

# Snails select sources of food based on dislike for smells rather than acceptable taste

April 28 2016, by Mr Alan Williams

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Harnessing naturally occurring chemicals could be used as a means to protect crop seedlings being eaten by common pests, a study suggests.

Research led by Plymouth University and the University of Southampton analysed the feeding preferences of hundreds of snails when presented with several different cultivars of oilseed rape seedlings.

It showed the invertebrates were more inclined to choose seedlings based on their dislike of naturally-omitted scents rather than employing taste as their primary method of choice.

Scientists say the research, published in the *Annals of Botany*, represents a key area for further investigation to discover methods of crop protection which do not having lasting environmental impacts.

The research was led by Post-Doctoral Fellow Roger Shannon and Dr Mick Hanley, Associate Professor (Reader) in Plant-Animal Interactions, at Plymouth University. It also involved Professor Guy M Poppy and Professor Philip L Newland from the University of Southampton and scientists from the German Centre of Integrative Biodiversity Research, Jena, Germany.

Dr Hanley, the corresponding author for the research, said:

"Slugs and snails are two of the key pests threatening crop production, and they can be particularly damaging to seedlings, since they cannot

regrow in ways that older plants can. But common prevention methods – such as slug pellets – can have a major environmental impact, and finding ways to protect young crops without causing lasting pollution is a major challenge. But with our research demonstrating the olfactory preferences of molluscs, harnessing these naturally produced chemicals could provide a potential solution without the environmental problems."

For the research, scientists collected snails from the Plymouth and Southampton areas and presented them with a variety of oilseed rape seedlings, with their choices being recorded.

Each of the seedling cultivars was then characterised for the presence of glucosinolates and [volatile organic compounds](#) (VOCs), both types of naturally produced chemicals, to determine whether the snails' choices were linked to either type of defence.

The results showed there was no relationship between the [snails'](#) choices and the presence of glucosinolates, but that seedling acceptability was strongly related to VOCs.

In the paper, the scientists say:

"Crop plants are often bred for various desirable characteristics, but most often priority is given to increased yield and disease resistance over traits favouring herbivore resistance. Increased agro-chemical inputs are often used to maintain productivity; however pesticides can have adverse effects on key non-target species such as pollinators and cause wider contamination. But at a time when increasing demands for food security are in conflict with concern over pesticide use, we show that for one major crop species at least, plant protection could be developed without ecotoxic side effects."

**More information:** Roger W. R. Shannon et al. Something in the air?

The impact of volatiles on mollusc attack of oilseed rape seedlings,  
*Annals of Botany* (2016). [DOI: 10.1093/aob/mcw032](https://doi.org/10.1093/aob/mcw032)

Provided by University of Plymouth

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