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# Do differences in food web structure between organic and conventional farms affect the ecosystem service of pest control?

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Agro-ecology; biodiversity; networks; parasitoid diversity; species interactions

## Abstract

While many studies have demonstrated that organic farms support greater levels of biodiversity, it is not known whether this translates into better provision of ecosystem services. Here we use a food-web approach to analyse the community structure and function at the whole-farm scale. Quantitative food webs from 10 replicate pairs of organic and conventional farms showed that organic farms have significantly more species at three trophic levels (plant, herbivore and parasitoid) and significantly different network structure. Herbivores on organic farms were attacked by more parasitoid species on organic farms than on conventional farms. However, differences in network structure did not translate into differences in robustness to simulated species loss and we found no difference in percentage parasitism (natural pest control) across a variety of host species. Furthermore, a manipulative field experiment demonstrated that the higher species richness of parasitoids on the organic farms did not increase mortality of a novel herbivore used to bioassay ecosystem service. The explanation for these differences is likely to include inherent differences in management strategies and landscape structure between the two farming systems.

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