

Sniffer bees

Bees are useful creatures because of their role as pollinators, but they can do more: it turns out they make good detectives. Klaas van Rozen, a Field Crops researcher in Lelystad, will be using their skills to track down diseased seed potatoes.

These are potatoes affected by potato virus Y (PVY). This is by far the most important virus that seed potato growers have to deal with. The virus is spread by aphids. You can tell the plant is diseased by the discolouration and deformation

Growers would benefit a lot from early detection of the potato virus

of the leaves, explains Van Rozen, but that is not always the case. 'It depends on the variety, the virus strain

and at what point you are in the growing season.'

The damage to the seed potatoes costs money, so growers put a lot of time and effort into preventing the disease. Van Rozen: 'They carry out an intensive selection, spray the plants with mineral oil every week to protect them and at regular intervals with insecticide to kill the aphids. The inspectorate checks the fields and there is a check of the tubers after the harvest.'

If too many plants or tubers are found with the virus, batches get rejected. So growers would benefit a lot from early detection of the virus. Detection and removal of infected plants is still a manual job. 'It would be useful to have a

system to remove diseased plants during the field inspection or post-harvest check,' says Van Rozen.

Conditioning

That is where the bees come in. Van Rozen's idea is to train bees to identify the infected plants. He is enlisting the help of the Wageningen company BeeSense. It will use classical conditioning (the Pavlov effect) to train bees to sound the alarm if they detect the virus. The training uses the bee's sense of smell.

'The virus changes the plant's cell structure,' explains Van Rozen. 'This causes the plant to emit aromas, which the bees can be trained to detect. So the bee doesn't smell the virus itself.' The first step is an experiment to demonstrate whether the principle works. Then field trials will show whether it is feasible in practice. RK



Photo Shutterstock

Wild cards

Klaas van Rozen's idea is one of ten projects that have received funding in the Biodiversity-positive Food Systems investment theme. That is one of the investment themes in WUR's updated Strategic Plan. Some of the investment money is going on 'wild cards': small-scale innovative studies. Ten of the 47 wild-card project proposals were accepted, getting a total of 200,000 euros. The bee study received 42,000 euros.