



Biodiversity benefits of organic farming could depend on context

Organic farming has often been found to have benefits for biodiversity, but any biodiversity benefits over conventional farming may depend on the individual crop species and landscape in question. Research on vine farming in Italy suggests that the impact of organic methods on the number or diversity of pollinating insects may depend on local context. For example, the lack of connectivity between organic vine farms may limit benefits in some circumstances.

The negative impacts of pesticides on biodiversity have been partly responsible for an increase in organic farming. Between 1998 and 2007 the proportion of EU-15 agricultural land that is farmed organically increased from 1.8 to 4.1 per cent.

The study, supported by the EU's ALARM and COCONUT projects², investigated the biodiversity benefits on organic sites that are found in an otherwise conventionally farmed landscape. Pollinating insects are a good indicator of biodiversity and are vulnerable to the effects of pesticides, so the researchers compared the number and range of pollinating insects between six organic vine fields and six conventionally farmed vine fields that used pesticides in North-east Italy. They also looked at the level of pollination on petunia flowers planted in the fields especially for the experiment to measure pollinator activity. Vines are wind-pollinated, so the crops themselves would not provide a good indicator of pollination services.

The majority of pollinating insects were bees. Although both the average number and the range of species were greater in organic fields (an average of 20 bees compared with 13 bees in non-organic fields), the data varied a great deal between the fields which meant that the difference was not significant and could have been due to chance.

The results indicated that the type of farming appeared to have no effect on the number of times the bees visited the vine fields. In this case study, there was no clear evidence to suggest that organic farming significantly affected the number and range of pollinating insects and the differences between organic and traditionally farmed vines could have been by chance.

It has been suggested that organic farming can benefit pollinating insects when it occurs at a larger scale and it could be that the small and scattered nature of the organic vine fields considered in this study limited any benefit to the pollinators. The researchers also suggested that the biodiversity benefits of organic farming may be crop specific.

The research suggests that isolated organic farms with no differences in floral resources from conventional farms may not provide additional benefits for pollinators. The size of the organic managed field, crop type, connectivity of fields and the nature of surrounding land could influence the positive effects of organic farming. If this is the case, specific farmland and crops could be targeted for organic schemes in order to bring the greatest biodiversity benefits. However, these conclusions are very tentative since the research only demonstrates the absence of a difference between the types of vine-farming. When evaluating organic farming it must also be remembered that organic methods have positive effects on the environment other than those on pollinators, such as on the soil and soil organisms.

1. ALARM (Assessing LARge-scale environmental Risks for biodiversity with tested Methods) and COCONUT (Understanding effects of land use change on ecosystems) were both supported by the European Commission under the Sixth Framework Programme. See: www.alarmproject.net and www.coconut-project.net

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