



Factsheet: Biodiversity and pesticides

If biodiversity is to be restored in Europe and opportunities are to be created for crop production utilizing biodiversity-based ecosystem services such as biological pest control, there must be a Europe-wide shift towards farming with minimum use of pesticides over large areas

(Geiger, F. et al. Persistent negative effects of pesticides on biodiversity and biological control potential on European farmland. Basis and Applied Ecology (2010), doi: 10.1016/j.baae.2009.12.001)

March 2010

Biodiversity is vital: Reducing pesticide dependency

Pesticides have a major effect on biological diversity, alongside habitat loss and climate change. They can have short-term toxic effects on directly exposed organisms, and long-term effects can result from changes to habitats and the food chain. Policy intervention and greater coherence are urgently needed!

What is biodiversity?

Biological diversity is life. Our life as it spans the immense range of ecosystems, species and individuals.

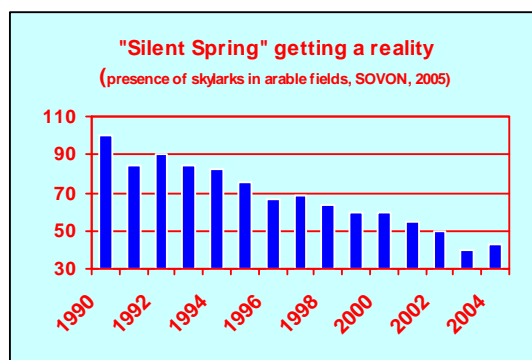
Why is biodiversity important?

Charles Darwin and Alfred Wallace were among the first to recognise the importance of biodiversity for ecosystems, suggesting that a diverse mixture of crop plants should be more productive than a monoculture. Recent studies confirm that an intact, diverse community generally performs better than one which has lost species (Chapin *et al* 2002). Ecosystem stability (resilience to disturbance) seems to arise from groups of connected species being able to interact in more varied positive and complementary ways (Tilman 2002). Communities of different animal and plant species perform vital functions within ecosystems. Ultimately, biodiversity is life.

How pesticides influence biodiversity

Half a century ago, Rachel Carson's 'Silent Spring' clearly revealed the far-reaching environmental impact of pesticides, showing how some chemicals, organochlorines, a large group of insecticides are highly persistent in the environment.

Insecticides, rodenticides and fungicides (for seed treatment) and the more toxic herbicides all threaten exposed wildlife. Some pesticides lead to direct poisoning of species can cause major population declines which threaten rare species. Other pesticides gradually accumulate in the food chain, something which matters particularly to vertebrates, and not least to higher order species and top predators like mammals or raptors. Non-targeted predatory mammals (eg dogs and foxes) and raptors often suffer 'secondary poisoning' by eating mice which have been poisoned by rodenticides. Finally, pesticides can reduce the abundance of weeds and insects which are important food sources for many species.



A 1997 report cites pesticides as a factor in the decline of British farmland bird species over the previous 30 years. In the Netherlands a typical arable field bird like the skylark is threatened with extinction because of the lack of wild plants and heavy pesticide use. In Germany, over 130 plants found near farmland are endangered or have vanished.

'A Europe-wide study in eight West and East European countries found important negative effects of agricultural intensification on wild plant, carabid and bird species diversity and on the potential for biological pest control. Of the 13 components of intensification measured, the use of insecticides and fungicides had consistent negative effects on biodiversity. The study concludes that despite decades of European policy to ban harmful pesticides, the negative effects of pesticides on wild plant and animal species persist. At the same time the opportunities for biological pest control is reduced. If biodiversity is to be restored in Europe and opportunities are to be created for crop production utilizing biodiversity- based ecosystem services such as biological pest control, there must be a Europe-wide shift towards farming with minimal use of pesticides over large areas' (F;Geiger et al. Persistent negative effects of pesticides on biodiversity and biological control potential on European farmland. Basic and applied ecology (2010). Doi:10/1016/j.baae.2009.12.001)

We need a biodiversity rescue plan

The UN Convention on Biological Diversity requires EU countries to set targets for biodiversity conservation. National ambitions vary greatly, so the 2010 objectives to halt further biodiversity loss need a new rescue plan for 2020, setting clear targets, timetables, ambitious monitoring, and ensuring better coherence with other EU policies.

A coherence with other EU policies means serious implementation of already established policies (protection of sensitive areas of the Natura 2000 network, water framework directive and serious implementation of the new regulation on authorisation of plant protection products, and on how seriously EU countries implement the new framework directive for sustainable pesticide use, starting by setting dependency/use pesticide reduction targets and clear timetables. Also It will depend on new EU policies (on soil) as well as reforming the Common Agricultural Policy into a model encouraging farmers for developing better agricultural practice, supporting more mixed agriculture, crop rotation and pastoral grassland, lower field-size or even larger field margins, reestablishing hedgerows into a system with high diversity, encouraging farmers willing to make environmental and health improvements,

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Pesticide Action Network Europe (PAN Europe) was founded in 1987 and brings together consumer, public health, and environmental organisations, trades unions, women's groups and farmer associations from across 19 European countries. PAN Europe is part of the global network PAN working to minimise the negative effects and replace the use of harmful pesticides with ecologically sound alternatives.