

Genetic Technology Bill to take on most pressing environmental problems of our time

Legislation to unlock new technologies to boost food production and support farmers to grow more productive crops will return to Parliament today – paving the way for Britain to become the best place in the world to invest in agri-food research and innovation

Third Reading of the Bill is scheduled for today (Monday 31 October) and is expected to be introduced in the House of Lords the following day.

By introducing a more proportionate and science-based regulatory system for precision-bred plants and animals, it will unlock opportunities to develop crops that are more resilient against disease and the effects of climate change such as drought and flooding, and less reliant on pesticides.

Farming Minister Mark Spencer said:

We are already seeing how new genetic technologies can increase yields, make our food more nutritious and result in crops that are more resistant to disease and weather extremes.

British scientists are leading the world in precision breeding and this Bill will put Britain at the forefront of agri-research and innovation – opening the door for more investment and continuing our work to provide farmers with the tools they need to innovate and use new, smart technologies.

The Genetic Technology (Precision Breeding) Bill covers precision-bred plants and animals developed through techniques such as gene editing, where the genetic changes could have occurred naturally or through traditional breeding methods. This is different to genetic modification (GM), which produces organisms containing additional genes.

While there is great potential for increasing innovation, the government recognises that there is a need to safeguard animal welfare in the new regulatory framework. That is why we are taking a step-by-step approach, enabling use of precision breeding technologies with plants first followed by animals later.

Defra's Chief Scientific Adviser Gideon Henderson said:

This is an important time for agricultural science. The ability to use gene editing to make precise, targeted changes to the genetic code of organisms, in a way that can mimic traditional breeding,

enables development of new crop varieties that are more resistant to pests, healthier to eat, and more resilient to drought and heat as climate changes.

For centuries, traditional breeders have made use of our understanding of genetics to breed plant varieties with desirable characteristics. Gene editing allows precision breeding to make the same type of genetic changes in a far more efficient and precise way, significantly reducing the time needed to create new varieties. Precision breeding is a powerful and important tool to help us tackle the challenges of biodiversity and climate change, while feeding a still growing global population.

Professor Nigel Halford, Crop Scientist at Rothamsted Research, said:

It is tremendously exciting to see this Bill progress to the House of Lords because it will pave the way for this powerful technology to be used in crop improvement rather than just research.

We are already behind much of the world in the application of precision breeding techniques and we are keen to see the Bill become law as soon as possible.

Further information:

The Bill will:

- Remove plants and animals produced through precision breeding technologies from regulatory requirements applicable to the environmental release and marketing of GMOs (Genetically Modified Organisms).
- Introduce two notification systems; one for precision bred organisms used for research purposes and the other for marketing purposes. The information collected will be published on a public register on GOV.UK.
- Establish a proportionate regulatory system for precision bred animals to ensure animal welfare is safeguarded. We will not be introducing changes to the regulations for animals until this system is in place.
- Establish a new science-based authorisation process for food and feed products developed using precision bred plants and animals.

Opportunities brought by the new legislation:

Climate resilient wheat

- Developing wheat that is resilient to climate change will help to increase food production from a crop that 2.5 billion people are dependent on globally.
- Researchers at the John Innes Centre in Norwich have used gene editing techniques to identify a key gene in wheat that can be used to introduce traits such as heat resilience whilst maintaining high yield.

- This discovery presents an exciting opportunity to identify variations of the gene that can give wheat varieties resilience to climate change.

Non-browning banana

- Bananas are a key food crop globally – but there is significant wastage with over 50% not consumed and 10% – 15% lost due to fruit bruising post-harvest.
- Tropic, a leading agricultural biotechnology company in the UK, has recently developed a non-browning banana using precision breeding techniques.
- Given the fruit's high perishability, this innovation has the potential to reduce the amount of bananas that are wasted, reduce carbon emissions and provide higher farmer revenues.

Disease resistant chickens

- Bird flu is a major threat to farmed chickens worldwide, with some strains killing up to 100 per cent of birds in a flock. In some cases, variants of the virus can infect people and cause serious illness.
- In a collaboration between Imperial College London, the Pirbright Institute and the Roslin Institute, a research study has shown potential in using gene-editing to produce chickens that are resistant to the disease. The virus was no longer able to grow inside cells with the genetic change.
- The use of gene editing could help to control the spread of the disease which is urgently needed to protect chickens and to reduce the risk to human health.

On Rothamsted Research:

[Rothamsted Research](#) is a world-leading, non-profit research centre that focuses on strategic agricultural science to the benefit of farmers and society worldwide.

It is also the longest-running agricultural research institution in the world dating back to 1843.

Its key aims include:

- Deliver know-how, data, better practices and new technologies to improve performance, resilience and value.
- Raise the productivity of crop and livestock systems.
- Tackle weed, disease and insect resistance to agrochemicals and improve soil health.
- Enhance natural capital and reduce agriculture's carbon and nutrient footprint.
- Add novel nutritional, health and bioeconomical value to crops and other products.