



Abstract

As agricultural intensification continues, it is vital to understand how biodiversity loss in farmlands affects the ecosystem functions required to maintain crop production. High species richness within crop pollinator assemblages has been linked to enhanced crop yields, but direct comparisons of pollinator performance among individual bee species have been limited by methodological constraints. The overarching goals of my thesis were to explore the direct influence of bee diversity and community composition on pollination and fruit production in strawberry agroecosystems, and to examine how elements of agricultural landscapes impact the structure of crop bee communities. Through the development of a new pollen deposition measurement technique and controlled bee diversity field experiments, I found that honey bee pollination results in lower strawberry yields than wild bee pollination. The foraging behaviour observed in the wild bee community, especially by bees in the genus *Lasioglossum*, was a possible mechanism driving this effect. Although wild bees show promise as strawberry pollinators, conventional cultivation methods may limit wild bee abundance on strawberry farms. The limited foraging range and habitat requirements of many wild bees suggest they may only pollinate marginal areas of strawberry crops, given typical field sizes in the study region (Québec and Ontario). Management efforts aimed at the maintenance or enhancement of wild pollinator populations may be a cost-effective way to increase both crop y