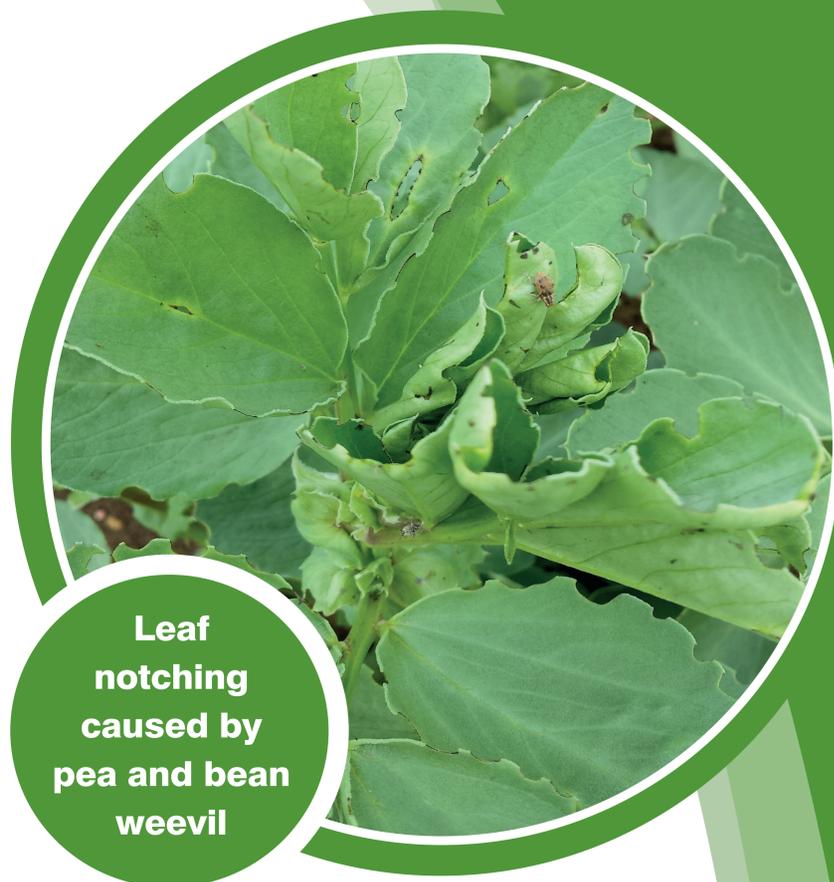


# Lure-and-kill technology to manage beetle pests (*Sitona lineatus* and *Bruchus rufimanus*) of field beans and peas

Pea and bean weevil can be a problem in combining, vining or fresh market peas, broad beans and field beans. Damage caused by the adult is visible as notching around the leaf margins, although this damage doesn't usually significantly affect yield. Loss of yield is caused by the larval stages which feed in nitrogen-fixing root nodules of the plant.



Leaf notching caused by pea and bean weevil



Larvae feeding in root nodules

Adult weevils are beetle-like in shape and 4-5mm in length. They are light grey to brown in colour with faint striping along the length of the wing cases. They have a short snout, but the elbowed antennae typical of weevils.

Migration from overwintering sites, mainly grassy, uncultivated grass margins, occurs in early spring when maximum air temperature exceeds 15°C. Newly emerged spring grown crops are most susceptible to damage,

although in severe cases winter beans can be affected by adults or larvae.

If leaf damage is seen, early treatment of the crop is necessary to interrupt egg-laying and reduce root nodule damage.

A monitoring system is available which detects adults when they begin migrating in the early spring, developed by Rothamsted Research, PGRO and ADAS. The system comprises traps containing an aggregation pheromone lure that is highly attractive to both sexes, and is used to aid spray application decision-making.

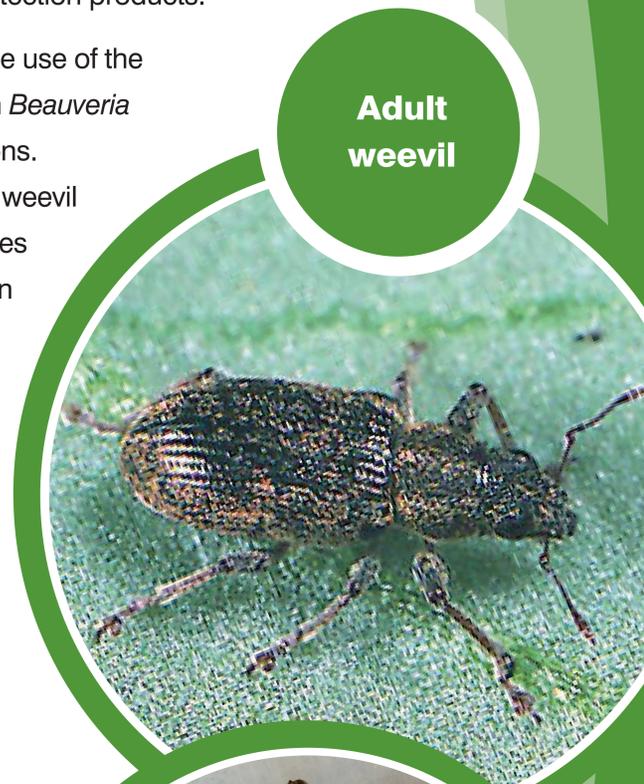
In recent years growers have reported increased damage by these pests, despite chemical interventions. Whether damage is related to increased pest pressure or ineffective controls is unknown.

As a result of this feedback, PGRO, Rothamsted Research, Oecos, Exosect Ltd, Velcourt and BASF plc are undertaking further work

to test the efficacy of a novel biological control agent against pea and bean weevils, with a secondary target for bruchid beetle control. In addition, the project will look at more targeted use of conventional crop protection products.

The work will be based on the use of the naturally occurring pathogen *Beauveria bassiana* in targeted conditions. Using the currently available weevil pheromone, and plant volatiles that were identified from bean floral aromas as the most attractive for bruchid beetle, insects will be attracted to traps and infected with the insect killing fungus, or a conventional pesticide. Conditions will be maintained to avoid infection of beneficial insects.

The project is co-funded by Innovate UK and the Biotechnology and Biological Sciences Research Council, with additional support from industry partners. The project started in October 2014 and investigations will be carried out over four years. The aim of this new project is to provide effective and environmentally-friendly control of both pea and bean weevil and bruchid beetle.



Adult weevil



Bruchid damage and adult