Investigating **biopesticides** for the control of **cabbage stem flea beetle** (*Psylliodes chrysocephala*) and the optimisation of conventional synthetic insecticides

#### **Claire Hoarau**

*supervised by* Tom Pope and Heather Campbell

@CSFB\_Hoa
19303100@live.harper.ac.uk

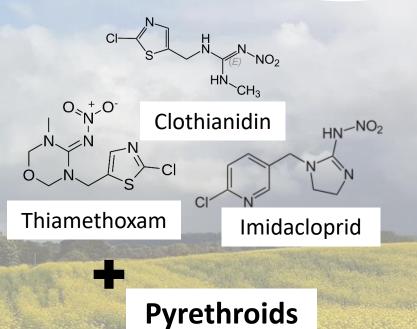


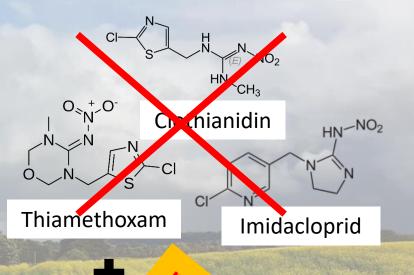


Cabbage stem flea beetle (CSFB)

Oilseed rape crop

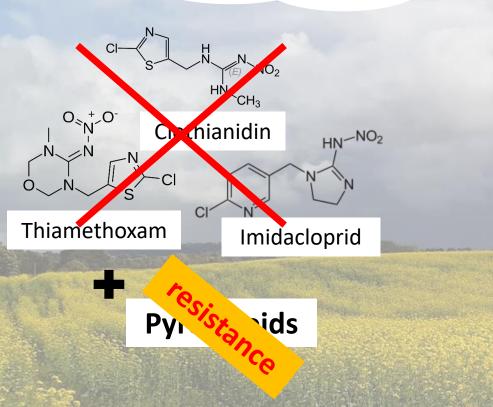
Severe economic damage from reduced yields or total crop failure





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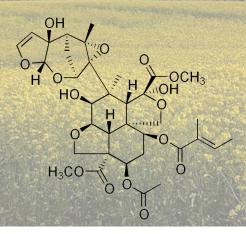
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Oilseed rape growers need other solutions to control the cabbage stem flea beetle!

Metarhizium spp. Beauveria spp.

CSFB infected with a fungus



Azadirachtin (neem extract)

*Steinernema* spp. *Heterorhabditis* spp.

Nematodes

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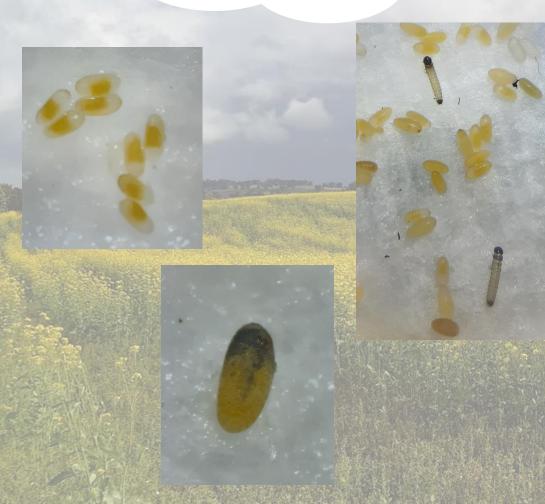
Bacillus thuringiensis, a bacterium

# Tender loving care





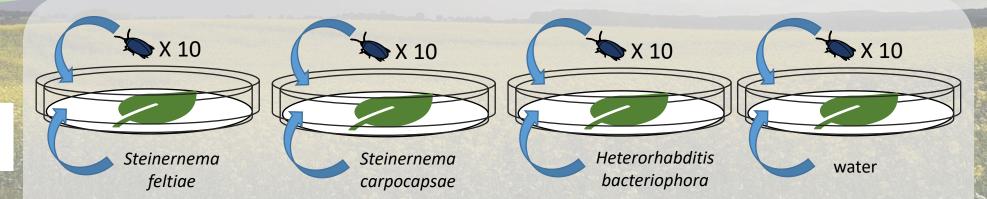
# Tender loving care







Screening of biopesticides in the lab against adults and larvae



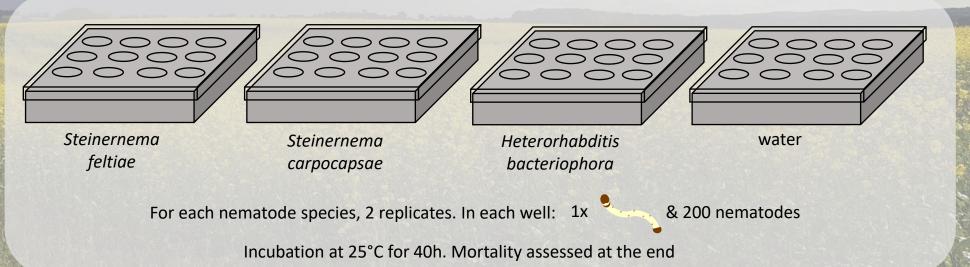
For each species, 3 repetitions of 3 concentrations: 4000, 10000 and 40000 injective juveniles/ml

Incubation at 25°C for 4 days; mortality assessed after 2, 3 and 4 days

Nematodes bioassays on adult stage >>

Screening of biopesticides in the lab against adults and larvae

Nematodes bioassays on 3<sup>rd</sup> larval stage >>



Screening of biopesticides in the lab against adults and larvae

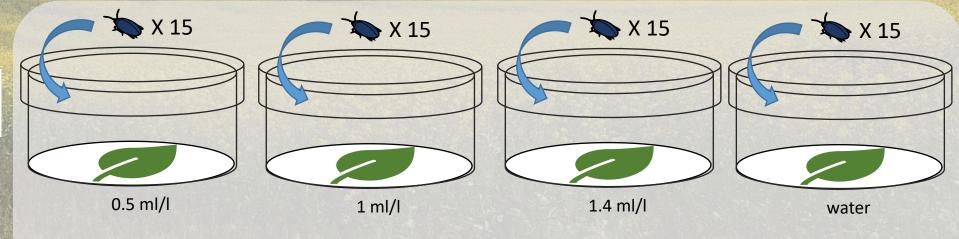
Nematodes bioassays >>



Screening of biopesticides in the lab against adults and larvae



Azatin bioassays on adult stage >>



For each concentration, 3 repetitions

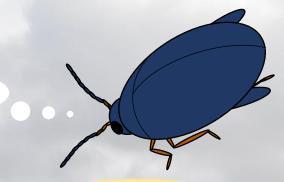
Incubation at 20°C for a week day; mortality assessed every day, leaf consumption assessed at the end

Screening of biopesticides in the lab against adults and larvae

Azatin bioassays on adult stage >>

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Screening of biopesticides in the lab against adults and larvae

Investigation of diurnal patterns of CSFB susceptibility to insecticides

Combination between biopesticides and with pyrethroids

Semi-field and field experiments using selected insecticides combinations Study of the economical feasibility of the successful combinations