

## Annual Project Report July 2022 to July 2023

<b>Project title</b>	Reducing the impact of cabbage stem flea beetle on oilseed rape in the UK		
<b>Project number</b>	21120185		
<b>Start date</b>	30/07/2020	<b>End date</b>	29/02/2024

### Project aim and objectives

WP1: Minimise the impact of CSFB through improved understanding of pest phenology and biology.

- 1.1 Determine the factors that govern adult CSFB migration activity.
- 1.2 Determine the effect of temperature on egg laying, egg and larval development, and larval movement.
- 1.3 Determine the impact of larval number on plant growth.
- 1.4 Determine the impact of larval invasion date/crop stage at invasion on plant growth.
- 1.5 Determine the effect of stem width on the impact of larvae on yield.
- 1.6 Determine adult preference for crop stages.
- 1.7 Determine the relationship between adult numbers and adult feeding damage.
- 1.8 Determine the relationship between larval scars and larval number.
- 1.9 Disseminate findings to the industry.

WP2: Minimise the impact of CSFB through testing and validation of on-farm control approaches.

- 2.1 Identify alternative control approaches for CSFB.
- 2.2 Coordinate Farm Innovation Groups to investigate CSFB methods.
- 2.3 Disseminate findings to the industry.

### Key messages emerging from the project

- Timing of CSFB migration in 2022 was similar time to 2020 and 2021 but numbers of adult CSFB were generally higher than in 2021 and lower than 2020.
- Controlled environment (CE) experiments indicate that a range of factors affect egg hatch, but that temperature and moisture are the predominant influences.
- Field trials investigating non-chemical control methods demonstrate that sow date is critical for determining CSFB pressure (both from adults and larvae), and that other management strategies ought to be selected based on the chosen sow date.
- Late sowing does have increased risks due to changes in weather, but trial results demonstrate that yields can be significantly higher than crops drilled at more traditional dates under high CSFB pressure.
- Other field trials show significant reductions in pest damage and/or incidence when using companion crops, applying organic amendments, leaving long stubble, increasing seed rate and using low intensity cultivation methods.

The results described in this summary report are interim and relate to one year. In all cases, the reports refer to projects that extend over a number of years.

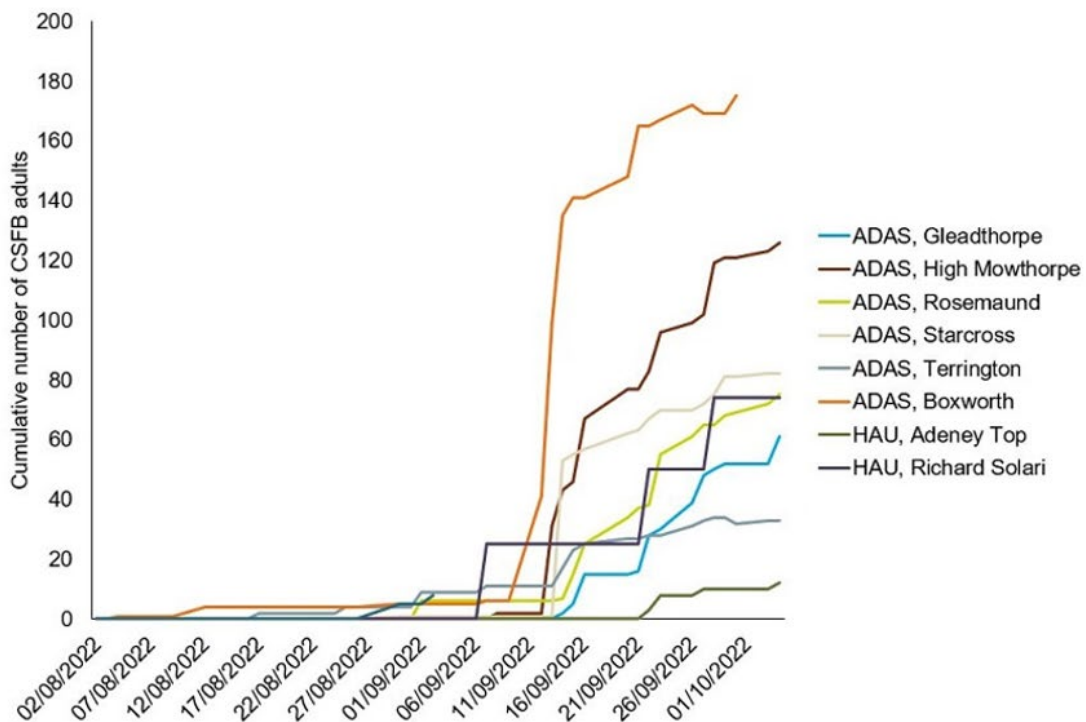
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## Summary of results from the reporting year

- CSFB migration was monitored at eight sites across England (see chart). Numbers of adult CSFB varied with location; numbers in Cambridgeshire were notably higher than other areas (as seen in previous years). Peak migration occurred in mid-September (as seen in previous years). Overall CSFB numbers were generally slightly higher than in 2021 but lower than 2020.



- Five pot experiments were conducted in 2023 investigating the impact of larval feeding on crop development. These addressed three hypotheses, 1) a greater larval load has a greater negative impact on crop development, 2) earlier plant invasion has a greater negative impact on crop development, and 3) plants with thicker stems are better able to tolerate feeding. Data from these trials are being analysed currently.
- Preferences of adult CSFB for WOSR growth stages have been investigated in pot, cage and olfactometer experiments. Data is still being analysed but preliminary findings indicate that

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feeding is greatest on second true leaves but that a greater proportion of cotyledon leaf area is consumed. Females show a preference for the odour of cotyledons.

- Four 'stacked IPM' tramline trials were drilled in 2022/23. These trials investigated the benefits of combining CSFB management methods. One trial was lost due to drought. Data from the remaining trials is being analysed and CSFB pressure was relatively low, but preliminary findings indicate that some interventions (e.g. companion planting and high seed rate) decrease damage from adult CSFB.

### Key issues to be addressed in the next year

- Analysis of data from experiments and surveys.
- Submit final report by 29 February 2024.

<b>Lead partner</b>	ADAS
<b>Scientific partners</b>	Harper Adams University
<b>Industry partners</b>	BASF, Bayer, DSV, Elsoms, Frontier, Innovative Farmers, KWS, Limagrain, Syngenta, Tuckwells, United Oilseeds, YARA
<b>Government sponsor</b>	n/a

### Has your project featured in any of the following in the last year?

<b>Events</b>	<b>Press articles</b>
'Reducing the impact of CSFB', Frontier Agronomists' Conference – 7 December 2021	'Cabbage stem flea beetle' – DSV in-house magazine "Innovation"  'AHDB from theory to field: One strategy, many different parts" in Crop production Monthly – March 2023.
<b>Conference presentations, papers or posters</b>	<b>Scientific papers</b>
'Reducing the impact of CSFB', AAB conference 'Bringing IPM to the market' - November 2022	
<b>Other</b>	

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