



Climate change and agriculture

The threat of climate change

The latest grim conclusions by international scientists is that our world is already heating up and is now on the brink of runaway global warming. Once average temperatures reach 2°C above the levels of 250 years ago, it is predicted that we will face changes such as major droughts, widespread crop failures, devastating rises in sea levels and the death of forests.

The impact of agriculture on the climate

The International Federation of Organic Agricultural Movements (IFOAM) believes that modern agriculture is a largely overlooked contributor to climate change. Agriculture is a very large source of the major greenhouse gas emissions: carbon dioxide, nitrous oxide and methane. Some of the main sources of these emissions in agriculture are not yet being addressed by policy-makers.

Probably the single main source of greenhouse gases in current food production methods are from fertilisers:

- the production of fertiliser is an energy intensive process which uses fossil fuels as a raw material (mostly methane). This results in the emission of large quantities of carbon dioxide and nitrous oxide.
- when fertiliser is applied to the land it emits more nitrous oxide emissions.
- fertilisers also acidify the soil, requiring the regular application of lime by farmers, the production of which in turn produces more carbon dioxide.
- fertilisers also have the effect of suppressing the soil micro-organisms that break down methane in the atmosphere. By reducing the soil oxidation rates, fertilisers cause there to be more methane in the atmosphere than there would otherwise be.

Overall, fertilisers are the largest source of carbon dioxide emissions in agriculture and the single largest source of nitrous oxide emissions for all sectors in the world. But there is no policy targeting this source at the moment in Europe.

Soil is also major store of carbon, containing about twice as much carbon as the atmosphere. However, scientists have discovered that soil is losing its carbon content on a large scale. Agriculture is the main land use in Europe and the move from using organic matter to inorganic fertiliser and intensive grazing are likely to account for much of these losses.

Organic farming can play a major role in addressing climate change

We believe that organic farming is the most sustainable way of producing food and, in particular, will substantially reduce many of the key impacts of agriculture on the climate:

- 1. Reduces fossil fuel energy use** - Organic farming uses nature rather than industrial processes, so it requires far less energy to produce food. One study by the UK Government found that organic farming requires about half the amount of energy as conventional farming to produce the same amount of food. The main reason for this is because it uses organic matter and soil biology for

crop nutrition, instead of energy-intensive fertilisers.

- 2. Increases the carbon content of agricultural soils** - Organic farming is based on the use of organic matter. This builds up carbon in the soil. Studies, including long-term trials by the Rodale Institute in the United States found that organic farming maintains and often increases carbon levels substantially.
- 3. Increases soil methane oxidation rates** - by not using fertiliser, organic farming maintains the role of soil micro-organisms in oxidising atmospheric methane.
- 4. Reduces transport** - organic farming is a genuinely local production system as most crop nutrition, animal health and pest control is carried out by natural processes in situ on farm. Non organic food, even if sold locally still involves the transport of fertiliser, much animal feed, pesticides and veterinary drugs that account for a high proportion of the growth in road transport in recent decades.

The Soil Association is lobbying the Government to:

Promote sustainable agricultural systems. Organic farming, with its proven benefits for tackling climate change and other environmental challenges, should be actively promoted and adopted internationally. In particular the green house gas emissions caused by manufacturing and using fertilisers needs to be included in climate change predictions, as does the alarming reduction of carbon in the soil caused by non-organic farming. It is unacceptable that intensive, fossil-fuel dependent farming is being promoted abroad by our Government and international institutions.

The evidence is clear. Organic farming could make an enormous contribution to the reduction of the greenhouse gas emissions that threaten the future of all life on earth. The Soil Association believes that over time all farming should switch to modern organic methods. Additionally wherever possible, food should be bought close to its point of production. It is imperative that we take steps to feed ourselves sustainably - without depleting non-renewable resources like soil and fresh water, and without contributing to climate change.

How can I support the work of the Soil Association?

The Soil Association is a membership charity, we urgently need your support to continue our work. As public support for the Soil Association continues to grow, our ability to influence the thinking and policies of government and big business grows with it. In this way we help to develop a truly healthy and sustainable future. Join us today and help us to continue campaigning for sustainable agriculture and organic food. You can join the Soil Association on our website, over the phone or by writing to us.

⁴Transport Statistics for Great Britain 2004. Department of Transport

Further Reading

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Version149.5 Approved: