

GOING DEEPER ON PEA LEAF WEEVIL MANAGEMENT

Three years of fieldwork in field peas and faba beans will allow growers to sharpen their approach to this significant insect pest.



Photo: Shelley Barkley

An adult pea leaf weevil. The notches on the leaves indicate adult weevil feeding.

Pea leaf weevil is believed to cause two kinds of damage: first, this year; then, next year.

The first year's damage is inflicted on its host crops of field pea and faba bean. Since pea leaf weevil feeds on root nodules that are essential to nitrogen fixation, immediate crop yields can suffer. With less nitrogen being fixed the first year, the following year's crop (wheat, for example) could be under-nourished or would require added nitrogen.

In recent years, Dr. Hector Carcamo and his colleagues have added vital detail to this picture. In 2016-18, he led a study that examined pea leaf weevil management and produced important conclusions in several key areas.

Weevils prefer faba beans to peas.

"One question we had going in was, does pea leaf weevil do more or less damage in faba beans compared to peas," said Carcamo, Lethbridge-based Research Scientist, Insect Pest Management with Agriculture and Agri-Food Canada. "After all, faba beans have more nodules than field peas and of all the pulse crops, they are the best at fixing nitrogen. Our work found that pea leaf weevils fed more on faba beans."

Faba bean threshold lower than

peas. Having 15% of seedlings with damage on the clam leaf at the 2- to 3-node stage can result in economic yield losses. This threshold is lower than for peas, which is 30%. This shows the importance of managing

the pest through seed treatment rather than foliar application, which the project found did not provide worthwhile protection.

"We found that the plots treated with a seed insecticide showed less damage compared to the plots treated with a foliar insecticide," said team member Asha Wijerathna, PhD student at the University of Alberta.

Pea leaf weevil defence starts in the summer.

Scouting the previous growing season can give growers an indication of how strong the following year's weevil activity is likely to be.

"What is the population of pea leaf weevils at the end of the summer?" Carcamo said. "What are the conditions that might affect the mortality of the pea leaf weevil during the winter? Based on that, before they buy seed, growers need to decide whether or not to get the seed treated."

Carcamo adds that seeding early could invite greater weevil damage; later-seeded crops tend to see less damage.

Nitrogen loss isn't significant.

Based on analysis of soil nitrogen and straw nitrogen of crops planted the next year, Carcamo now believes nitrogen loss caused by damaged nodules the previous year doesn't significantly hurt yields.

Looking forward, he wants to understand how beneficial insects and spiders could play a role in managing pea leaf weevil. Carcamo's final caution is that the environmental impact of chemical control should be carefully balanced with its yield protection benefits.

"The pesticides are not specific to the pea leaf weevil," he said. "When you use an insecticide – either a seed treatment or a foliar – you can expect some negative effects on the beneficial insects."