

A mixture of crops provides ecological benefits for agricultural landscapes, find researchers

January 20 2023



A mixture of crops: faba bean and wheat. Credit: Horst-Henning Steinmann

There are often too few flowering plants in agricultural landscapes, which is one reason for the decline of pollinating insects. Researchers at

the University of Göttingen have now investigated how a mixture of crops of fava beans (broad beans) and wheat affects the number of pollinating insects. They found that areas of mixed crops compared with areas of single crops are visited equally often by foraging bees. Their results were published in the journal *Agriculture, Ecosystems & Environment*.

The researchers observed and counted foraging honeybees and [wild bees](#) in mixtures of wheat and fava bean and in pure cultures that only contained fava beans. "We had expected that the mixed crops with fewer flowers would be visited less frequently by bees for foraging than single crops," says Ph.D. student Felix Kirsch from the Functional Agrobiodiversity research group, University of Göttingen. "To our surprise, this was not the case."

This could be due to several reasons. "Our mixed cultures were less dense than pure cultures, which possibly increased the visibility of the flowers. This might have attracted the similarly large number of bees to the mixed cultures," suggests Dr. Annika Haß, postdoctoral researcher in the Functional Agrobiodiversity research group.



A bumblebee feeding from the flower of a faba bean. Credit: Nicole Beyer

"In addition, reduced competition between the faba bean plants in mixed cultures could mean that they can invest more resources in the production of nectar and pollen to increase their attractiveness to [bees](#)," adds Professor Wolfgang Link, head of the group for Breeding Research faba Bean.

"Mixed cultivation of wheat and faba bean has also other advantages for [crop production](#)," says Professor Catrin Westphal, Head of Functional Agrobiodiversity. For instance, yields per bean plant were higher in

mixed crops than in pure cultures.

"Cereal crops can be ecologically enhanced by adding legumes such as beans or lentils. This can make a valuable contribution to increasing the abundance of flowers on the [arable land](#) and thus counteracting pollinator decline," concludes Haß.

More information: Felix Kirsch et al, Intercrops as foraging habitats for bees: Bees do not prefer sole legume crops over legume-cereal mixtures, *Agriculture, Ecosystems & Environment* (2022). [DOI: 10.1016/j.agee.2022.108268](#)

Provided by University of Göttingen

Citation: A mixture of crops provides ecological benefits for agricultural landscapes, find researchers (2023, January 20) retrieved 27 April 2024 from <https://phys.org/news/2023-01-mixture-crops-ecological-benefits-agricultural.html>

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