

Flowering hedges and edges support pollinating insects throughout the season – Irene Bottero,

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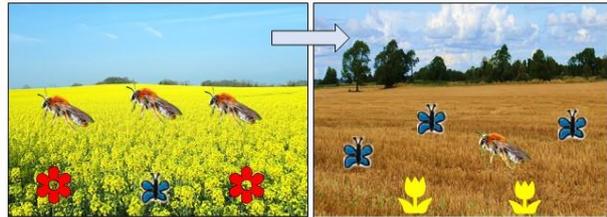
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Do flowering hedges and edges of crops support pollinating insects in apple and oilseed rape crops?

“Yes, flowers in hedges and edges supported bees, hoverflies and butterflies. In fact, hoverflies and butterflies were more abundant here than in the crop fields themselves”



Does the number and type of insects and flowers vary through the season?



Yes, insect and plant diversity changed through the season, but not in predictable ways.

Exception: there were more bumblebees recorded when there were more different types of flowers.



Pollinators are animals that feed from flowers, and in doing so, transfer pollen, helping plants to produce fruits and seeds. Flower-visiting insects such as bees, butterflies, and hoverflies, are important pollinators, but some species are declining. One of the causes of these declines is the destruction of natural habitats, which decreases the amount and diversity of flowers that pollinators use as a food source. In agricultural landscapes, natural habitats remain in the form of flowering hedgerows or floral edges along the borders of grass pastures or cultivated crop fields. Mass-flowering crops (cultivated crops that have abundant, but short-lived, flowers) can also act as a food source, but flowers in hedges and edges could be important outside the flowering period of the crop. We studied the relationship between the number and different types of flowers in the hedges and edges of two mass-flowering crops (apples and oilseed rape), on the number of bees, butterflies and hoverflies, and investigated how this changed throughout the season. We selected 11 mass-flowering crop sites (six oilseed rape crop fields and five apple orchards), where we monitored the flowers, and five groups of insects (honey bees,

bumble bees, solitary bees, hoverflies and butterflies). To check how the communities changed through time, we did this in three different periods, during and after the flowering periods of the crops (April – August 2019). We sampled insects both in the centre of the crop fields and along their margins. We found seasonal shifts in the number and types of insects and flowers in the hedges and edges of the crops, but there were not predictable relationships between insects and flowers. One exception was that the number of bumble bees increased when there were more different types of flowers in bloom. We discovered that each group of insects changed through the season in different ways – solitary bees declined in abundance through the year, while butterflies were more common at the end of the summer. We also found differences in the abundance of insects in the centre of crops and on the margins. Specifically, butterflies and hoverflies were more common at the edges than in the middle of fields when crops were in flower. This was also true after the crops had ceased to flower, in apple orchards. Our results confirm the importance of natural habitats at the edges of crops for these insects, both as alternative sources of food during the blossoming of the crops, and to fill potential nutritional gaps at the end of the flowering periods of the crops. Overall, our study supports policies that preserve and improve natural habitats (such as flowering hedges and field margins) in agricultural landscapes, to protect pollinating insects and promote sustainable crop production.