

Science for Environment Policy

Planting field margins with wildflowers give farmers a net profit

The pollination benefits of planting field margins with wildflowers can outweigh the costs of set-up and maintenance, a new study suggests. On US blueberry farms wildflower strips resulted in double the number of wild bees on adjacent crops and significantly increased yield, the researchers found.

Three quarters of the world's major crops are dependent on, or benefit from animal pollination. However, insect pollinators are in global decline, in part as a result of increasing agricultural intensification leading to the loss or fragmentation of natural habitats.

Although the honey bee (*Apis mellifera*) can be cultivated and the hives transported to crops that require pollination, they are nevertheless in decline and reliance on a single species substantially increases the world's food-security [risk](#). Wild pollinators therefore have a vital role to play in the sustainable future of agriculture.

In this study researchers investigated the effects of planting small strips of wildflowers in an intensive agricultural system, using blueberry farming in the US as a case study. In 2009 field margins of between 0.06 and 1.01 hectares on five blueberry (*Vaccinium corymbosum*) farms were planted with 15 species of native wildflowers. The five wildflower strips were all within 3 m of a crop field and the researchers also monitored a 'control' crop on each farm, with a normal, grassy margin. The researchers then sampled pollinators in the fields over four years (2009–2012).

The results show that in the first two years the numbers of wild bees were similar in both crops adjacent to wildflower strips and control crops. However, in the third year the numbers of wild bees in fields with wildflower margins were nearly double the numbers in the control fields. Furthermore, this difference continued for the fourth year.

The numbers of hoverflies showed a similar pattern, with no substantial differences for the first two years but significantly higher numbers in crops with wildflower margins in the third and fourth years. For the managed pollinators, honey bees, there was no significant difference between numbers on the crops with wildflower margins and those with grassy margins in any year.

The researchers then set out to evaluate whether the changing numbers of wild pollinators made any significant difference to crop pollination rates and how this translated into financial return for the farmers. They found that, in the third and fourth years, the percentage of flowers that developed into fruit was over 10% higher in crops with wildflower margins. Furthermore, in the fourth year the average weight of the berries increased from 0.47 to 0.64 g.

The profits from these increased yields would outweigh the costs of planting wildflower strips, including preparation and maintenance, in four to five years, the researchers estimate. After 10 years, accumulated profit may reach around US\$ 8 750 (€6 431) for a 0.8 hectare patch of wildflowers. The time to reach net profit can be further reduced, the authors of the study point out, if policy measures such as agri-environment schemes are used to provide financial support for the initial set up.

Importantly, these results demonstrate that providing habitat for wild pollinators is financially worthwhile for farmers, even if they already keep or rent honey bees for pollination.



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