



Precision breeding: We must not repeat the mistakes of the GM debate

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With encouraging signs that the new Labour Government is preparing to implement the Precision Breeding Act in England, Norfolk arable farmer David Hill urges Ministers to re-convene the cross-sector working group established under the previous administration to support routes to market for precision-bred products. New breeding techniques such as gene editing promise enormous benefits to society, for example through more sustainable and climate resilient farming systems, reduced food waste, and improved nutrition. But for these technologies to realise their full potential, a collaborative approach will be needed to negate the influence of those with a vested commercial interest in blocking such innovations. We must avoid the mistakes of the GM debate 20 years ago, when scientists kept their heads down, Government Ministers sent out conflicting signals, and the supermarkets used GM avoidance as a competitive issue. Britain's farmers have missed out on a generation of progress as a result. It was a truly shameful episode in the history of British science, which must not be repeated with precision breeding, he warns.

There are increasingly positive signs that the newly-elected Labour administration will shortly bring forward the secondary legislation needed to implement the provisions set out in the Genetic Technology (Precision Breeding) Act 2023, and so pave the way for commercialisation of this vital technology in agriculture and food production in England.

In response to an [open letter](#) calling for early implementation of the Precision Breeding Act, signed by more than 50 leading figures from the scientific and agri-food sectors, Defra Minister Daniel Zeichner [acknowledged](#) the importance of innovation in supporting the Government's policy aims to strengthen food security, enhance resilience and improve agricultural sustainability.

"We are now considering how to take forward the regulatory framework outlined in the Act and will share our plans with key interested parties soon," Mr Zeichner confirmed.

Meanwhile, Environment Secretary Steve Reed has also highlighted precision breeding as one of the technologies needed to support the Government's commitment to tackle water pollution. In a recent [speech](#) on the introduction of the Water (Special Measures) Bill to Parliament, Mr Reed underlined the importance of agricultural innovation:

“We will pioneer solutions through agri-tech, such as using satellite data and AI to apply fertilisers more precisely, and in Precision Breeding, such as higher yielding crops that could reduce the need for fertilisers that run into our rivers,” he said.

And on the international front, Mr Zeichner held a [bilateral meeting](#) with his Indian counterpart Ram Nath Thakur at the recent G20 Agri-Ministerial Summit in Brazil. Precision breeding and gene editing were among the issues highlighted for future collaboration, so there is clearly an ambition for Britain to be recognised as a global leader in these technologies.

But for that to happen, Ministers must also recognise that implementing the provisions of the Precision Breeding Act is only a first step. It is only the start of the journey.

There are influential anti-science forces ranged against these technologies, including activist NGOs and other organisations with a vested commercial interest in holding back innovation in agriculture, by spreading misinformation and unwarranted concern among consumers.

New breeding techniques such as gene editing offer enormous potential to deliver benefits to society, for example through more sustainable, productive and climate resilient farming systems, reduced food waste, and improved nutrition.

But for these technologies to realise their full potential – and learning from the experiences of the GMO debate 20 years ago - there is a need to bridge gaps in public understanding of how our food is produced, and to explain the vital role of science and innovation in providing the healthy, safe and affordable food choices we take for granted.

This is particularly true in relation to plant breeding. Our familiar food crops are perceived by many consumers as ‘natural’, when in reality none of the crops grown on Britain’s farms are native to this country, and most bear only a passing resemblance to their ‘natural’ counterparts. Through continuous scientific advances and human ingenuity, plant breeding has underpinned these transformations.

As the next step in that innovation process, we cannot afford to let the promise of precision breeding slip through our fingers in the same way as happened with GM crops 25 years ago.

I was one of 100 or so trial growers in the Government’s GM crops Farm-Scale Evaluations (FSE) in the early 2000s.

I vividly recall the frenzied nature of the GM debate.

We must learn from that experience.

At the time, very few public sector scientists spoke up for the technology, instead they ran for cover or, even worse, they over-egged the theoretical risks, sensing a rich new seam of research funding.

Government Ministers sent conflicting messages about the technology. From Prime Minister Tony Blair and Agriculture Minister Helene Hayman on the one hand, who saw GM crops as a positive development, to Environment Minister the late Michael Meacher and his ‘special advisor’ the late Stephen Tindale, who together conspired to present the technology in an unfavourable light, and to place ever more unreasonable conditions on the FSE trial operators. This included, at one point, conceding to the RSPB’s demands to scrap one of the planned trials because it was located six miles away from an organic garden centre.

That Tindale moved on from Meacher's service to become the director of Greenpeace UK speaks for itself, although it is worth noting that, some years later, [he conceded](#) that the activists' campaigns against GM crops were "morally unacceptable."

A quieter form of conversion than Mark Lynas, perhaps, but no less impactful as a result.

Meanwhile, one by one, British supermarkets bailed out of selling GM foods, even using perceived consumer concerns as a point of competition. One leading retailer claimed on its carrier bags: *"For your peace of mind we have removed GM ingredients from our own label products."*

And the criminal justice system failed to protect trial growers like myself from criminal damage, intimidation and fearmongering by campaigners.

Many farmers had machinery vandalised and crops ripped up, one even found metal spikes planted in the trial field intended to cause maximum damage.

NGOs routinely sent letters to mothers around planned GM trial sites, warning that their children's health was at risk, or that the value of their house would fall.

To cap it all, a group of self-confessed vandals from Greenpeace infamously walked free from Norwich Crown Court after trashing a trial crop of maize, a perverse verdict celebrated by the mainstream media.

It was a truly shameful episode in the history of British science.

And what exactly did it achieve?

Over the past 25 years, GM crop technology has become the most rapidly adopted crop technology on record, safely grown on hundreds of millions of hectares around the world, and delivering major environmental benefits in terms of reduced chemical use, lower greenhouse gas emissions, and more land spared for nature.

Britain's farmers have missed out on the best part of a generation of progress, even lagging behind many developing countries in our access to genetic innovation.

So in Sub-Saharan Africa, for example, South African farmers are growing GM drought-tolerant and insect-resistant maize varieties.

GM cotton in Malawi has more than trebled yields compared to conventional.

In Nigeria, GM cowpea provides resistance to pod borer, which can devastate up to 90% of the crop.

I do often wonder what farming in Britain might look like today if the GM debate had taken a different turn.

Just imagine the fungicides we could be saving with blight resistant potatoes.

Imagine having the ability to control yield-robbing black-grass with roundup-ready wheat.

Imagine having Bt insect resistance in oilseed rape to combat flea beetle, or in sugar beet to ward off aphids and virus yellows.

Things could be very different.

But of course, the political landscape today is already very different compared to 25 years ago.

The Arab Spring, war in Ukraine, a changing climate and the cost-of-living crisis have all brought a renewed urgency to the issue of food security, and with it the need to redouble efforts to improve public awareness of the importance of agricultural science in safeguarding our future food supply.

In relation to precision breeding, an important step for Ministers will be to reconvene the working group established under the previous Government, with its collective aim to facilitate and support routes to market for precision bred products.

Bringing together representatives from research centres, plant breeders, farmers and growers, food manufacturers and retailers, this working group holds the potential to deliver on the need for common, consistent messaging and pro-active public outreach, supported by effective engagement and collaboration along the length of the agri-food supply chain.

From our scientific institutes leading the early-stage research and development of precision bred products right through to the food retailers engaging directly with consumers, we must work together to avoid making the same mistakes as happened with GM.

This time it can be different. Time for Government to act.

David Hill farms in central Norfolk growing early generation cereal seed, grass seed, oilseed rape, sugar beet and spelt wheat. The farm also operates three processing plants, adding value to its own and other farmers' crops. David is a Nuffield Scholar and a member of the Global Farmers Network. A keen advocate of new technology in agriculture, he was one of the first farmers to host UK trials of GM sugar beet as part of the Government's GM crop Field Scale Evaluation trials in the late 1990s.