Odors to protect oilseed rape crops against its major pest, the cabbage stem flea beetle *Psylliodes chrysocephala*

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Scientific context

Locating and finding a host plant is crucial and may be one of the first challenges to phytophagous insects' success. Plant volatiles play a major role in host-plant location at distance by these insects. Exploiting the sensitivity of insects' olfactory system by using semiochemicals that modify their behavior can be used to protect crops.

Social-economic context

Winter oilseed rape (*Brassica napus*) is one of the first oilseed crops in Europe and worldwide. One of its most important pests is the cabbage stem flea beetle (CSFB) *Psylliodes chrysocephala*, which can lead to severe yield losses up to the complete destruction of the crop. Following restrictions on the use of pesticides and the emergence of insecticide resistance in CSFB populations, new methods of crop protection must be developed. Finding semiochemicals that can attract or repel CSFB could be part of an integrated pest management solution to protect OSR crop.

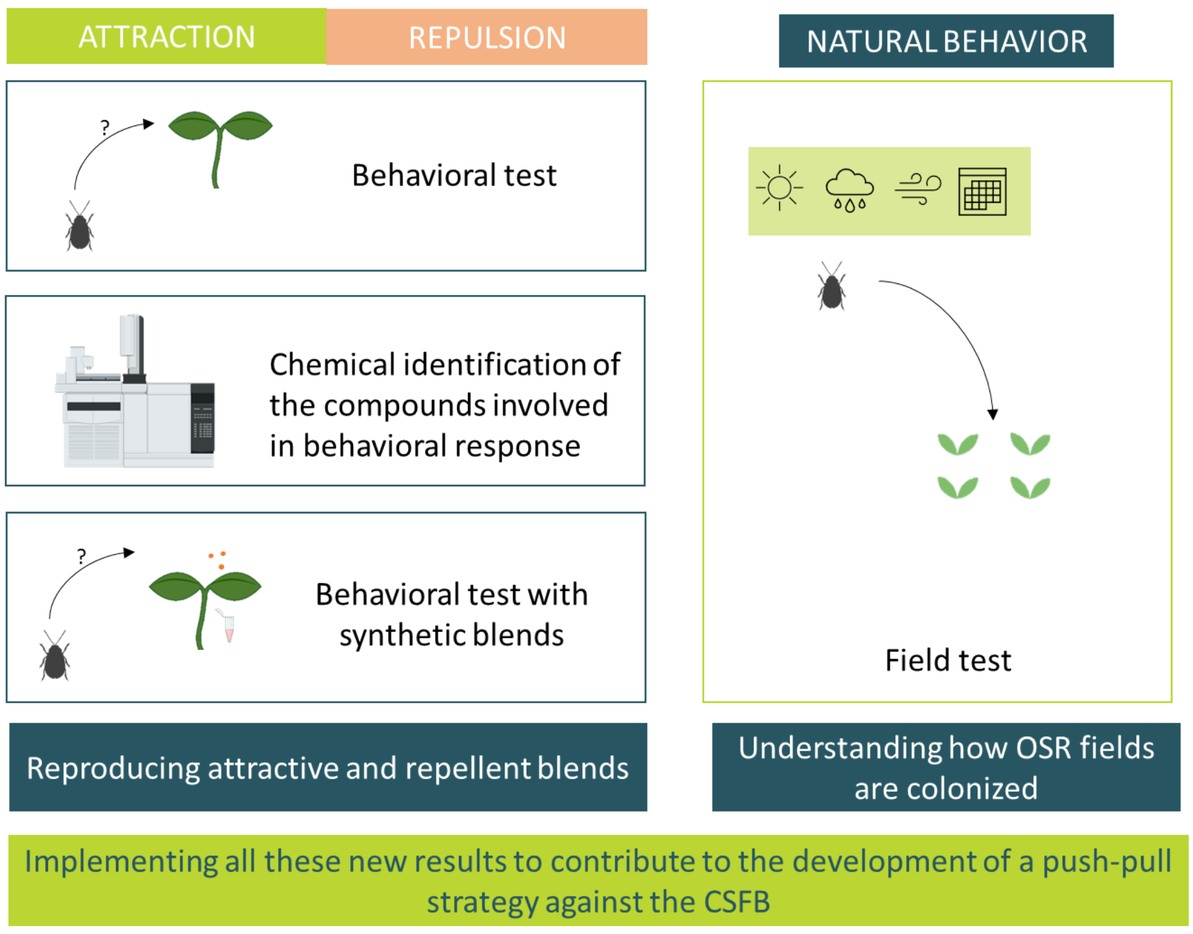
Objectives

Adult CSFB feed on young leaves while their larvae develop into the plant during autumn and winter. Both life stages are damaging for the crop. Studies conducted on other flea beetle species highlighted the importance of plant volatiles for host location and colonization. The aim of this PhD is to identify attractant and repellent semiochemicals that modify the behavior of *Psylliodes chrysocephala* at distance.

i) Semiochemicals involved in host plant location and host plant preference will be investigated in order to recreate attractive blends.

ii) Semiochemicals associated to repulsion will be studied to create repellent blends.

iii) Integration of both attractant and repellent blends in an IPM solution will be considered by understanding how OSR crops are colonized by the CSFB.



Perspectives

This PhD will allow the identification of attractant and repellent semiochemicals for the CSFB. Furthermore, understanding the colonization process of OSR fields by the CSFB will contribute to the implementation of push-pull strategies against this pest.