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# Are there easy changes for farmers to mitigate the impacts of conventional farming on biodiversity?

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## Abstract

In a European context of farmland biodiversity collapse, solutions should be found to stop these losses. Due to the intensification of the most part of agriculture, improvements are easily accessible such as input and soil tillage reduction. Such changes are known to positively affect biodiversity. However, because these changes are very complex and inter-correlated, studies are often focused at low accurate levels of management changes (e.g. organic versus conventional farming, tillage versus conservation tillage...), leading sometimes to no consensus about effects on biodiversity. Moreover, impacts of farming on some taxa at the top of trophic network such as insectivorous bats remains poorly known.

With the aim to find efficient solutions for biodiversity conservation, we published 2 studies linking farming practices to passerine bird and bat communities. We focused our sampling design on tillage types and underlying weed-control possibilities such as the intensification of cover-crop or herbicide use, in the Ile-de-France region. Studied farming systems are commonly performed, which potentially allows to make results more easily transferable to farmers and needing low changes and risk taking about yield losses.

Our results demonstrated that the benefit of the tillage reduction for birds and bats strongly depends of the underlying practices (i.e. weed-control methods to offset the tillage reduction). Results highlighted an even more negative impact of herbicides than tillage, showing that stopping tillage to intensify herbicide use is not a promising way compared to a conventional tillage. In contrast, direct-seeding, consisting in a no-tillage with a cover-crop in the intercrop period to control weeds, appears to be very efficient. These studies also showed that even if organic farming is presently difficult to implement and requires a change of economic context for farmers, considerable and easy improvements in conventional farming are attainable with herbicide and tillage reduction, while maintaining yields.

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