A disaster by design: the UK's new rules for new GMOs

A report by GM Freeze

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Introduction

The Genetic Technology (Precision Breeding) Regulations were signed into law in May 2025 by Daniel Zeichner MP, then farming minister. This opened the gates for hidden Genetically Modified Organisms (GMOs) to enter our food and farming systems. It also shredded protections against the risks posed by GMOs for which UK farmers and consumers fought hard in previous decades.

Zeichner's sign-off completed the deregulation of newer forms of GMO plants—those categorised as "precision bred" —which was set in motion by the Conservative government when it passed the Genetic Technology (Precision Breeding) Act (GenTech Act) in 2023. The GenTech Regulations for plants will come into force in November 2025. It is expected that the deregulation of new GMO animals will follow, though as of September 2025 the timeline for this is unclear.

This report outlines multiple problems with the new system and why it creates health, environmental and socio-economic risks. The UK's deregulatory regime also poses a threat internationally, as it's an area in which regulatory 'alignment' is being sought. This means that other countries are being pressured to accept, and potentially adopt the same, removal of safeguards.

Current exposure to GMOS in the UK

GMOs are not banned in the UK but they are not grown commercially. There are field trials of both older and newer forms of GMOs for research purposes.

GMOs imported wholesale and then used in the manufacture of food and animal feed must be authorised by the Food Standards Agency (FSA) after it has reviewed a technical dossier. The authorised GMOs appear on a register maintained by the FSA and GMO-containing foods should be labelled at the point of sale. However, products from animals fed a GM diet do not need to be labelled and today most animal feed in the UK is imported, and is GM.

GMOs imported in goods already packaged for consumers do not go through an FSA authorisation process. They do not appear on any registers, and the FSA does not collect any genetic or safety information. GMO ingredients should be labelled at the point of sale—for example, in confectionery and cereals imported from the USA.* However, it is rarely the case that restaurants and takeaways using GM oil will inform customers, and Trading Standards do not appear to enforce the regulations with regard to cooking oil.

What's new about new GMOs?

According to its legal definition in the Genetic Technology (Precision Breeding) Act, "precision breeding" involves the application of "modern biotechnology" (genetic engineering) to make changes to organisms that "could have resulted from traditional processes". It does not involve breeding, and the definition was described as "staggeringly imprecise" by an intellectual property barrister at a parliamentary hearing in June 2022.

So-called precision breeding includes, but isn't limited to, gene editing—a more widely recognised term that refers to the use of specific techniques (e.g. CRISPR-Cas9). Conversely, gene editing includes, but isn't limited to, "precision breeding" —it may result in changes that could not have been produced by breeding.

The definition of precision breeding has been interpreted to mean that no genetic material from other species will be present in the final organism. However, such material is used in the creation of Precision Bred GMOs, and has already been found to persist in subsequent generations from which it should have been bred out.

There is a lack of consensus at the scientific advisory body with key "precision breeding" decision-making powers about what genetic material should and should not be permitted. Furthermore, no limits have been set on the number of genetic changes that can be made.

The legal definition of a Precision Bred Organism creates a scientifically meaningless hypothesis—it's impossible to prove that something couldn't have happened. This places developers at a huge legal advantage, which is likely to be expensive for taxpayers and have a dampening effect on the actions of regulators and advisory bodies.

Summary table:
Problems with the UK's treatment of new GMOs

- No safety testing or assessment of health risks—the GenTech Regulations prevent this.
- No environmental risk assessments.
- No segregation, labelling or traceability, or measures to notify neighbouring farms, or contain or monitor new GMOs along supply chains, which:
  - Removes consumer freedom of choice;
  - Increases contamination risk for nearby farms and wild species;
  - Threatens non-GM production, supply chains and livelihoods;
  - Undermines devolved nation sovereignty;
  - Prevents the management of environmental risks;
  - Threatens to disrupt trade with Europe and internationally, and
  - Prevents the assessment of how changes might affect future crop generations.
- No detection measures will be developed.
- Developers will decide the risk profiles of different organisms.
- There will be inadequate assessment of unintended genetic changes.
- No plants are out of scope—the regulations extend to wild species and trees.
- Patents will extend to conventional breeding, which will stifle innovation in plant breeding and threaten biodiversity.
- There is no requirement for sustainability outcomes of new varieties.
- Detrimental impacts on Food Sovereignty and global food security are likely.
- Sets a precedent for inadequate management of powerful emerging technologies.
- Fails to adequately or scientifically define "precision breeding" and so places developers at a legal advantage, which may have a chilling effect on regulators and expose taxpayers to expensive lawsuits.
- Likely to contravene international agreements and protocols (the Aarhus Convention and the Cartagena Protocol of the Convention of Biological Diversity).
- Assumes new GMOs are equivalent to non-GMOs, and abandons the Precautionary Principle.

How to hide a GMO

There will be no segregation, labelling or traceability of Precision Bred GMOs (PB-GMOs). This is a major problem for any producers, traders or retailers who want to exclude them or—in the case of the organic sector—are legally required to do so. The cost of segregation will be borne by the non-GM sector, making non-GM products more expensive.

There could be country-wide contamination of land and crops because there will be no requirement for anyone growing PB-GMOs to notify neighbouring farmers. This presents environmental risks, livelihood risks for organic producers and the risk of patent infringement claims against farmers.

PB-GMOs will be unidentified and unidentifiable at the point of sale except for fresh fruit and vegetables where the variety names are provided by the seller. In this instance, it might be possible to cross-reference the variety names against multiple lists that are to be maintained by government agencies, and establish whether the varieties being sold are PB-GMOs. In England, in all other cases, it won't be possible to establish whether you're buying PB-GMOs—from bodycare products to processed and prepared foods.

This removes the right of consumers to freedom of choice, despite surveys consistently showing that around three quarters of people want to know whether or not they are buying PB-GMOs[1]. It also seriously undermines the ability of authorities to identify PB-GMOs in the food chain and thereby manage health risks if they are identified.

The Department for the Environment, Food and Rural Affairs (DEFRA) has claimed that a minority of consumers would want to avoid food containing PBOs. However, it made this claim on the basis of data it didn't publish. This move was criticised by the Secondary Legislation Scrutiny Committee, which also drew attention to the likely difficulty of businesses and consumers navigating "a highly technical and complex regulatory framework".

In the near future, buying organic food will ensure that PB-GMOs are avoided, but in the longer term the lack of any measures that will protect against contamination (co-existence measures) poses a threat to organic production.

Human health risks

The GenTech Regulations state that the DEFRA Secretary of State will allow PB-GMO food and feed to be sold if it would not have adverse effects on animal or human health. However, in making this assessment, they "must… not apply any test… which would not otherwise be applicable in relation to any food or feed produced from organisms which are not produced from the application of modern biotechnology".

This astonishing and deeply worrying clause forbids regulators from treating PB-GMOs differently from traditionally bred organisms when they assess safety, and restricts the tests that will be conducted.

The Food Standards Agency (FSA) claims it will conduct "in-depth safety assessments" of PB-GMOs where necessary. But this statement is misleading. What the FSA will actually do is look at the data provided by developers and make an assessment based on this. It will only do so if the PB-GMO is self-classified by developers as falling into a higher risk category, Tier 2. Neither the FSA nor any independent body will conduct any safety *testing*. If developers decide that their products are low-risk, or Tier 1, the FSA will not look at any data at all, but rather read the "descriptive statements" provided by developers.

Gene editing in human and animal cells has been found to have significant unintended consequences, but government agencies are not going to require systematic monitoring nor reporting of unintended genetic changes to genomes[2]. This safety measure would be possible through techniques such as long-read ultra-deep whole genome sequencing and "omics" analyses[3]. In their designation of risk status, developers are only required to refer to the *expected alterations* to source organisms rather than the *actual composition* of their PB-GMOs.

An expert opinion on the risks of new GM plants published by the French National Agency for Food, Environmental and Occupational Health Safety (ANSES) states that potential risks include those "linked to unexpected changes in the composition of the plant, which could give rise to nutritional, allergenicity or toxicity problems"[4]. The study is supported by other government agencies, such as the German Agency for Nature Conservation, but appears to have been completely ignored by the UK's Food Standards Agency.

Environmental risks

No environmental risk assessments for PB-GMOs are required under the GenTech Regulations, nor are any measures required to manage risks. There will be no post-market monitoring of PB-GMOs. The risks associated with newer forms of GMOs are under-researched and the GenTech Regulations mean this is unlikely to change.

General risks stem from the failure to identify PB-GMOs in fields or supply chains, or to notify others of their existence, or to segregate them from other plants and foods. Contamination of non-GM varieties in such circumstances is almost inevitable.

Wild species may be contaminated with genetic material from modified crops, and the impact will depend on the traits introduced and how they emerge in future generations of the plant. One concern is the creation of invasive species, another is the impact on other species such as insects.

Many risks associated with genetic engineering are organism-specific. For example, herbicide-tolerant plants come with their own set of associated environmental and socio-economic risks. They have been found to increase chemical use over time as weeds develop a resistance, requiring ever greater amounts of chemicals to be sprayed. Despite government claims that so-called precision breeding will reduce chemical use in agriculture, herbicide-tolerant gene edited crops are a major area of research, and the Regulations do not exclude these from PB-GMO designation. When in opposition, Daniel Zeichner MP acknowledged that there were issues with this.

Insecticide-producing crops carry the risk of negatively affecting populations of non-target species, such as bees and other beneficial insects. If insecticide-producing plants cross with wild species, this will affect crucial insect populations.

Wild species may also be deliberately genetically modified, and the Regulations do not prevent this. This may be because of claims that they will be good for conservation purposes, but there has been a lack of public consultation on this approach and much concern about using genetic engineering in this way.

The genetic modification of trees is of particular concern given their long lifecycle, the number of species they interact with and their ability to spread pollen and seeds over long distances.

Their lifespan means that it's impossible to fully assess the long-term risks they may pose to forest ecosystems, local communities and indigenous people.

Science undermined: Risk, probability and a nonsensical hypothesis

The GenTech legislation has been constructed in a way that critically undermines the very foundations of scientific enquiry: the assessment of risks and probabilities, and the testing of hypotheses.

Companies are able to bypass the environmental and health-related safety measures that are in place for GMOs if their PB-GMOs are granted "precision bred" status. The Advisory Committee on Releases to the Environment (ACRE) provides DEFRA with advice on individual applications. According to ACRE, PB-GMOs are no riskier than traditionally bred organisms. The problem is, because it's already decided this, it is now unable to consider risk when it assesses PBO applications. This was an issue that became apparent during an ACRE meeting in July 2025, at which a number of other problematic issues arose.

ACRE will not consider the probability of PB-GMOs occurring through traditional breeding techniques, apparently because "likelihood is not in the Act". This may help to explain why no limits have been set on the number of genetic changes that can be made. At the July meeting, one member expressed concern that this could result in "every amino acid in a protein" being changed, without providing grounds for refusing PBO status.

Furthermore, the legal definition of a PBO—that it could have happened by another process—is scientifically meaningless because it presents a hypothesis that cannot be tested, or disproved. It's impossible to prove that something couldn't have happened.

This means there will never be any solid legal grounds for rejecting PBO applications, and this would place developers at a major advantage if they wanted to legally challenge a refusal of PBO status. If a court finds in a company's favour, it will be taxpayers who ultimately bear the costs. ACRE is perhaps more likely to act with caution in order to avoid court cases (and therefore grant PBO status even where there may be reservations within the Committee) than precaution in order to protect human and environmental health.

The Precautionary Principle is a risk management approach that is enshrined in environmental and health law, whereby an action should be avoided if there is scientific uncertainty about risks. It is not honoured in the GenTech legislation, and this has wider implications for the legal frameworks around risk management in the future.

The fact that PB-GMOs have not been clearly or scientifically defined also means that there are no tests that could determine an organism's PB status. Everything is up to the discretion of ACRE, which has shown that it is unwilling or unable to set limits on either the type or number of genetic changes made. Consequently, there is huge potential variation in the organisms that could be produced, and the claim that they will never be riskier than conventionally bred organisms is demonstrably ludicrous.

A patent problem

PB-GMOs grown and sold in the UK will be subject to patents and these will extend to conventional varieties. This is because the traits can be patented and if the same traits can be achieved through conventional breeding then such breeding will be restricted by the patents. According to No Patents on Seeds, patent claims already affect more than 1,000 European plant varieties, and many of the patent applications also claim the food products derived from the plants[5].

The GenTech Act and Regulations do not address patents at all, which is remarkable given their potential impact on the food system and the fact that they have become a major barrier for the EU adopting new regulations for new GMOs.

Patents present an economic risk to farmers because of potential legal action arising from their use of, or contamination of their crops with, patented genetic material. In a 2005 report on Monsanto's patent-related litigation in the USA, the Centre for Food Safety (CFS) found that the company (now merged with Bayer) used "heavy-handed investigations and ruthless prosecutions that have fundamentally changed the way many American farmers farm".

Monsanto was estimated to investigate at least 500 farmers each year for possible patent infringement[6]. Farmers across the country faced financial ruin if they lost against Monsanto in court, and many settled out of court.

According to the CFS: “The result has been nothing less than an assault on the foundations of farming practices and traditions that have endured for centuries in this country and millennia around the world, including one of the oldest, the right to save and replant crop seed.”

It’s not just American farmers who have suffered. Patents have been found to lead to economic hardship for food producers in other countries too. Patents on plants were first granted in the 1980s and by 2021 there were over 13,000 filed worldwide according to a database maintained by Kein Patent Auf Leben (No Patent on Life).

Beyond the impact on individual farmers is the potential impact of patents on conventional plant breeding, agricultural systems, food security, Food Sovereignty, biodiversity, and resilience in the face of our changing climate. These are complex and interrelated issues.

Patents and other forms of intellectual property rights over plants have a “major impact on both cultivated and wild biodiversity,” according to the citizens’ watchdog *Inf’OGM*. The UN Food and Agriculture Organization acknowledges that genetic diversity is key to adapting to changing conditions.

According to a statement signed by more than 200 organisations, including Greenpeace, European Coordination Via Campesina, IFOAM Organics Europe and GM Freeze, patents lead to biopiracy:

> “Claiming patents on living organisms poses serious ethical questions because life is not a human invention. What’s more, these so-called "inventions" for which patents are claimed are often based on already existing genetic material that is collected from nature or from farmers’ fields, without their free and informed consent nor compensation or sharing of the benefits obtained via the patent.
>
> “European patent law allows private companies to claim a patent both on the techniques used to obtain a plant… and on the plant products and genetic information resulting from these techniques. This means that patents can extend to traits and genetic material that are present in plants obtained via conventional breeding (non-genetically engineered), or that exist in nature. In this way, private companies privatise genetic resources that do not belong to them (biopiracy).”

Regional and international impacts

Devolved nations

The Act only applies to England, but the Westminster government has decided that, as a result of the Internal Market (UKIM) Act, PB-GMO products placed on the market in England can be sold in Scotland and Wales without being subject to the GMO regulations that would otherwise apply there. This directly undermines the sovereignty of the devolved nations in areas in which they are supposed to be able to make their own laws (devolved powers)—agriculture, the environment and consumer advocacy.

The Scottish Government has said that it is "wholly opposed to the imposition of the Internal Market Act" for PB-GMOs. The Welsh Government has not agreed to a Legislative Consent Memorandum.

The imposition of GMOs in Wales and Scotland creates an unworkable regulatory nightmare, with unacceptable risks for small retailers. The UKIM Act only applies to the product as it is first put on the market. If PB-GMOs undergo any processing in Wales or Scotland, they will fall under the existing GMO legislation there. With no segregation or labelling of PB-GMOs, though, it won't be possible to identify those products sold from England that would need to be labelled post-processing.

Would a Welsh sandwich maker be able to check every ingredient it used and label accordingly? When PB-GMO wheat comes onto the market in England, will all Scottish and Welsh bread need to be sold with a "may contain GMOs" warning, in case some of it has been sold over the border?

This situation also creates the potential for the same product to be labelled differently in Scotland depending on where it was manufactured. Bread produced with PB-GMO wheat in Scotland would carry a GMO label, but wouldn't if it were produced in England. Perversely, this may mean that the Scottish bread is less popular, creating a trade advantage for England and a disincentive for value-added production processes in devolved nations.

Products identified as PBOs imported from third countries into Wales or Scotland will fall under existing GMO regulations. However, if the same products were imported into England and then transported into Wales and Scotland, they would not fall under GMO regulations.

This undermines the principles of non-discrimination in global trade, and may place the devolved nations in an untenable situation regarding their existing trade agreements.

Trading problems with Europe

At the time of writing (September 2025), negotiations were ongoing in the European Union regarding the deregulation of newer forms of genetic technologies. Issues yet to be resolved include labelling, traceability and patents.

Different requirements in the UK and Europe for new GMOs could have serious negative effects for *all* British agricultural producers. For British products to be sold in Europe, customs officials would need to establish whether or not they were PB-GMOs. Without labels, a system would need to be developed that, DEFRA has predicted, would involve "checks and certification requirements", though might in future also include testing. The resulting delays and additional paperwork have been predicted to apply to exports worth around £8.56bn a year, and would push up the costs of production.

This figure comes from DEFRA's 2022 Impact Assessment (IA) of the Genetic Technology (Precision Breeding) Bill. The IA was judged not fit for purpose by the Regulatory Policy Committee. When DEFRA published the draft GenTech Regulations in February 2025, it didn't even produce an Impact Assessment—a highly irresponsible move for which it was strongly criticised by the Secondary Legislation Scrutiny Committee. The not-fit-for-purpose IA from 2022 is, therefore, the only estimate of the likely impacts that these Regulations will have on trade with our most important trading partner if Europe regulates differently. For example, if it proceeds with the European Parliament's position that products produced using new genetic technologies should be labelled and traceable.

The EU-UK reset deal

A few days after Zeichner signed the GenTech Regulations into force, the UK and EU began formal talks on a deal designed to ease post-Brexit trade restrictions. The pro-biotech lobby asked for assurances that the GenTech Regulations would not get paused or rolled back, given that they now represent a significant departure in standards. The DEFRA Secretary of State, then Steve Reed, sounded confident that they would not.

"We are continuing with the legislation," he told a DEFRA Committee in May 2025. "The door remains open to seek exemptions so that the gene editing programme in the UK can continue. It is fair to say that this country is ahead of Europe on this. There are many parts of the European Union that are looking to us for leadership, so we have their support in this, but it is an area that the agreement leaves open."

It would appear that the UK-EU reset deal could be used as a lever to push the EU into adopting similarly problematic—'aligned'—legislation for newer forms of GMOs.

International trade and commodity crops

Internationally, trade regimes differ with regard to products from newer forms of genetic engineering. Now that the UK has decided it won't segregate PB-GMOs, it's unclear how British products for which there are PB-GMO varieties could be traded with countries that require additional controls for such products.

This applies to supplies to commodity markets, which function on the basis that products are the same no matter where they're bought. Wheat is of particular concern given the importance of the crop[7] and the fact that wheat produced using new genetic technology is under development in the UK[8].

Speaking at a Westminster Food & Nutrition Forum policy conference in April 2025, the GM crop developer Professor Cathie Martin acknowledged this was a problem: "The wheat breeders are very anxious about mixing in GE [gene edited] with non-GE and having to separate it," she said.

Food Sovereignty and genetic engineering

The Food Sovereignty Movement is a global movement of small and medium-scale food producers that is recognised by the United Nations. It is spearheaded by La Via Campesina, according to which:

> "Food Sovereignty is the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems. It puts the aspirations and needs of those who produce, distribute and consume food at the heart of food systems and policies rather than the demands of markets and corporations."

The Food Sovereignty Movement rejects genetic engineering technologies, recognising the risks they present for seeds and seed systems, health, biodiversity, ecosystems and peasants and Indigenous Peoples' rights.

"GMOs are contrary to the sustainability of food systems and peasants' and Indigenous Peoples' way of life, which is built upon autonomy and resilience," according to the International Planning Committee for Food Sovereignty.

"The struggle against GM crops is grounded towards the fight for Food Sovereignty," said La Via Campesina when Kenya lifted a ban of GM crops in 2022. "GMOs are being promoted not to solve hunger problems but rather to serve the market for transnational seed companies."

Impacts on global food security and Food Sovereignty

What happens in the UK in terms of regulations, research and trade agreements has profound effects in other areas of the world. The UK's deregulation of new GMOs, combined with trade deals, may have ramifications for food security and Food Sovereignty, and for farmers, communities and ecosystems around the world.

Provisions or mechanisms of trade deals to consider include:

- Regulatory alignment—the potential for other countries to be pressured to adopt similar legal frameworks governing new genetic technologies so they can trade with the UK.
- Investor State Dispute Settlements—the potential for other countries to be sued if they don't pursue the same legal frameworks for new genetic technologies.
- Intellectual property provisions on seeds—commitments within trade agreements to align national laws with the International Convention for the Protection of New Varieties of Plants 1991 (UPOV 91), which restricts the ability of farmers to save, exchange and sell seeds.

No development of detection methods

The UK government has decided not to develop analytical detection methods for PB-GMOs. This is against the recommendations of a report commissioned by the FSA. Furthermore, the FSA and DEFRA will not be collecting the information that is deemed necessary for—or would at least greatly assist—the development of detection methods in future.

In contrast, the European Union is actively funding detection strategies[9]. The UK, then, will fall behind scientific advances in this area if it fails to invest in detection methods, leading to disadvantages in the event of non-tariff trade barriers.

It should be noted that, under the older regulation for GMOs, developers had to supply the genetic sequence details, changes made, a detection method and sample (reference) materials to regulators as a condition of marketing. These elements of the older regulation could easily be required for PB-GMOs as well, saving considerable public funds and making the work of regulators far easier.

Lack of traceability

The only traceability requirements under the GenTech legislation are those that apply in general food law—that traders must be able to disclose their direct suppliers and customers to authorities if asked. At the FSA's March 2024 Board meeting, Dr James Cooper, the FSA's Deputy Director of Food Policy, explained to GM Freeze that this was traceability to all *possible* sources rather than *actual* sources. There could be multiple possible sources—he

used an analogy of a tree with multiple branches. Likewise, it would not be possible to trace the *exact* products that contained a PB-GMO, only those that *potentially* contained it.

In the event of a safety-related product recall of a PB-GMO, or where DEFRA retracted a decision to grant PB status to a developer, this lack of traceability could result in losses for all *potential* suppliers and distributors of a product, whether 'precision bred' or not. For example, where a PBO wheat was on the market and mixed with other wheat, all wheat that potentially contained the PBO would need to be removed from sale. This could have country-wide ramifications.

International agreements

In pursuing this deregulatory approach, the British government is at risk of contravening its international agreements.

The UK has signed the Cartagena Protocol on Biosafety to the UN's Convention on Biological Diversity. This is a legally binding international agreement that addresses the risks to the world's biological diversity and human health posed by Living Modified Organisms (LMO is the term for GMO under the Convention). However, the UK government has stated that it doesn't consider the Cartagena Protocol to apply to GMOs that could have occurred naturally or been produced by traditional methods.

The government's dismissal of the Protocol on the basis of something that has not been adequately or scientifically defined, and is therefore not provable, is a direct disregard of the country's international obligations. Furthermore, taking a unilateral position on the issue is inappropriate given the focus of the Protocol on the transboundary movement of LMOs and the international impacts of their release.

The UK is also a signatory to the Aarhus Convention, which enshrines the right of citizens to have access to environmental information and participate in environmental decision-making. Given that the UK's Regulations don't require PB-GMOs to be identifiable at farm level or through supply chains, it does not intend to uphold these legally-binding rights.

Emerging technologies and future-proofing

The scope of the UK's GenTech Act is broad and may encompass a range of technologies currently under development. The Regulations in relation to plants may set a precedent for the inadequate regulation of powerful emerging technologies.

Microorganisms such as soil microbes may fall within the scope of the Act in future. Knowledge in this area is limited, which affects the ability to predict or control outcomes. Issues of particular concern include the impossibility of containment, horizontal gene transfer, unintended impacts on species of plants and insects due to changes in microbiomes, and novel pathogens.

Other genetic technologies that could have major impacts on the environment and on society include gene drives, RNA 'gene-silencing' sprays and genetic modification combined with Artificial Intelligence. These should be developed with transparency, regulatory oversight and public awareness, and it's hoped the British government will takes a more responsible approach than it has with the GenTech legislation.

No requirement for sustainability outcomes

The biotech industry and politicians have made a number of claims about the potential for new GMOs to provide environmental benefits, such as reducing chemical use and being resilient to climate change. However, there are no requirements for the new GMOs being developed to have any sustainability aims. Nor, to the best of our knowledge, are there any sustainability criteria under development for the assessment of new GMOs.

For all the talk of environmental benefits, developers are not required to provide any justifications for the new GMOs they develop—their sole purpose could be profits, market capture and the spread of patents. There are new GMOs under development with herbicide resistance, which the European Parliament has recognised as causing increased chemical use over time. When Europe enacts its own legislation for new GMOs, it is likely to exclude herbicide-tolerant crops from those that are more lightly regulated. The UK has implemented no such curbs on crops that are likely to lead to an increase in chemical use.

Summing up: In whose interest?

Huge public mobilisations against GMOs in previous decades have meant that, until now, genetically modified organisms have been largely kept at bay in the UK and Europe. In countries where they are permitted, such as the USA, the use of chemicals in agriculture has increased, and so has the concentration of power in food systems—just four agrochemical companies control over 60% of the global seed supply.

As the climate-wrecking impacts of industrialised agricultural systems become ever more apparent, GMO 2.0 has landed. And GMOs have had a face-lift.

This time around, the biotech industry appears to have recruited the British government in its marketing campaign. Free from the shackles of advertising standards, government officials have been making wildly optimistic and entirely unsubstantiated promises about the technology. It will, they say, solve the very problems that industrial agriculture causes in the first place.

As she introduced the GenTech Regulations to a Parliamentary Committee in March, Emma Hardy MP claimed that so-called Precision Bred Organisms would "transform and modernise our food system". But fiddling with genes does not offer systemic changes. Quite the opposite.

The loss of genetic diversity as a result of genetic engineering could further lock us into our current unsustainable food production systems. Alternative systems, rooted in agroecology and Food Sovereignty, could be undermined by the contamination of non-GMO seeds. Genetic engineering takes the focus away from safe, proven and sustainable alternatives, and puts ownership and control of genetic resources into fewer and fewer hands. This is not good for farmers, consumers, the environment or future generations.

Notes

* Reese's and Hershey's products sold online via Ocado list ingredients produced from genetically modified crops, as does the listing for Malt-O-Meal Marshmallow Mateys and Mike & Ike sweets. This is not an exhaustive list.

[1] 'Consumer perceptions of genome edited food', FSA, July 2021. Available from: https://www.food.gov.uk/sites/default/files/media/document/consumer-perceptions-of-genome-edited-food.pdf; 'Summary of responses to a consultation on the regulation of genetic technologies', Defra, 29th September 2021.

Available from: https://assets.publishing.service.gov.uk/media/61532cc5e90e077a291f391f/genetic-technologies-regulation-summary-of-responses.pdf; 'YouGov Poll: UK citizens demand robust regulation of GMOs', Beyond GM, 18th November 2022. Available from: https://beyond-gm.org/yougov-poll-uk-citizens-demand-robust-regulation-of-gmos/

[2] "Off-target effects" in other places in the genome and "unintended on-target effects" at the intended edit site.

[3] i.e. transcriptomics, proteomics, and metabolomics.

[4] 'Risques et enjeux socio-économiques liés aux plantes NTG', ANSES, January 2024. Available from: https://www.actu-environnement.com/media/pdf/news-43622-avis-anses-nouveaux-ogm.pdf Cited in: 'Risks of new GMOs: French food safety agency ANSES recommends case-by-case assessment', GM Watch, 7th March 2024. Available from: https://www.gmwatch.org/en/106-news/latest-news/20391-risks-of-new-gmos-french-food-safety-agency-anses-recommends-case-by-case-assessment

[5] No Patents on Seeds! Has researched a range of patent applications. These include: tomatoes, where a patent claims exclusive rights to plants with tolerance / resistance to the ToBRFV virus, despite the fact that relevant genetic variations that confer resistance have been detected in wild relatives of domesticated tomatoes; patents related to around 80 plant species resistant to the fungal disease northern corn leaf blight, including maize, rice, eucalyptus and onions; and patents by Carlsberg and Heineken that cover barley plants derived from conventional breeding, their usage in brewing as well as the resulting beer brewed. *Inf'OGM* has reported on the Dutch organic maize breeding company threatened by patents on cold resistance held by KWS.

[6] The story of Percy Schmeiser, a Canadian farmer who fought Monsanto in court, was portrayed in a 2020 film starring Christopher Walken.

[7] Wheat exports were valued at £252 million in 2022. https://www.gov.uk/government/statistics/agriculture-in-the-united-kingdom-2022/chapter-13-overseas-trade

[8] 'The results are in: Gene edited wheat field trial delivers', Rothamsted Research, undated. Available from: https://www.rothamsted.ac.uk/news/results-are-gene-edited-wheat-field-trial-delivers

[9] For example, the DARWIN and DETECTIVE projects.

Photography by Jo Thomas @jo_wild_revival