

Floral resource provision for insect communities: the effect on multi-trophic interactions in agricultural systems

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The addition of floral resources to agroecosystems to improve biological control may enhance the third trophic level (i.e. the pests' natural enemies), but also provide a resource that benefits the second trophic level (i.e. the target pest). However, it is currently unknown if the presence of a pest parasitoid mediated by floral resources, results in increased crop yields or reduced crop damage. We manipulated insect communities by providing *Phacelia tanacetifolia* and *Fagopyrum esculentum* to investigate if these two floral resources mediated a trophic cascade effect. Using field cages we studied if the presence of these flower species affected parasitism by *Diadegma semiclausum* on the diamond back moth (DBM) *Plutella xylostella*, a major pest of cruciferous crops. The resultant effect measured was seed yield of pak choi (*Brassica chinensis* var. *parachinensis*). Our results showed that floral resource availability did not significantly increase the number of parasitoids. We also found that parasitoids reduced DBM populations by up to 68%, compared to the DBM control, irrespective of floral resource availability. Furthermore, the mediating effect of floral resources on the insect community resulted in no significant effect on seed yield. Combining all our results, we conclude that the likelihood of a trophic cascade occurring, mediated by the provision of floral resource remains unclear.

