

Is organic farming good for wildlife? It depends on the alternative

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Even though organic methods may increase farm biodiversity, a combination of conventional farming and protected areas could sometimes be a better way to maintain food production and protect wildlife.

The findings come from a study of butterfly populations in UK landscapes by scientists at the Universities of Leeds and York. They found that [organic farms](#) have more butterflies than conventional farms, but that a conventional [farm](#) plus an area specifically managed for wildlife could support more butterflies, and produce the same amount of food, from the same area of land. However, the wildlife area would have to be similar in quality to a nature reserve, rather than similar to an uncultivated field margin.

The study is the first to seek to establish the trade-off between the most efficient use of farmland and the most effective way to conserve wildlife in our countryside and has important implications for how [agricultural land](#) in the UK should be managed

The research, which involved scientists from the Institute of Integrative and Comparative Biology, at the University of Leeds, and the Department of Biology at the University of York, is published in the online edition of [Ecology Letters](#).

Author Prof. Bill Kunin of the University of Leeds says: "It's not enough to know how much biodiversity an agricultural field supports, we also

need to know how much food it produces. If 'sharing' our farmland with wildlife means that more total land will be taken into production to produce our food, then there may be a hidden cost of hurting wildlife somewhere else."

The scientists measured the density and numbers of species of butterflies in organic farms, conventional farms and grassland [nature reserves](#) in 16 locations in the South of England, the Midlands and Yorkshire. They used butterflies as a wildlife example because of their sensitivity to small-scale habitat change, and focused on winter cereal and pasture fields because they are among the commonest crops.

The team project that a combination of conventional farming and nature reserves would be better for butterflies if the organic yield per hectare falls below 87 per cent of conventional yield. But if the uncultivated land is not specifically managed for wildlife - being more like unmanaged field margins - organic farming would be better whenever organic yields rise above 35 per cent of conventional yields. The relative yield of organic farming is often somewhere between 35 per cent and 87 per cent of conventional yield, depending on the type of crop and landscape. The trade-off might also be different for other types of wildlife: for example wildflowers benefit more from organic farming than butterflies, and many birds do not benefit at all. The results suggest that organic farming will be better when organic yields are high and when spared land has low value to wildlife. Conventional farming will be better when organic yields are low and spared land is of high wildlife value.

Lead author, Dr Jenny Hodgson, of the Department of Biology at York, said: "This research raises questions about how agri-environment schemes and incentives could be improved. There could be much more scope for restoring and maintaining permanent, high-quality wildlife habitat. This might involve neighbouring farmers clubbing together to achieve a larger area of restored habitat, or setting up a partnership with

a conservation organisation."

Author Prof Tim Benton highlights the fact that "More effective agri-environment methods will strengthen the case for conventional farming. The real challenge is to develop better ways to manage AES areas on conventional farms, so they can come closer to nature reserve standards. The spared land could be in nature reserves, but if properly managed, the spared land could also be in strips at the margins of fields."

One premise of this study was that we aim to maintain food yield and wildlife in the UK countryside, and that these cannot be traded off with food or wildlife further afield. However, in reality the situation is much more complicated.

Author Prof Chris Thomas, of the University of York says: "It is hard to work out the best strategies to minimise the environmental impact of producing food in a global context. For example, if we adopt a low-intensity farming strategy in Europe, European citizens won't starve; we will simply import more food from other countries. This will potentially increase the area of land under cultivation, or the intensity of cultivation, in other countries, and hence accelerate biodiversity losses elsewhere in the world"

Provided by University of York

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