
Plant functional trait diversity in wildflower strips: the key to promote pollinators in agricultural landscapes?

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Abstract

Creating wildflower strips is often suggested as a tool to support pollinator diversity in agricultural landscapes and to promote crop pollination service. The choice of the plant species to sow in flower strips can influence the effectivity of the strips in supporting pollinators. While it has already been shown that increasing plant species diversity is beneficial for ecosystem services, it is often suggested that plant functional traits and functional trait diversity are the key for this relationship. We created a replicated field experiment with different levels of plant functional diversity in wildflower strips in Belgium to test the effect on the flower-visiting pollinator community. We sampled plant-pollinator interaction networks during 2 years and assessed how the plant functional diversity affected the network structure. Plant functional diversity did not have a clear effect on visiting pollinator species richness, however a different interaction pattern was observed with different functional diversity level. Pollinators in wildflower strips with higher functional diversity had less overlap in their ecological niche, while network stability and robustness for secondary extinctions were not affected. We discuss implications for wildflower strip design.

Keywords: Plant, pollinator networks, functional diversity, biodiversity support, wildflower strips

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