

Consumer perceptions of precision breeding: Executive summary

Results available: Results available

Area of research interest: [Behaviour and perception](#)

Research topics: [Novel foods](#)

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[The Board Paper](#) published 9 March 2023 seeks Board input in respect to Consumer information on precision bred food.

The Genetic Technology (Precision Breeding) Bill is currently progressing through parliament. To understand consumer perceptions further, the FSA has commissioned research to build on [Consumer perceptions of genome edited food \(2021\)](#).

Methodology

This research was conducted in two stages:

Phase 1: Polling

- A quantitative online survey, with 4,177 respondents across the UK.
- Conducted via the Ipsos Access Panel, allowing national and regional samples that are representative of the population on key demographics.
- Achieved total sample of 4,177 UK adults aged 16-75. Sample for England (1,900), Wales (1,016), Scotland (1,005) and Northern Ireland (256).
- Fieldwork ran from 29 July to 1 August 2022.

Phase 2: Deliberative workshops

- Reconvened deliberative workshops, with each cohort attending two 3-hour sessions hosted on Zoom.
- The achieved sample was 97 in total, with 43 in England, 26 in Wales and 28 in Northern Ireland. Scotland was not included in the qualitative research as Food Standards Scotland will be carrying out their own deliberative research with consumers in Scotland.
- Participants had enough time to familiarise themselves and ask questions about precision breeding before having to consider their own opinions.
- Participants received £120 for their time.

Awareness and understanding of precision breeding

There was very low awareness of precision breeding, both in workshops and among polling respondents. Very few had ever heard of precision breeding, and generally they did not know

what the term referred to.

Three quarters of polling respondents (75%) have not heard of precision breeding, whilst just one in twelve (8%) have and know what it is, and 16% have heard of it but are unfamiliar.

However, it is important to note that they also had low awareness and understanding of food production methods generally, including conventional breeding methods.

Workshop participants who had heard about precision breeding said they had heard about it from EU-Exit related news about trade and imports, or from New Scientist articles about scientific developments such as CRISPR.

Once participants knew what precision breeding was, they displayed some key initial reactions, which were underpinned by their general attitudes to and understanding of food technology and science. These initial reactions often informed their overall attitudes throughout the workshop discussions.

- There were participants who viewed precision breeding as a natural progression from conventional breeding, and a logical next step that is similar, but more efficient than selective breeding.
- There were also participants who viewed precision breeding as unnatural interference, and just a re-brand of genetic modification. These participants viewed precision breeding as unpredictable and likely to cause unpredictable health impacts in the long-term.

Overall, half of survey respondents (50%) said that precision bred food products should be available for sale in the UK in the future, compared to fewer than three in ten (29%) who said they should not be.

However, both the workshop and survey findings demonstrated that precision breeding is less acceptable in animals than in plants. A majority of the survey respondents (54%) think it would be acceptable to use the precision breeding of plants in food production, whilst just 35% said precision breeding of animals is acceptable.

There were some negative reactions to the terminology, with the word 'breeding' closely associated with livestock rather than crops. This was off-putting to some participants because precision breeding in animals was often not seen as acceptable. Participants suggested that 'grown' or 'cultivated' or even 'engineered' are words that are more closely associated with plants.

When hearing about how precision breeding works, the word 'mutation' was also very off-putting for participants who were less familiar with the scientific concepts. They viewed mutations as a negative or scary occurrence, and therefore not a word they would like to associate with their food.

Perceptions of risk and benefits

It is important to note that the benefits and risks reported on here are the respondents' perceptions, the ones that matter to them; these may not be based on the existing scientific evidence. As this report represents participants' views, it is important to include all of these, as they demonstrate the concerns, expectations and areas of confusion for consumers.

Key perceived benefits for consumers include: Improved health benefits such as increased vitamins in food, or allergen safe foods, potentially cheaper foods if cost savings from higher yields passed onto consumers, improved availability of foods if less reliance on imports due to UK climate friendly precision bred crops.

Key perceived benefits for the economy and food industry include: Farmers benefiting from higher yields due to improved resilience and fewer imperfections in crops, more local food production if crops altered to be resilient to UK climate, and more jobs created in research and development to create new precision bred crops.

Key perceived environmental benefits include: Combatting impacts of climate change with more resilient crops, lowering carbon emissions by increasing local food production and reducing imports.

Other perceived benefits include: Global benefit of creating resilient crops that may address food security in countries impacted by climate impacts such as floods.

Key perceived risks for consumers include: Risk of unknown long-term health impacts caused by consuming precision bred foods, emergence of new food intolerance, lack of transparency about decision making meaning that the public interest is not prioritised, lack of information undermining consumer choice, or more expensive foods if the costs of research and development passed on to consumers.

Key perceived risks for the economy and food industry include: Monopolisation of precision bred foods by large companies may price out smaller companies and hoard profits generated by the technology, risk to trade negotiations for the UK if deviating from the EU stance on precision breeding.

Key perceived environmental risks include: Risks to biodiversity if more resilient precision bred crops are not contained and cross contaminate non-precision bred crops, risk to ecosystems if new crops diseases mutate.

Other perceived risks include: Risk that monopolisation of precision breeding may cause increased global inequity if smaller countries who lose key export income due to increase in UK grown precision bred crops, or if they are not able to access the technology to combat food scarcity after human or natural disasters, risk of crossing ethical and moral lines by 'playing god' with the DNA of other organisms.

Participants felt that any benefits achieved by precision breeding will be seen sooner, yet negative impacts may only become obvious in the long-term, too late to be properly addressed.

There was a sense that scientific advancements like precision breeding are necessary to tackle both global and domestic challenges, such as climate change and the cost of living crisis. It was also suggested that precision breeding may provide some security to the UK's food supply, often cited in relation food shortages that participants linked to the pandemic and the UK's exit from the EU.

However, there was still large concern amongst participants, particularly about the unknown. Whether they were supportive of precision breeding or not, participants felt that it is worth it only if very tightly controlled, assessed, and monitored.

Understanding and awareness of food regulation in the UK: food you can trust

There was generally very strong confidence in current UK food regulation, with participants trusting that food available to them is safe.

Among survey respondents, a large majority of over eight in ten (83%) are confident that the food they currently buy in the UK is safe to eat, while just a small minority (12%) said the opposite.

Workshop participants said this trust has been undermined to some extent by previous controversies, with participants sometimes referring to the horse meat scandal and “Mad Cow” disease. Participants responded particularly well to the independent nature of the FSA. They viewed the FSA’s work as more trustworthy because it is non-political.

Participants were reassured that the new food risk assessments process can take up to 2 years, feeling that this demonstrated appropriate thoroughness. Some participants were also supportive of the proportionate assessment of foods that are new to the UK market yet widely consumed in other countries (such as Chia seeds) compared to new foods with little or no history of consumption in other countries (such as Quorn).

Workshop participants said that they trust scientists, experts, farmers, and independent regulators. They did not trust politicians or large corporations such as biotech companies, supermarkets or large food producers. The quantitative survey showed similar patterns of trust. Around seven in ten trust scientists (75%), farmers (73%) and scientists advising on food (69%), and three in five say the same about regulators such as the FSA (62%). Just under half trust food manufacturers (49%), and only 14% trust politicians.

Workshop participants were asked what they would want or expect to be in place so that they could trust that precision bred foods were safe. They wanted unbiased, independent governance of precision breeding, and reassurance that decision making is led by scientists and experts, and not private or political bodies.

Participants were very clear in their desire for thorough safety testing of all new precision bred products. They wanted to know that risk assessments would have high standards and require strong evidence and that the FSA’s work to regulate precision bred foods would be adequately funded so that consumers can trust that the processes are followed thoroughly.

Due to low trust in politicians and private corporations, participants wanted full transparency about the organisations and individuals who fund precision breeding research, develop new crops, or produce precision bred products. They felt it is important for consumers to know which products are precision bred, and to have been well enough informed that they can understand what this means.

Participants also wanted to ensure that precision breeding technology and precision bred seeds were accessible for small producers and developing countries. They worried that without market regulation large producers may monopolise precision breeding technology.

Participants were also keen to see separate environmental impact risk assessments conducted on new precision bred crops, as part of the authorisation process.

Views on the Genetic Technology (Precision Breeding) Bill and regulatory framework

The Genetic Technology (Precision Breeding) Bill was introduced to Parliament in May 2022 and will set the legal parameters for the release and marketing of, and risk assessments relating to, precision bred plants and animals and the marketing of food and feed produced from such plants and animals.

Overall, participants across the groups reacted positively to the idea that the Bill would create a new category specifically for precision bred foods. Due to the scientific differences between genetic modification and precision breeding, participants felt it logical that the two were separated. They felt this may improve transparency and consumer choice for those who are happy to eat precision bred but not genetically modified foods.

Some participants opposed the Bill because they fundamentally disagreed with the distinction between genetic modification and precision breeding, arguing that despite the difference in outcomes, it is still altering DNA and should be considered a type of genetic modification.

Workshop participants largely supported the concept of a two-tier risk assessment framework, saying that the approach is logical, by prioritising FSA resources to focus on thorough assessments for products that were more likely to have risks, and avoiding over-assessing lower risk foods in Tier 1 and that we already know to be safe. More details about the difference between Tier 1 and Tier 2 is described in the main body of the report.

Some participants disagreed with the two-tier system, due to their view that that all precision bred products should be subject to more rigorous Tier 2 level screening. They reasoned that there is no way to predict what risks may be discovered in the future, and therefore Tier 1 assessments would not be acceptable while precision breeding is new.

Some participants felt strongly that the two-tier system should only apply to precision bred crops, not livestock. These participants felt that all precision bred livestock should be subject to Tier 2 regulation and assessment, or subject to a separate bill and regulation system entirely due to the common opinion that precision breeding in livestock is far less acceptable and possibly riskier than in crops. Some also felt that precision bred livestock should not be permitted at all.

In both Wales and Northern Ireland, there was concern that their own devolved governments would have no input into safety regulations if the Bill applies only to England. Welsh participants had concerns that the Welsh farming industry may be at a disadvantage to English farmers who are allowed to grow precision bred crops.

Communicating information about precision breeding

Participants felt that the public should be educated on the broad concept of precision breeding, so that they have a basic understanding of how the foods available to them may change. They felt this is important so that consumers are able to choose to learn more if they want to, and where to look for more information.

Public education was also seen as key to maintaining public trust in precision bred foods, and the transparency of the UK food system as a whole. Participants described clear information as a protection against backlash and misinformation.

Workshop participants felt very strongly that precision bred products should be labelled as precision bred. While existing mandatory labelling would inform consumers of any changes to the characteristics of the product, participants felt that this would not be sufficient on its own. They argued that being able to identify precision bred products via labelling is critical for transparency, and therefore to consumer choice and public trust.

Survey respondents agreed, with nearly four in five (77%) saying it would be important when buying a food item to know if it had been precision bred, and nearly half (45%) saying it would be 'very' important. Only one in six (15%) say knowing this would not be important.

Participants were informed that the FSA are considering a precision breeding register. Participants felt that would be a beneficial way to house all helpful information in one place, as a powerful tool for transparency and public trust. While participants felt that consumers may not be likely to use the register, they said that just knowing the register exists is key to public trust.

Participants felt that the register could be most effective if combined with some level of product labelling as they would need to know if a product is precision bred so that they know when to refer to the register for more information. In addition, they wanted information at the point of purchase

so they could make an informed decision.

Participants felt that the register should prioritise accessible, jargon-free language, so that consumers could understand the information.

Views of precision breeding across UK nations

A requirement for the FSA was how views varied across the UK nations. Overall, perceptions of precision breeding were broadly similar across nations, with few notable differences. However, the quantitative findings suggest slightly more positive views in England. For example, there was slightly less support for precision bred foods to be on sale in Wales and Scotland, and consumers in Northern Ireland were less likely to think precision bred food would be safe and less likely to say they would eat precision bred foods.

People across all nations thought the potential impact precision breeding could have on food affordability and the environment was more likely to be positive than negative but were more concerned about animal welfare and even more so about small-scale farmers, particularly in the devolved nations. People in the devolved nations were also less convinced by many of the potential positives such as nutritional benefits, the taste, animal welfare and small-scale farmers compared to those in England, particularly in Scotland and Northern Ireland.