

News

Non-GM crop spray can raise wheat harvest by a fifth

Oxford scientists claim vital breakthrough to help plants use sugar more efficiently

By Sarah Knapton SCIENCE EDITOR

A CROP spray which can boost farmers' wheat yields by a fifth, without genetic modification, has been developed by scientists at Oxford University.

Researchers have found a molecule

which helps plants make the best use of the sugary fuel that they generate during photosynthesis. And with more fuel, the plants can produce bigger grains.

Other scientists in Britain have developed ways to genetically modify crops to increase yields, and the Department for the Environment is currently deciding whether to allow a field trial for GM wheat in Hertfordshire.

But genetic modification has proved controversial, with campaigners warning it could disrupt nature or be toxic to humans, while critics point out that

GM has never been proven to increase yields, despite 20 years of trials.

In contrast, the new technique which is described in the journal *Nature*, would be far less controversial, and could be administered simply by farmers using a crop-sprayer. The results were seen after just one application.

Professor Ben Davis, of the Department of Chemistry at Oxford University, said: "The tests we conducted show real promise for a technique that, in the future, could radically alter how we farm not just wheat but many different

crops. The Green Revolution in the 20th century was a period where more resilient, high-yield wheat varieties were created, an innovation that has been claimed to have helped save one billion lives.

"By now developing new chemical methods based on an understanding of biology, we can secure our food sources and add to this legacy."

Wheat is one of the three main staple crops grown worldwide, alongside maize and rice. But if farming is to keep up with predicted population increas-

es, yields need to increase 70 per cent by 2050. Although plant breeding and better fertilisers have steadily increased yields, scientists believe wheat has now reached the limit of what can be achieved naturally.

The team at Oxford and Rothamsted Research in Hertfordshire, decided to try to increase yields by helping plants use sugar more efficiently. They created a spray that contains a molecule called sugar trehalose 6-phosphate (T6P).

T6P controls how wheat uses sucrose, the main fuel generated during

photosynthesis. When T6P molecules were added to a solution and sprayed on the wheat plants it created a "pulse" which resulted in more sucrose being drawn into the grain to make starch which increased wheat grain size and yield by 20 per cent.

The study also demonstrated that the spray could enhance plants' ability to recover from drought, which could help farmers overcome dry seasons.

And, because T6P performs the same function in all plants, the technique could potentially be applied to any crop.

Extra funds for rural schools to save them from closure

By Camilla Turner
EDUCATION EDITOR

RURAL schools are in line for a boost in funding as the Government pledges to change rules to ensure that institutions in remote areas have enough money to stay open.

Justine Greening, the Education Secretary, unveiled proposals yesterday to end an "unfair, opaque and outdated" funding system that favoured children in London over those in the countryside.

A new national formula will use a host of factors to calculate how much money is allocated to each school, including "sparsity", which takes into account how small and remote it is.

Under the proposed changes, primary schools which qualify for sparsity funding would receive up to £25,000, which rises to £65,000 for secondary, middle and all-through schools. Overall, an extra £27 million would be spent on the sparsity factor.

The announcement was welcomed by MPs in rural areas. Simon Hoare, MP for North Dorset, said one of the biggest issues facing schools in his constituency is "recruitment of and retention of staff in a rural areas where costs are higher, living costs are higher and all the rest of it. The sparsity quota will be warmly welcomed".

Paul Carter, chairman of the County Councils Network, said the current system leads to county schools receiving half the funding per pupil that inner London schools are given.

Ms Greening also promised extra money to schools with a high population of children who join midway through the year. Schools in areas with an influx of migrants, as well as military children, Roma gypsies and travellers stand to gain under this measure.



PHILYCOMANS/BNPS

Rare breed Brenda Waterman and her son, Kevin, carry crows and buff turkeys off for Christmas at their Dorset farm. The family started Heritage Turkeys 12 years ago after being disappointed with the quality of commercial hybrid birds, and are the only breeders in Britain to have all our native varieties.