixed extensive farms, meadows, and a diversity of crops in the fields, all of which are valued features on modern organic farms.\(^{44}\)

**Diversity of wildlife**

Organic farmers have adopted specific measures to encourage wildlife and protect habitats.\(^{45}\) Organic farming standards stipulate the maintenance of wildlife habitats such as grassland, hay meadows, and moorland. There are significantly more butterflies on organic farms.\(^{46}\) Sensitive cattle grazing regimes are helping to conserve the high brown fritillary butterfly.\(^{47}\) This can be attributed to greater plant diversity, crop rotation, hedgerows, and the absence of pesticides. Populations of skylarks and other endangered bird species are significantly greater on organic farmland.\(^{48}\)

**Animal welfare**

Organic livestock are allowed to roam freely and are reared without the routine use of antibiotics, growth promoters, or other drugs. All organic farm animals are fed a healthy, natural diet and are allowed to live a decent life in decent conditions.

**Jobs**

A survey found increased employment on farms that converted to organic methods.\(^{49}\) Modern organic farming is more labour intensive than industrial farming because it is reliant on management rather than artificial chemical inputs. Overall labour requirements tend to be 10-30% higher.\(^ {50} \)

**Regional development**

Modern organic farming can make an important contribution to regional development through increased employment and local food production.\(^ {51} \) A key principle of organic farming is to localize food economies, providing processing and distribution work within the region. Because of higher employment and local consumption of food, the whole community tends to benefit.\(^ {52} \)

---

A factor that is often ignored when comparing prices of organic to conventional is the hidden costs of conventional farming. If elements such as air and water pollution, eroded soils and health care costs were factored into the price of produce, organic produce would be the same price or even cheaper than conventional products.  

*Datamonitor\(^ {53} \)*
Modern organic farming yields results

When you think how much money is spent in research terms on the genetic engineering research field - something in the region of $1.6 billion per annum, it shows, I think, how little is being spent at the moment on alternative research.

HRH The Prince of Wales

Industrial farming and agricultural policy have concentrated on ever increasing levels of production. The result has been the mass over-production of food for which there is no real market. The consequence for the taxpayer is the wasteful costs of subsidising the production of unwanted food surpluses that must be stored or dumped on world markets. This policy can be contrasted with the positive contribution modern organic farming can offer to our health and the environment.

While most comparative studies show that crop yields in organic agriculture are between 10-40% lower than industrial systems, organic systems are nowhere near their full yield potential because insufficient research, development, training, or advice support has been given to the organic industry in the past.

Currently, the Government is spending a mere £2.2 million on research and development of the organic sector, and this is principally market-oriented. By contrast, MAFF spends £125 million on R&D for industrial farming, and in 1998, the Government spent £52 million on agricultural biotechnology. However, most R&D on genetic engineering is funded by the agrochemical industry. As a result, organic yields vary considerably, according to techniques used and varieties chosen, but the potential for sustainable viable yields in professional organic businesses has been clearly demonstrated:

- A recent US study, published in *Nature*, showed that over ten years, the difference in yields between industrial and organically farmed maize was only 1%. However, the modern organic system had significant long-term advantages. Soil fertility increased dramatically under organic management, while it declined in the industrial trial. Moreover, the industrial system had a greater negative environmental impact, with a significant percentage of the synthetic fertilizer leaching into the groundwater.

- Fifty-three percent of the land area of the UK is hills and uplands, and supports 60% of our breeding ewes and suckler cows. One MAFF-funded research project into organic agriculture in the uplands started in 1991 stated: ‘Results from the organic unit at Redesdale show that it is possible to combine profitability with good levels of performance, without compromising animal welfare or the quality of the stock produced.’

However, the potential of modern organic farming is largely unrealised, as research funding has focused on industrial farming and more recently on genetic engineering. Organic yields could be improved if government and industry supported more research and development in modern organic farming.
In Sweden, even McDonalds uses organic coffee and milk in all its outlets, and has attempted to secure supply of organic meat for its burgers. In Austria, more than 15% of all fruit and vegetables sold are organic, and organic accounts for 11% of the overall food retail market. In Denmark, 20% of milk produced is organic, and the Danish Agriculture Ministry estimates that this figure will rise to 40% in the next few years.

The UK market value for organic produce could top £1 billion by next year. In February 1999 alone, UK supermarkets experienced a 35-40% increase in demand for organic food, and Marks & Spencer said its increase was ‘more than 100%’. Sales would be higher still if production increased to meet demand. Supply must increase dramatically.

The UK imports 80% of its organic fruit and vegetables. The majority of these imports are for staples such as onions, carrots, potatoes, and brassicas, and come from other European countries - particularly Germany, Holland, and Italy. If the right mechanisms were put in place to encourage organic production, UK farmers could easily supply these staples.

The UK Government has earmarked just £6.2 million in 1999 for a revised Organic Conversion Scheme to assist farmers in conversion to organic farming. ‘We have had as many applicants in the first two weeks of the new scheme as, on average, in each year since the scheme was first introduced in 1994. So funds may run out for this year.’ By contrast, in 1998, £75,589,275 was paid in England and Wales on ‘set-aside’ - a scheme designed to take industrial farmland out of production and thereby reduce surpluses. Unlike other European countries, our Government does not support organic farmers after a five year conversion period.

However, modern organic farming and food production represents a huge commercial opportunity, with massive potential for rural development, environmental protection, and job creation.

This market is going to go one way - and that is up. We can’t get enough organic foods... We are desperate to find ways of getting more farmers and growers to convert.

J. Sainsbury

Organic targets

Land farmed organically in Europe could reach 30% by 2010 if current trends continue. Some predict that up to 50% of EU agricultural land could be farmed organically by 2020.

Germany and Sweden aim for 10% of their agricultural land to be organic in the next few years. The Danish Government aims to treble Danish organic production over the next five years, and hopes that it will grow to 50% within the next ten years. Austria has already reached 10%, with some sectors of Austria already 50% organic. Less than 1% of UK agricultural land has organic certification, and the UK has no targets.
Conclusion

UK agricultural policy can be characterised by irresponsible short-term priorities and a failure to respond to public needs.

Irresponsible short-term priorities
Current market policies for agriculture emphasise quantity at the cost of food quality, public health, animal welfare, and environmental protection.

A failure to respond to public needs
Industrial agriculture does not serve the needs of the environment, the farming community, or the people it feeds.

Time for modern organic farming
Modern organic farming can match industrial farming in terms of genuine profitability and productivity. Unlike industrial farming, it does not favour the overproduction of unwanted goods and does not destroy that resource - the soil - upon which sustainable food production ultimately depends. The barriers to modern organic farming in the UK are not technical, but political and institutional.

The Government must act now to put in place a responsible agricultural policy that produces food that is safe, healthy, and farmed in an environmentally responsible way.

Policy Recommendations

Ban genetic engineering in food and farming
Because of the inevitability of cross-pollination and genetic contamination, GM food and organic farming are incompatible. The health and environmental risks of genetic engineering in food and farming are unacceptable.

Phase - out artificial chemical inputs
Pesticides and other synthetic chemical inputs, growth hormones, and routine antibiotics should be phased out. Polluters should compensate for environmental destruction.

Go organic
The UK should set in place a long-term national conversion strategy which will support the shift of all our agriculture to organic methods. The UK conversion to organic farming should at least equal that of the rest of the EU - 30% by 2010 if current rates of growth continue. The UK should meet domestic demand for organic and aim to export.
References

1 DETR consultation paper, Genetically Modified Crops: wider issues - biodiversity and the agricultural environment leaked 21 February 1999
2 The Soil Association
3 Science and Technology Select Committee Hearing 26 April 1999
4 GeneWatch UK
5 Gary Barton, Director of Biotechnology Communications, Monsanto as reported in The Independent on Sunday 25 April 1999
6 Andrew Simms, Christian Aid, in The Guardian 10 May 1999
7 The Food Magazine April/June 1999 and other sources
8 The report, Organic Farming and Gene Transfer from Genetically Modified Crops, was commissioned by MAFF and leaked to the Daily Mail 12 May 1999
9 BBC interview 14 April 1999
10 1999 Taylor Nelson poll
11 The SAFE Alliance, Soya: the ubiquitous bean April 1999
12 The Pesticides Trust, Organic Cotton: from field to final product 1999
13 SCRI annual report 1997
14 The Soil Association; Jules Pretty, The Living Land 1998; Radio Four Today Programme
15 The SAFE Alliance
16 Dr Carlo Leifert, University of Aberdeen Centre for Organic Research
17 David Buffin, Pesticides Trust; The SAFE Alliance, Food Indicator's Report; Datamonitor, Natural and Organic Food and Drinks 1999
18 RSPB press release 21 March 1999
19 The Times 10 April 1999; The Daily Mail 13 April 1999
20 Pesticides Trust, Pesticides News number 39
21 MAFF, Food and Pesticides
23 Environment Agency news release 27 March 1998: nb - no link established to fertilizer
24 Compassion in World Farming
25 Compassion in World Farming
26 Compassion in World Farming, Factory Farming and Human Health 1997
29 Jules Pretty, The Living Land 1998
30 Graham Harvey, The Killing of the Countryside 1997
33 Wildlife Trusts
34 Datamonitor, Natural and Organic Food and Drinks 1999
35 EU Scientific Committee on Veterinary Measures relating to Public Health
36 EU Scientific Committee on Animal Welfare reports, The Women's Environmental Network
37 The SAFE Alliance
38 Jules Pretty, The Living Land 1998
40 Plantlife as reported by John Ingham, The Express 22 April 1999
41 Joint Nature Conservation Committee, The Indirect Effects of Pesticides on Birds 1997
42 ESRC Global and Environmental Change Programme Briefing number 17
43 Jules Pretty, The Living Land 1998
44 Countryside Commission, Effects of Organic Farming on the Landscape
45 Countryside Commission, Effects of Organic Farming on the Landscape
47 The SAFE Alliance
48 Joint Nature Conservation Committee, The Indirect Effects of Pesticides on Birds 1997
49 The SAFE Alliance, Double Yield: jobs and sustainable food production 1997
50 Nic Lampkin, Organic Farm Management Handbook 1999
52 Robert Beaumont, Organic Retail Guild
53 Datamonitor, Natural and Organic Food and Drinks 1999
54 Council for the Protection of Rural England, Meadow Madness: why the loss of England’s grasslands continues uncontested March 1999
55 Pesticides Trust
56 Pesticides Trust, Austrian Federal Ministry of Agriculture & Forestry report prepared for EU
57 The SAFE Alliance, The Perfect Pinta? 1998
58 Pesticides Trust and Friends of the Earth-USA
59 Dr Carlo Leifert, University of Aberdeen Centre for Organic Agriculture
60 MAFF
61 PQ 67712
62 PQ 80791
64 Ray Keatinge, ADAS Redesdale
65 Datamonitor, Natural and Organic Food and Drinks 1999
66 Datamonitor, Natural and Organic Food and Drinks 1999
67 Datamonitor, Natural and Organic Food and Drinks 1999
68 Danish Agriculture Ministry 3 February 1999
69 Simon Brennan, The Soil Association
70 The Independent March 1999
71 Gordon Brown PQ 54385
73 Lord Donoughue, House of Lords
74 PQ 80905
75 Robert Duxbury, Technical Manager, Sainsbury’s, The Telegraph 7 January 1999
76 Nic Lampkin, Organic Farming Unit, Welsh Institute of Rural Studies
77 Nic Lampkin, Organic Farming Unit, Welsh Institute of Rural Studies and Datamonitor, Natural and Organic Food and Drinks 1999
78 Farmers Weekly 14 May 1999