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

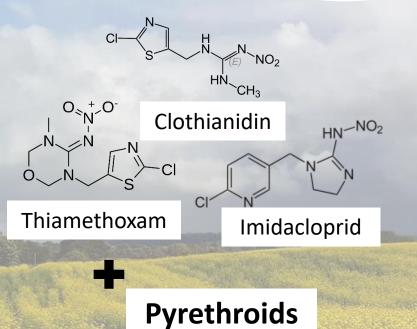


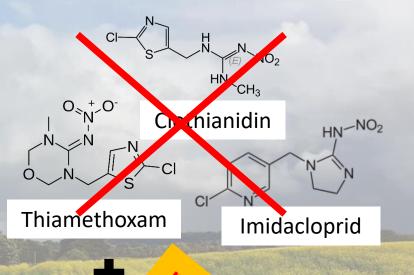


Cabbage stem flea beetle (CSFB)

Oilseed rape crop

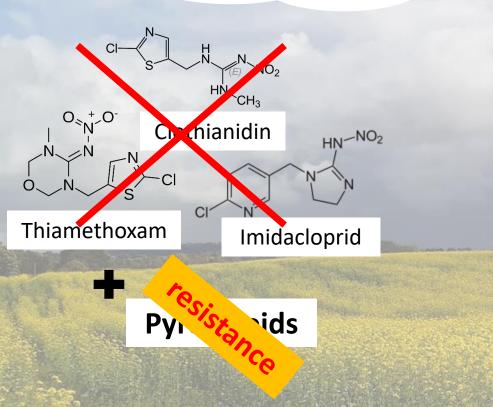
Severe economic damage from reduced yields or total crop failure





Pyı

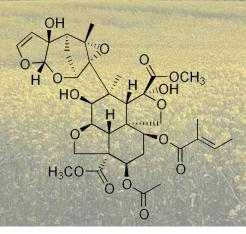
ids



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

0

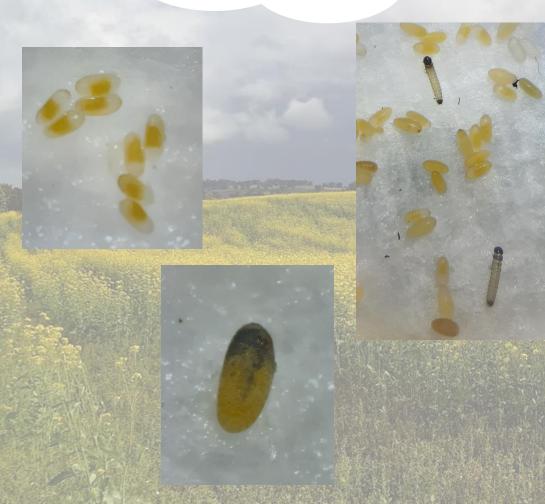
Bacillus thuringiensis, a bacterium

Tender loving care





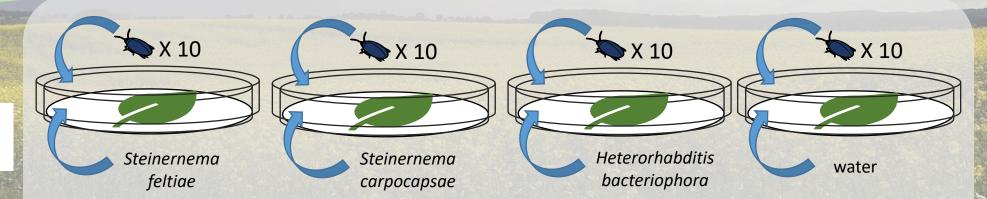
Tender loving care







Screening of biopesticides in the lab against adults and larvae



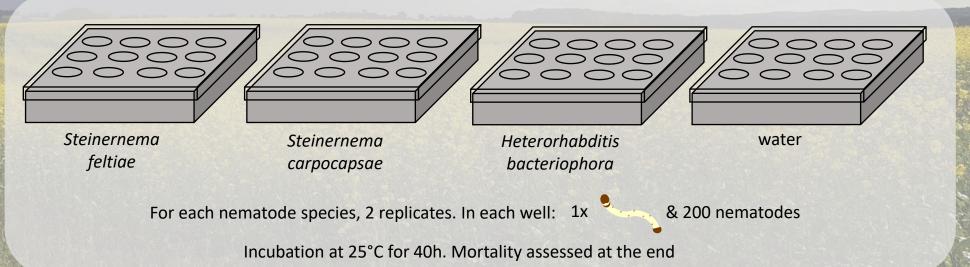
For each species, 3 repetitions of 3 concentrations: 4000, 10000 and 40000 injective juveniles/ml

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 3rd larval stage >>



Screening of biopesticides in the lab against adults and larvae

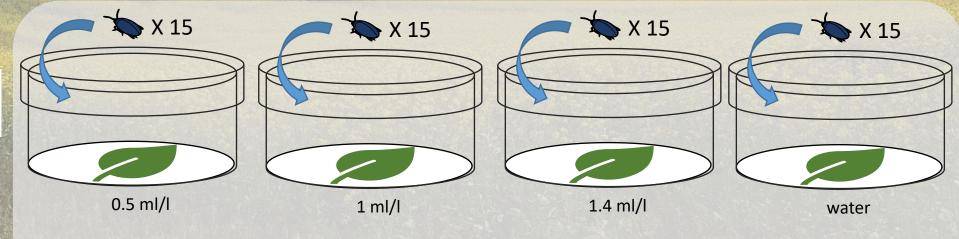
Nematodes bioassays >>



Screening of biopesticides in the lab against adults and larvae



Azatin bioassays on adult stage >>



For each concentration, 3 repetitions

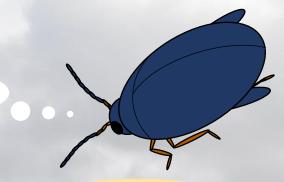
Incubation at 20°C for a week day; mortality assessed every day, leaf consumption assessed at the end

Screening of biopesticides in the lab against adults and larvae

Azatin bioassays on adult stage >>

👱 ImageJ	- 🗆	×	🛃 Results		122		<
File Edit Image Process Analyze Plugins Window Help			File Edit	Font Results			
	8 1	>>	Area	StdDev			
Flood Fill Tool			1 0.190	17.444			
	- 🗆	\times					
(GB; 22MB							
	and the second						
100.25			2221				3
			•			4	P
		28					19
							1
							5
At the end of the assay, cons	umptio	n rate	e measu	ured with Image	J		60

••



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