Parasitoid wasps protect lettuce and celery from pests

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Scientists have found that a native British parasitoid wasp has been found to be very effective at controlling the shore flies that infest lettuce and celery greenhouses, damaging crops and annoying farmers.

Shore flies are small black flies that thrive in aquatic environments with lots of algae. In the wild, this means ponds and lakes of fresh or brackish water. Unfortunately for celery and lettuce farmers, glasshouses fit the bill as well. The shore flies don't attack the vegetables but are very keen on the green algae that grow alongside them where water is used as a growth medium.

'Where infestation of shore flies is heavy, the number of flies becomes a nuisance to glasshouse workers, and a sanitary pest on the crops, reducing marketability,' says Luke Tilley, who studied the problem for his PhD at the University of York and Stockbridge Technology Centre. Buyers often reject crops contaminated with larvae, pupae and adult shore, which leads to additional losses.

Killing the shore flies with pesticides is an option, but there is growing pressure from consumers and retailers to cut the use of aggressive chemicals. So Tilley looked into nature's own arsenal for an alternative solution, focusing his research on a solitary parasitoid wasp called *Aphaereta debilitata*.

The wasp is native to Britain and attacks the shore flies in their natural habitat. The female wasps lay their eggs inside the shore fly larvae. 'The wasp egg then develops into a larva and then a pupa within the fly's body of the fly, allowing the host fly larva to develop and pupate,' Tilley adds. Needless to say, the adult shore fly never gets to see the light of day.

Tilley and his colleagues were keen to see if shore flies in glasshouses can also be kept under control by their natural enemies. To do that, the team set up three small greenhouses and separated them into two units with 50 mixed-age lettuce plants

each.

On the first day of the experiment, Tilley introduced shore flies into the greenhouses and let them set up camp. A few weeks later, he introduced solitary wasps to one unit in each glasshouse, and left nature to run its course.

Every week for six months, he removed the pots with the ten oldest lettuces and replaced them with new ones. Each pot was inspected carefully for the number of shore flies and solitary wasps, as well as for damage to the lettuces.

The experiment showed promising results: 'In all three units where the wasps were introduced, the number of shore flies was significantly reduced, along with the amount of crop damage observed,' says Tilley.

This means that the wasp is an efficient control of shore fly populations. 'The single introduction of wasps in our study significantly reduced pest numbers,' he adds, highlighting that the decrease in shore flies was maintained throughout the half-year study.

The findings, published in *BioControl*, show that *Aphaereta debilitata* is a valuable addition to the armoury of measures to keep shore flies under control.

The next step is to make the solution available to growers dealing with shore fly infestations. The parasitoid wasp is not commercially available at the moment, but it may be present in smaller numbers in glasshouses already. Growers can take advantage of this: 'Another paper of ours suggests that there may be some measures for growers to take in order to naturally increase wasp numbers and subsequent control of shore flies,' Tilley suggests.

SOURCE [1]

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