
Investigation into the main drivers of oviposition in *Psylliodes chrysocephala*

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Résumé

The cabbage stem flea beetle, *Psylliodes chrysocephala* (Coleoptera: Chrysomelidae), is an insect specialized on the Brassicaceae family that causes significant damage to oilseed rape crops in Europe. A better understanding of the determinants of oviposition behavior in this insect provides a means of developing new control strategies aimed at reducing population pressure and thus damage associated with larval and adult feeding. In this study, we used a standardized population of mature females as part of an oviposition experiment designed to **1**) determine the nature of the relationship between oviposition and feeding activity and **2**) gain insight into the role of chemical cues in stimulating or deterring oviposition. Individuals were isolated in test tubes with different brassica species selected based on their host quality in relation to *P. chrysocephala*. A superior host, *Brassica rapa* subsp. *pekinensis*, and intermediate one, *Brassica napus* and a non-host plant, *Iberis amara*, were used. An additional treatment involved wrapping the plants in micro-perforated plastic bags to prevent insects from feeding on aerial parts. The number of eggs was recorded after 3 days of tube-testing. The remaining eggs were counted after 7 days of fasting in the presence of an oviposition medium. In the absence of feeding, the sole presence of a plant failed at stimulating oviposition regardless of the species tested. However, a significant positive correlation between oviposition and feeding was observed across all tested species, with variations in the strength of this correlation. Indeed, for the same amount of feeding, females laid significantly more eggs when feeding on *B. napus* than when feeding on *B. rapa* subsp. *pekinensis*. These results emphasize the importance of controlling feeding in *P. chrysocephala* populations to decrease population pressure. Further investigation is required to determine the impact of plant nutritional quality and defenses on oviposition. Results suggest that both factors may significantly affect the extent to which feeding is involved.

Mots-Clés: Plant insect interactions, oviposition, *Psylliodes chrysocephala*, Brassicaceae, oilseed rape

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