

Designer wheat fails anti-aphid field test

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High hopes had rested on a five-year bid by the Rothamsted Research institute in Hertfordshire, England, to create the world's first genetically-modified (GM) crop able to resist pests without the help of chemical sprays

The scientific quest for pest-resistant crops suffered a blow Thursday when disappointed British researchers announced their designer wheat failed to repel aphids in the field.

High hopes had rested on the five-year bid by the Rothamsted Research institute in Hertfordshire, England, to create the world's first genetically-

modified (GM) crop able to resist pests without the help of chemical sprays.

But success under laboratory conditions could not be replicated in the great outdoors, the research team announced in the journal *Scientific Reports*.

"As scientists we are trained to treat our experimental data objectively and dispassionately, but I was definitely disappointed," study co-author Huw Jones said in statement issued by the institute, whose work and facilities had been the target of anti-GM activists.

"We had hoped that this technique would offer a way to reduce the use of insecticides in [pest control](#) in arable farming," said Jones. "As so often happens, this experiment shows that the real world environment is much more complicated than the laboratory."

The team had succeeded in genetically altering the [wheat plant](#) to produce the EBF pheromone or chemical signal against sap-sucking aphids, also known as plant lice.

In the lab, aphids were successfully repelled by the EBF-producing plants, whose yield and appearance was no different to non-modified plants, the researchers said.

They then planted batches of the GM wheat on plots of farmland in 2012 and 2013. The crops were not intended as food or feed.

"However, in the field trials there was no statistically significant difference in aphid infestation between the GM wheat and the conventional wheat used as a control," the researchers wrote, explaining that they had to analyse mountains of data before the definitive findings could be published.

Improve and refine

The study was financed by the British government-funded Biotechnology and Biological Sciences Research Council. Apart from research costs of £732,000, another £444,000 was invested in fencing off the research site for this and future studies.

A further £1.8 million had to be spent on security measures after threats and attempts by anti-GM protesters to damage the research site. In May 2012, police reportedly had to prevent hundreds of activists from ripping up the study crops.

Outside experts said that in spite of the disappointing outcome, the work had not been in vain.

A clear result was obtained, which scientists can now use "to refine and improve their technical approaches to control aphids in crops without using insecticides," Jonathan Jones, a plant molecular biologist from Norwich, said in comments carried by the Science Media Centre in London.

"We are in urgent need of new ways to control insect pests on crops, with very limited options available from pesticide sprays and conventional breeding," added Ottoline Leyser from the University of Cambridge.

"This field trial is an excellent example of the sort of work that is needed."

The Rothamsted team said they were looking at a followup project to uncover why the method didn't work, and to improve it.

More information: The first crop plant genetically engineered to

release an insect pheromone for defence, [DOI: 10.1038/srep11183](https://doi.org/10.1038/srep11183)

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