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## Organic farms not necessarily better for environment

### Science

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**Organic cereals generate higher greenhouse gas emissions per unit of product than their conventionally farmed counterparts, the researchers found.**

**Organic farming is generally good for wildlife but does not necessarily have lower overall environmental impacts than conventional farming, a new analysis led by Oxford University scientists has shown.**

The researchers analysed data from 71 studies published in peer-reviewed journals that compared organic and conventional farms in Europe.

This literature revealed that whilst organic farming almost always supports more biodiversity and generally has a positive wider environmental impact per unit of land, it does not necessarily have a positive impact per unit of production.

Organic milk, cereals, and pork all generated higher greenhouse gas emissions per unit of product than their conventionally farmed counterparts – although organic beef and olives had lower emissions in most cases. In general organic products required less energy input, but more land than the same quantity of conventional products.

In terms of biodiversity, generally organic farms had 30% higher species richness than conventional farms but a minority of studies (16%) suggested that organic farming could have a negative impact on species richness.

A report of the research will appear in a forthcoming issue of the *Journal of Environmental Management*.

**Whilst some organic farming practices do have less environmental impact than conventional ones, the published evidence suggests that others are actually worse for some aspects of the environment.**

Dr Hanna Tuomisto

'Many people think that organic farming has intrinsically lower environmental impacts than conventional farming but the published literature tells us this is not the case,' said Dr Hanna Tuomisto, who led the research at Oxford University's Wildlife Conservation Research Unit (WildCRU). 'Whilst some organic farming practices do have less environmental impact than conventional ones, the published evidence suggests that others are actually worse for some aspects of the environment. People need to realise that an "organic" label is not a straightforward guarantee of the most environmentally-friendly product.

'The literature survey revealed a lot of variation between the different environmental impacts of farming, which is the result of very different management practices at different organic and conventional farms. This suggests that there could be a lot to gain by moving beyond the simplistic "organic" versus "conventional" debate and look at how to combine the most environmentally-friendly practices from both types of farming.'

The researchers suggest that reducing the environmental impacts of farming is a priority, as is biodiversity conservation on farmland. They also conclude that introducing new techniques could help to reduce the environmental impact of all types of farms: anaerobic digesters could be used to convert animal waste into biogas for heating and electricity, livestock could be selectively bred to reduce nitrogen and methane emissions, and new crops could be developed to reduce the need for pesticides or harness nutrients more efficiently.

Development of these technologies would be in addition to the crucially important task of better understanding the ecology of nature on farmland and so how to manage the landscape for the best outcomes for farming, biodiversity and the wider environment.

The researchers believe that ensuring food production while minimising damage to the environment and safeguarding wildlife is a priority. The happiest outcome would be to develop farming systems that produce high yields with low environmental impacts and that also take into account alternative land uses – such as setting land aside for wildlife habitats and sustainable forestry.