Food and Agriculture

The Problem

- It is generally agreed that about 25% of carbon dioxide emissions, are produced by agricultural sources, mainly deforestation, the use of fossil fuel-based fertilizers, and the burning of biomass.
- The use of pesticides in conventional agricultural systems not only protects plants from insects, rodents and fungi but also has non-beneficial effects both on human and animal health and the environment.

Policy Relevance

Organic food and farming

- Council Regulation (CE) N. 834/2007 on organic production and labelling of organic products.

Plants and plant products protection - Pesticides

- Directive 91/414/EEC on The Evaluation, Marketing and Use of pesticides in plant protection.
- Regulation 396/2005 and amendments on Pesticide Residues in Food.
- Thematic Strategy on Sustainable Use of Pesticides that aims to fill the current legislative gap regarding the use-phase of pesticides in the EU (Framework Directive and Regulation Proposal).

Best Practices

- Denmark: national pesticide use reduced by 50%
- Italy: a pesticide-free food campaign undertaken by a non profit-making organisation

Links and References

The Problem

It is generally agreed that about 25% of carbon dioxide emissions are produced by agricultural sources, mainly deforestation, the use of fossil fuel-based fertilizers, and the burning of biomass.
Although agriculture accounts for only 9% of greenhouse gas emissions, it is the main source of methane (CH_4), and nitrous oxide (N_2O) emissions. On the other hand, conversion of agricultural land to forest offers considerable potential in absorbing CO_2 from the atmosphere. Most of the methane in the atmosphere comes from domestic ruminants, forest fires, wetland rice cultivation and waste products, while conventional tillage and fertilizer use account for 70% of the nitrous oxides. According to the Intergovernmental Panel on Climate Change, the three main causes of the increase in greenhouse gases observed over the past 250 years have been fossil fuels, land use, and agriculture.
Over the past centuries, human ingenuity has led to technological advances in agriculture that have allowed for substantial increases in crop yields, in part stimulated to meet population growth. Intensive agricultural methods are reported to have detrimental effects on the environment.
Agriculture contributes to greenhouse gas increases through land use in different ways:

- CO_2 emissions linked to deforestation in temperate regions: where forests and woodlands are cleared to make room for fields and pastures.
- Methane emissions from rice cultivation and enteric fermentation in cattle.
- Nitrous oxide emissions from fertilizer applications.

Together, these agricultural processes comprise 54% of methane emissions, roughly 80% of nitrous oxide emissions, and virtually all carbon dioxide emissions tied to land use. Deforestation for land clearing purposes also affects regional carbon reuptake, which can result in increased concentrations of CO_2, the dominant greenhouse gas. Worldwide, livestock production occupies 70% of all land used for agriculture, or 30% of the land surface of the Earth.

In conventional agriculture systems, the use of pesticides not only protects crops from insects, rodents and fungi but is also responsible for environmental damage such as water pollution and presents risks to human health.

The yield of agricultural and horticultural crops can be severely reduced as a result of infestation by pests and diseases. In order to protect crops before and after harvest, pesticides are used. Conventional agriculture makes extensive use of pesticides (insecticides, fungicides, herbicides) which are chemical formulations containing an active substance and other ingredients.

<u>Human Health</u>
Every year over 200,000 tonnes of pesticides are released into the European environment. These chemicals cause harm not only to the pest species they are intended to control, but in many cases have the potential to impact upon the well-being of human adults and children.
This overlap is particularly associated with insecticides designed to interfere with biological systems common throughout the animal kingdom, such as the nervous and reproductive systems. Worryingly, the EU's use of insecticides has more than doubled over the past decade. All of the EU's top 10 insecticides are described as hazardous by the World Health Organisation (WHO).
Evidence relating to the negative health impacts of pesticide exposure is rapidly mounting. New findings reported at the European Respiratory Society annual meeting in September 2007 showed adults in contact with pesticides are at a higher risk of developing respiratory problems. An EU study on Parkinson's Disease found that low level exposure may increase the chances of developing the condition - which now affects 1% of EU citizens aged over 60. And scientists in Canada have found evidence linking pesticides with cancer, including Leukaemia and Non-Hodgkin's Lymphoma.

Food Contamination

In 2007 the European Commission published the results of its own pesticide residues analysis. Of the 60,450 food samples sourced from across the 27 EU Member States, some 45.7% of food items tested were found to contain pesticides, including 5% – one item in 20 – which contain pesticides at levels above EC legal limits. While fruit and vegetables show the highest likelihood of pesticide contamination, cereals, processed foods and baby foods are also widely affected. In total 349 different pesticides are present in food products sold in the EU .
Over 25% of fruit, cereals and vegetables tested in the EU contain two or more different pesticides. While over 5% of fruit, cereals and vegetables tested in the EU contain 5 or more different pesticides. More than ten different pesticides are detected most frequently in sweet peppers and grapes.

Pesticides applied to food crops:

More than 140,000 tonnes of synthetic pesticides (active substances) are sprayed onto EU food crops each year – equivalent to 280 grams of pesticides for every European citizen. Grapes, citrus fruit and potatoes are the three most intensively sprayed food crops in the EU and all receive over 6kg/ha of synthetic pesticides.

Pesticides in wine

A 2005 study published by the French Ministry of Agriculture found that French wine was systematically contaminated with pesticides. A PAN Europe analysis of 34 bottles of conventional wine produced from across France, Germany, Italy, Austria, Portugal, South Africa, Chile and Australia found that all bottles tested contained pesticides.

Water Pollution

In intensive agricultural systems, the over-use of pesticides and fertilisers means that such quantities cannot immediately absorb in crops and soil. Excess phosphorus, nitrates and pesticides move through the soil and reach water bodies, leading to problems such as algal bloom and contamination of human drinking water. According to a recent study conducted on behalf of the European water industry, pesticide contamination is most acute in lowland river areas, particularly in Belgium, France, Netherlands and the UK. In all four of these countries, a high proportion of the resources contain residues above the legal threshold, often by a significant margin. In Germany, Denmark and the Netherlands too, pesticide pollution in excess of legal limits now affects up to 10% of all groundwater resources.
Unsurprisingly, several of the contaminants which most regularly cause water pollution problems across Europe are ranked among those pesticides most commonly used within the EU (the weed killers: Atrazine, Isoproturon and MCPA).
With substantial levels of pesticides now contaminating European water resources, utility companies across the EU are forced to spend large sums on water treatment every year. Estimates suggest annual investments of €24.4 million in the Netherlands, €130 million in Germany, and €170 million in the UK. Ultimately these costs are passed onto consumers.

Policy References

Organic food and farming

Council Regulation 834/2007: in 1991, the European Union was one of the first to set up a policy on organic farming defining in detail the requirements for agricultural products and foodstuffs bearing reference to the production methods used. In June 2007 new EU regulations came into effect for the production, control and labelling of organic products (Council Regulation 834/2007on organic production and labelling of organic products). Foods may only be marked as "organic" if at least 95% of their agricultural ingredients are organic. According to the new legislation, producers of packaged organic food must use the EU organic logo as of 1

July 2010. The EU organic farming (http://ec.europa.eu/agriculture/organic/home_it) renders consumers confident about the origins and qualities of their food and drink and its presence on any product ensures compliance with the EU organic farming Regulation. At present, organic farming operators can opt to place the EU logo on their products; from July 1st 2010 it will become compulsory. The advantage of using the EU logo is that consumers in any Member State can easily recognise organic produce, regardless of where it comes from.

Plants and plant products protection - Pesticides

Council Directive 91/414/EEC dated July 15th 1991: until September 2008, European legislation for the evaluation, marketing and use of pesticides (Council Directive 91/414/EEC dated July 15th 1991) was a shared responsibility of the Commission and the Member States, thus resulting in different levels of protection within Member States.

As of September 1st 2008 *Regulation 396/2005***,** a new legislative framework on pesticide residues came into force. This Regulation completes the harmonisation and simplification of pesticide Minimum Risk Levels (MRL) throughout the EU. With the new rules, MRLs undergo a common EU assessment to ensure that all classes of consumers, including those more vulnerable, like babies and children, are sufficiently protected. The review of existing pesticides has led to the removal from the market of pesticides which cannot be used safely. Of some 1000 active substances on the market in at least one Member State before 1993, 67% have been eliminated because dossiers were either not submitted, incomplete or withdrawn by the industry. The safety assessment for consumers is undertaken by the European Food Safety Authority (EFSA). The legislation covers the setting, monitoring and control of pesticide residues in products of plant and animal origin that may arise from their use in plant protection. Despite the positive aspects of this new legislation, the application of these regulations is not free from criticism. For example, while EU food safety regulations set maximum pesticide levels, current risk assessments do not take into account the long-term impact of exposure to multiple pesticide residues.

Framework Directive on the sustainable use of pesticides: In July 2009, the EU Parliament voted to restrict the use of toxic pesticides. The "pesticide package", that will have to be adopted by the Council, includes a new Regulation tightening pesticide usage and authorisation rules in Europe and a Framework Directive on the sustainable use of pesticides**,** and aims to fill the current legislative gap regarding the use-phase of pesticides. The UK, Ireland, Spain and Hungary oppose the deal, claiming that it will seriously affect agricultural production and increase food prices.

Best Practices

Scientists and policy analysts are increasingly pointing to the climate change benefits of transitioning to organic agriculture. Organic agriculture can help by reducing greenhouse-gas-intensive inputs, improving energy efficiency, and significantly increasing carbon sequestration in soils. Organic agriculture may also be more resilient to changing climate conditions than conventional agriculture because it increases soil fertility, helps crops survive drought, and promotes greater biodiversity.

Organic farming also makes economic sense and organic market share gives positive signals. This is because consumers are becoming more and more aware of what they eat. A 2006 survey undertaken by the European Commission found that 70% of EU citizens are either ‘very worried’ or ‘fairly worried’ about the pesticides in fruit, vegetables or cereals. The study ranked pesticides as Europe’s number one food issue with consumers expressing more concern on pesticides than any other topic.

At the end of 2007, 7.8 million hectares in Europe were managed organically by more than 200,000 farms. Twenty-four percent of the world's organic land is in Europe. The countries with the largest organic areas are Italy (1,150,253 hectares), Spain (988,323 hectares) and Germany (865,336 hectares) (2007). Compared to

2006, organic land increased by more than 0.3 million hectares. Sales of organic products were approximately Euro 16 billion in 2007. The largest market for organic products in 2007 was Germany with a turnover of Euro 5.3 billion (2008: Euro 5.8 billion), followed by the UK (Euro 2.6 billion), France and Italy (both Euro 1.9 billion).
Targets for pesticide use reduction have been adopted in Denmark, Sweden, Netherlands, France and Germany.

Denmark: national pesticide use reduced by 50%

In 1986, Danish politicians established a national 'Pesticide Action Plan' aimed at achieving a 50% reduction in pesticide use. The Government introduced market incentives to encourage low pesticide farming and financed a comprehensive advisory service to work with farmers in using pesticides more effectively.

Twenty years on, the results are remarkable: Denmark's farmers now use half as many pesticides as they did 20 years ago; Danish vegetables are six times less contaminated than their equivalent imports; water quality has doubled; and without significant economic impact to farmers. The Danes attribute their success to a combination of instruments including clear targets and indicators, a parallel revision programme of all substances in the Danish market, buffer zones for the protection of water resources, and mandatory record keeping. Farmers are supported by a comprehensive independent training system.
Contacts: Email: elliott-paneurope@pan-uk.org More info on www.pan-europe.info

Italy: a pesticide-free food campaign undertaken by a non profit-making organisation

In 2001 Legambiente, Italy's largest environmental NGO, launched a project aimed at supporting farmers in producing fruit and vegetables in compliance with a set of standards including improved animal welfare, no use of genetically modified organisms (GMOs) and zero pesticide residues. There are clear guidelines for farmers joining the scheme and support from an independent advisory service. There is a clear labelling system (LAIQ) and a good marketing strategy, with consumers and retailers accepting a slightly higher price for products that comply with stricter environmental and animal welfare criteria.

website: http://www.legambiente.eu/documenti/2004/1112alimentazione/1007laiqcampagna.php
Contacts: Davide Sabbadin email energia@legambienteveneto.it

Links and References

- General information on active substances and on plant protection products http://ec.europa.eu/food/plant/protection/evaluation/ index_en.htm
- To find out which active substances are approved in Europe, a database can be consulted on the website of the European Commission http://ec.europa.eu/sanco_pesticides/public/index.cfm
- Strategy on the sustainable use of pesticides http://ec.europa.eu/environment/ppps/home.htm
- Annual EU-wide Pesticide Residues Monitoring Report. http://ec.europa.eu/food/fvo/specialreports/pesticides_index_en.htm
- Pesticide Action Network website http://www.pan-europe.info/default.htm
- "Pesticide Use Reduction Strategies in Europe" Six European best practice, http://www.pan-europe.info/default.htm
- General information on EU activity and policy on the issue "Food and agriculture" EuroActive website http://www.euractiv.com/en/cap
- European Food Safety Authority http://www.efsa.europa.eu
- Regional and country information is provided with a focus on organic farming statistics http://www.organic-europe.net/
- Global data collection on organic agriculture http://www.organic-world.net/index.html

- The EU Organic Farming Information System (OFIS) website that provides information on relating to organic products and for the provision of current information for the public http://ec.europa.eu/agriculture/ofis_public/index.cfm