

Organic farming shows limited benefit to wildlife

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Organic farms may be seen as wildlife friendly, but the benefits to birds, bees and butterflies don't compensate for the lower yields produced, according to new research from the University of Leeds.

In the most detailed, like-for-like comparisons of organic and conventional farming to date, researchers from Leeds' Faculty of Biological Science found that the benefits to wildlife and increases in biodiversity from organic farming are much lower than previously thought - averaging just over 12 percent more than conventional farming.

The organic farms in the study produced less than half of the yield of their conventional counterparts, so the research - published online today in *Ecology Letters* - raises serious questions about how we can use [agricultural land](#) to maximise food production and still protect our wildlife.

"Over the next forty years, we're going to have to double food production worldwide to keep pace with population increases," says Professor Tim Benton, who led the project. "Our results show that to produce the same amount of food in the UK using organic rather than conventional means, we'd need to use twice the amount of land for agriculture.

"As the biodiversity benefits of organic farming are small, then the lower yield may be a luxury we can't afford, particularly in the more productive areas of the UK."

Organic farms have come out well in earlier research into biodiversity and wildlife, but as these farms tend to be found in areas with smaller fields, more hedges and woodland, they start with an advantage. The Leeds project, funded under the Rural Economy Land Use programme, aimed to see if organic farming was still as good for wildlife if these landscape effects were taken out of the

equation.

The research looked at two areas in Central South West England and the North Midlands, taking into account over 30 variables covering climate, topography, socio-economic conditions, land use and soil type. Thirty-two organic and non-organic farms were paired together, some in 'hotspot' regions with many organic farms and others in 'coldspots' with very few, to help identify any cumulative impacts over a wider area.

Comparisons were made also between individual fields, with 192 fields sampled in all. The research looked at birds, insects (including butterflies, bees and hoverflies), earthworms and plants.

Comparing farm by farm, the researchers found a 55 per cent drop in yield compared to a 12.4 per cent increase in biodiversity. However, comparisons between larger areas found that 'hotspots' with a greater density of organic farming showed a 9.1 per cent increase in biodiversity across the board.

"If one field is managed organically without use of herbicides, that can benefit plant species in a field by field comparison, but it won't affect enough of an area to impact on pollinating insects, for example," explains co-researcher on the project, Dr Doreen Gabriel. "However, if you aggregate organic farms together, the benefits can be seen across a wider range of species."

The research also threw up some unforeseen negative impacts. Conventional farms in 'hotspots' tended to use higher levels of herbicides than those in 'coldspots' to counteract the seeds coming across from their more weed-tolerant neighbours. And numbers of small farmland birds were actually lower on organic farms, as these tend to attract birds such as magpies and jays, which prey on smaller birds.

"Organic methods may be a useful part of the land

management mix for the less productive parts of the UK, particularly if policies can encourage farmers to coordinate activities to maximise the benefit to wildlife across a larger area," says Professor Benton.

"However, given the lower yield and the limited biodiversity benefit of [organic farming](#), it isn't sustainable to promote it as the best or only method of agriculture. To meet future demands of food production, we will need to keep farming our most productive areas in the most intensive way we can - and potentially offset that by managing some of our remaining land exclusively as wildlife reserves."

Provided by University of Leeds

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