New ADAS research: Looking beyond larvae per plant - OSR crops with high CSFB larvae counts may still have yield potential

n **ADAS’s latest research on Cabbage Stem Flea Beetle and lodging brings hope for UK OSR crop**

n **Data demonstrates high CSFB larvae numbers doesn’t always equal low yields**

n **Modelling showed that Caryx® reduced the lodging risk from one in three, to one in five or six for a ‘typical plant’.**

**Newly published research, conducted by ADAS, gives hope for the UK growers to keep oilseed rape (OSR) as a profitable break crop in their rotations.**

The four-year study, conducted by Dr Thomas Wilkinson, ADAS Senior Research Consultant in Crop Physiology, found that it is Cabbage Stem Flea Beetle (CSFB) tunnelling damage, rather than larvae number, that is a better indicator of lodging risk in OSR.

Building on ADAS and BASF’s long-term collaborative OSR research, the findings were presented at a recent roundtable discussion. **Dr Wilkinson, alongside Matt Keane, BASF Agronomy Manager and Grower, Chris Eglington from Norfolk**, shared invaluable insight and observations into larval counts and that, even when high, canopy management principles are as important as they have ever been.

“From measuring various stem lodging risk parameters and CSFB damage in over 350 plants, we’ve gained a number of insights that can help growers lower the risk of lodging,” **explained Dr Wilkinson**.

“Larvae counts have often been used as the primary indicator for CSFB damage, but interestingly, in this study, we noted the percentage of the stem damaged by CSFB tunnelling. When OSR has reached its maximum height and is therefore most at risk of lodging, the CSFB larvae will, in most situations, have left the stem and, even where there are a lot of larvae, the severity of the damage we see compared to the overall structure of the crop can range from high to low, particularly in those plants with thicker stems.

“During the study we used a lodging risk model rather than actual lodging events because it enabled us to take multiple measurements and meant we weren’t relying on the vagaries of the British weather.”

**Dr Wilkinson described important new observations in the understanding of CSFB impact from the work.**

“We found that crops with a high proportion of damage from CSFB larvae were related to reduced stem diameters – which is a key factor in determining stem strength. Yet the CSFB tunnelling damage we saw, weakened stems more than could be accounted for by the reduced stem diameter alone.

“Whether this tunnelling causes thinner stems, or thicker stems dilute CSFB tunnelling damage, we are not wholly sure yet, but what we do know is that crops with large robust stems tend to yield well and be more tolerant to CSFB larval pressure.”

Dr Wilkinson also highlighted the importance of using Caryx®, BASF’s plant growth regulator, because it significantly reduced lodging risk by increasing stem strength, in addition to its already understood height reduction.

“Our modelling showed that Caryx® reduced the lodging risk from one in three, to one in five or six for a ‘typical plant’.

“Where plants had up to 25% of the stem area damaged by CSFB, Caryx® increased the modelled windspeed threshold from 11.1 to 12.4 m/s, or 24.8mph – 27.7mph, showing that it reduces lodging risk in conditions typical in the UK.”

**Matt Keane, BASF Agronomy Manager,** concurred the results mirror what he has observed in the field**:** “It’s not unusual to find OSR crops with robust stems yielding well, even when carrying high numbers of larvae. Plants with strong branching can also compensate for some of the CSFB damage in the main stem.

“Past ADAS research demonstrates the importance of reducing leaning or lodging of the crop - lodging at flowering reduces yield by 46% (lodged flat) or by 20% (lodged to 45°) and oil reduction of up to 4% can occur. Therefore, whilst we know that factors such as an overlarge canopy or stormy weather can increase lodging risk it is important to understand how CSFB might affect this too. Upright crops maintain all-important light penetration to the lower canopy which minimizes pod abortion, and so maintain yield potential.

**Dr Wilkinson** cited the importance of looking at the crop: “It’s relatively easy to assess the degree of internal stem damage. A crop may appear to be developing normally but can still contain internal stem damage, so opening up the stem and having a check can be a useful way of observing what’s going on inside. This might help you decide how you plan your future crops, e.g., if you are in a situation like early drilling which is more likely to see higher larval pressure, is there a way to increase the robustness of your stems to dilute any potential damage?”

**Canopy management is important in plants which continue to develop normally despite larval damage, since they will have weak stems, Mr Keane said.**

“Now is the time to assess whether crops are likely to need a plant growth regulator. We recommend monitoring crops at the end of February/early March and earmarking any that have a green area index (GAI) above 0.8, that’s about 50% ground cover, for an application of Caryx®.

“Wait for stem extension to ensure the crop is developing normally and apply Caryx® at 0.7-1L/ha from green bud. Big crops, with a GAI of 2 or more will warrant a higher rate of 1-1.4L/ha,” he added.

“Where CSFB larvae are a concern, growers can hold back applications until yellow bud to look for any serious CSFB damage. If the crop is still growing well, it will still only be about 50% of expected final height so Caryx will still provide strong benefits.

“Because Caryx® is fast-acting, it is still very effective at this later timing. While there is a bit less height reduction than at green bud applications, there is a greater effect on the canopy and secondary branching.”

**ADAS monitoring of the crops of Grower Chris Eglington from Norfolk** inspired this new research from ADAS since he was achieving high yields despite high levels of larvae in his crops.

“I find if plants are too tight together, they waste their energy trying to compete with each other. On my farm I sow early and it’s important to go with low seed numbers such as 35 plants per square meter. I double roll to retain moisture and achieve even germination.

“A record high of 56 CSFB larvae per plant was recorded by ADAS on one of my oilseed rape crops, that went on to produce 4.6 t/ha.”

**Mr Eglington,** [**who farms at Letton near Shipdham**](https://www.edp24.co.uk/news/business/20654203.give-peas-chance---farmer-praises-power-pulses/)**,** has been growing crops for over 50 years, and has remained loyal to oilseed rape, seeing it as a vital crop within the rotation but you have to get the foundations right.

“It’s vital to get oilseed rape crops established quickly and ensure you are selecting the right seeds - I will throw away 70% of the seeds I have saved and just keep the big ones to ensure I give my crop the best chance.

“My low plant populations are still yielding well, and I’m convinced it’s because the flea beetle does not like the big thick stems. I joke that it takes a chainsaw rather than a penknife to cut them open and see what’s happening on the inside but it’s essential to find out.”

**Mr Keane reinforces the value of the break crop:** “For years, oilseed rape has been an excellent contributor to crop rotations – its drilling and harvest dates ease workflows, it gives cereals a true break from many pests and diseases, and market price has meant that it has been a very profitable option for growers who have persevered and succeeded with it over recent years.

“I, like many, would like to see improved confidence in it and it is through ADAS’s enlightening research and their practical advice to growers that will help reduce the crop’s recent variability.”

~ENDS~

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Caryx® contains mepiquat-chloride and metconazole.

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