

Final Project Summary

Project title	Cabbage Stem Flea Beetle Live Incidence and Severity Monitoring Autumn 2016 and Spring 2017		
Project number	21120050	Final Project Report	PR571
Start date	01/09/2016	End date	30/04/2017
AHDB Cereals & Oilseeds funding	£17,510	Total cost	£17,510

What was the challenge/demand for the work?

In December 2013 neonicotinoid seed treatments were withdrawn across all EU Member States, following the conclusions of a review by the European Food Safety Authority (EFSA) which looked at the risk to bees. In 2016 there were no emergency authorisations for either the seed treatments or foliar acetamiprid applications, therefore farmers were limited to foliar pyrethroids and cultural controls for cabbage stem flea beetle (CSFB) management. There is concern, especially in the Eastern region of the UK, over the level of damage that oilseed rape crops sustain from CSFB in the absence of neonicotinoid seed treatments.

How did the project address this?

The project provided detailed and structured evidence on the level of CSFB damage and area of crop losses on winter oilseed rape crops in autumn 2016 to March 2017 in the absence of neonicotinoid seed treatments. Since autumn 2014, adult CSFB damage surveys have been conducted to assess the level of leaf damage observed at two growth stages; cotyledon–2 leaves and at 3–4 true leaves from CSFB, with 2016 being the third year of data collection on CSFB damage. An additional assessment in spring 2017 was added to capture any over winter losses associated with CSFB.

Data was collected from 34 counties using 47 Association of Independent Crop Consultants (AICC) agronomists (44 in England, 3 in Scotland, no data were gathered from Wales due to the small area of oilseed rape grown) based on the area of winter oilseed rape crops that they walk – the assessed area. This was equivalent to 8% of the total UK winter oilseed rape area. Agronomists were asked to report oilseed rape crop damage and loss as a result of CSFB once 75% of their crops had reached the cotyledon- two leaf growth stage (assessment 1) and once again when 75% of their crop had reached

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the three-four leaf growth stage (assessment 2) as well as comment on overwinter OSR survival and estimate crop losses (assessment 3) at the end of March. Damage was classified into five categories; no damage, low (24% leaf area or less lost), moderate (25-49% leaf area lost), high (50-75% leaf area lost) and severe (more than 75% of the leaf area lost). Data from each agronomist was collated and analysed in MS Excel. Data was presented in two ways;

- The impact on the assessment area, which presents the results as found by the agronomists on the area that they walk.
- Data weighted up to give a national picture, based on the area of winter oilseed rape grown in each county in the UK.

What outputs has the project delivered?

- A total of approximately 48,700 ha of oilseed rape was assessed in this survey, which equates to 8% of the forecast UK winter oilseed rape area. CSFB damage was present on 74% of assessed crops at cotyledon to two true leaf (assessment 1) and 66% of assessed crops at three to four true leaves (assessment 2).
- Damage levels exceeded the spray threshold on 28.6% of crops at assessment 1 and 6.0% of crops at assessment 2.
- At assessment 1, it was estimated that 5.6% of the assessed area was lost due to CSFB, with an additional 4.5% lost due to other causes (including dry soils and slugs).
- By the end of assessment 2, it was estimated that 7.3 % of the assessed area was lost to CSFB damage, with an additional 6.5% of crops lost to other causes (including dry soils and slugs).
- The levels of crop losses in 2016/17 were higher in than in the previous two years 2015/16 (1%) and 2014/15 (2.7%). This is attributed to the fact that growing conditions were more difficult with dry soils and cool conditions slowing crop development and impacting on establishment. Slow growing, poorly established crops remain at the vulnerable growth stages for longer than actively growing well established crops, meaning that they are more susceptible to damage. Table 1 shows a comparison of results on assessed areas in 2015 and 2016.

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Table 1. Comparison of results on assessed areas from previous years. It should be noted that a slightly different assessment approach was used in 2014, making direct comparison between the years difficult. Values at a national level are slightly lower due to the weighting process.

	2014	2015	2016
Proportion of crops with damage seen - Assessment 1	NA	65%	74%
Proportion of crops with damage above threshold - Assessment 1	NA	22%	29%
Proportion of crops with damage above threshold – Assessment 2	NA	4%	6%
Crop losses to CSFB damage – Assessment 2	NA	1.0%	7.3%
Crop losses to other causes – Assessment 2	NA	3.1%	6.5%

- At assessment 3 (spring 2017) it was estimated that of the assessed crops an additional 1.3% of crops did not survive the winter due to CSFB, with an additional 2.6% of crops lost due to other factors such as pressure from slugs, pigeons and waterlogging.
- It is not always clear what the actual cause of crops losses was and in a number of crops this season there were a combination of factors, which on their own may not have caused losses but combined, resulted in crops being lost. In the east, dry conditions at planting, combined with CSFB damage and then subsequent slug grazing meant that there were a number of crops lost for which CSFB damage was a contributory factor, but not the sole reason.
- It is estimated that at the end of assessment 3 total crop losses (from assessment 1, 2 and 3) due to CSFB in the assessed area were equivalent 8.6%, with losses from other causes such as slugs, pigeon damage and waterlogging contributing an additional 9.1% of the assessed area being lost. When weighted and scaled up to a national level, the total area estimated to have been lost from crop emergence in 2016 to spring 2017 is equivalent to 14.8% of the national oilseed rape area, with CSFB being the major contributory factor to the loss of 5.4% of the area, the remaining losses are predominantly attributed to dry soil conditions, with slugs and pigeon grazing also contributing.
- The majority (5.6%) of the assessed crops that failed, due to CSFB, did so prior to assessment 1, with only small additional areas failing prior to assessment 2 and assessment 3.
- The counties with the highest crop losses associated with CSFB were Bedfordshire/Hertfordshire, Northamptonshire, and Cambridgeshire.

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- An estimated 79% of the assessed winter oilseed rape area had been treated with at least one application of insecticide across the survey period. This is an increase of 4% compared to the total area treated in the autumn 2015 survey.
- The counties with the highest levels of crop damage (Bedfordshire, Cambridgeshire and Northamptonshire) tended to receive 3-4 foliar insecticide applications to try and maintain control of the pest. In counties where damage levels did not exceed threshold only one foliar insecticide application was made, if at all.

Who will benefit from this project and why?

This project provides data to support that collected in 2015 and 2014 on impact of the loss of neonicotinoids on CSFB damage in winter oilseed rape crops. The project also provides levy payers with an independent view of CSFB damage in their county and at a regional and national scale and can be used by policy makers to help understand the scale of CSFB damage and the potential impact on the farming sector.

If the challenge has not been specifically met, state why and how this could be overcome

Lead partner	RSK ADAS Ltd
Scientific partners	
Industry partners	Association of Independent Crop Consultants (AICC)
Government sponsor	