

The UK debate on New Plant Breeding Techniques and Genetic Modification:
Voices from civil society

Sarah Hartley, Warren Pearce, Liz O'Neill and Penny Polson

September 2016, University of Nottingham

A broad range of emergent techniques and practices in the area of crop and animal science are attracting increasing attention within plant biotechnology. Scientists and industry partners developing these techniques and practices refer to them as 'New Plant Breeding Techniques' (NPBTs) with the term now used by research funders and regulators. Advocates claim NPBTs will improve resource use efficiency, disease resistance, and nutritional content. Currently, European Commission regulators are deciding whether or not NPBTs should be regulated as genetically modified organisms (GMOs). Campaigning groups of biotechnology scientists and agrochemical businesses argue such crops do not fall under existing GMO legislation. Civil society, organic farming and scientist organisations and others disagree. Both sides may take action via the European Court of Justice, pending the Commission decision. Debates over NPBTs tap into existing divisions associated with GMO controversies. Debate is highly charged and narrowly focused on scientific issues. However, questions of NPBTs [go beyond science](#). These are political questions that require broader societal participation.

The UK Government's [Agri-Tech Strategy](#) emphasises a prominent role for technology in agriculture and supports GMOs in the delivery of economic benefits from and for the sector. In this environment, civil society groups have been sceptical of engaging with policy discussions about new advances in agricultural biotechnology. For example, key groups refused to engage with the [House of Lords GM Insects inquiry](#) in 2015. There is a need to bring civil society groups into the debate about NPBTs to help illuminate a broader range of perspectives on the possible role of NPBTs in UK agriculture – and the potential consequences of introducing NPBTs. GM campaigning umbrella group GM Freeze's [Strategic Plan](#) states that food and farming policy needs to consider social and ethical issues. Yet there is little understanding about these issues related to NPBTs at this time.

In 2016, [Sarah Hartley](#) and [Warren Pearce](#) obtained funding from the University of Nottingham to work collaboratively with [Liz O'Neill](#), Director of GM Freeze, to explore the non-safety issues of NPBTs through a small one-day workshop. On 13th June 2016, civil society organisations actively campaigning or investigating in this area got together to explore issues that may be overlooked in current debates. The workshop included six participants from prominent civil society groups campaigning on the environment, agriculture and biotechnology, and currently working on NPBTs. These organisations ranged from international charities, to small advocacy consultancies, with two participants operating actively at the EU level. The workshop discussion was recorded and transcribed. Subsequent analysis identified five dominant themes emerging from the workshop: 1] The importance of terminology; 2] The dominance of science; 3] The need to focus on values; 4] The exclusion of governance issues; and 5] The implications of the 'crisis narrative' or

‘emergency rhetoric’. These themes emerged from civil society voices at the workshop and do not represent the views of the report’s authors. To ensure we interpreted the workshop findings as accurately as possible, we circulated this report to participants to ensure all of them agreed with our findings. We do not presume these are the only themes relevant to this debate or that our participants are qualified to speak for all civil society groups.

1. The importance of terminology

New Plant Breeding Techniques

NPBT is a term coined by scientists and industry partners in an attempt to distance themselves from the controversies that have embroiled GM crops. The term is a deliberate attempt to ‘sanitise’ the controversy through the use of more palatable language. Some participants characterised this as an attempt to ‘hoodwink’ legislators, MPs and MEPs into thinking crops developed through these new techniques are not GM. NPBTs are laboratory techniques altering the genetic codes of plants and have little if anything to do with breeding, which requires sexual reproduction. The term also masks the key emergent technique of genome editing, by including it with other less widely applicable techniques and excludes gene drives which should be considered alongside genome editing. The exclusion of gene drives from NPBT may be because it is likely to create significantly more controversy than the other techniques and the association would not be helpful for NPBT developers.

Social and ethical issues

The term ‘social and ethical issues’ excludes a range of governance issues that exist beyond scientific safety, including environmental and health concerns. Framing these governance issues as ethical also privileges ethical experts over different public groups and civil society. Ethical experts cannot fully represent public concerns and values and should not be considered a substitute for meaningful public involvement and input in decision-making.

2. The dominance of science

A focus on safety

Some civil society groups actively campaign on the environmental and human safety aspects of agricultural biotechnology. However, others are restricted and confined by this focus on safety and unintentionally reinforce it. They are shepherded into a narrow debate about the safety of GM/NPBT where only a small subset of scientific evidence is accepted as “valid” and they are unable to legitimately raise a broader set of issues related to governance, society, ethics/values, culture and policy.

GM-critical taken as anti-science

Civil society organisations campaigning against GM and NPBTs are often accused of being ‘anti-science’, or even ‘luddites’. However they do not see themselves as anti-science. The majority of participants were trained scientists. All participants led or managed scientific campaigns and had sufficient scientific knowledge and expertise to engage in the scientific debate about GM/NPBT. Accusations of being ‘anti-science’ are often used to discredit

groups who have a different opinion on the role, motivations and practice of science in society. Science does not operate within a vacuum in society. Rather, it is shaped by political and other value-based decisions about funding, regulation and policy.

Media's focus on science and safety

In the media, GM-critical voices and arguments involving governance, social and ethical issues are frequently marginalised or tagged on the end of reports. The [review of impartiality and accuracy of the BBC's coverage of science](#), warned against 'false balance' and giving "undue attention to marginal opinion". This has reduced the ability of civil society groups to raise issues that [fall outside scientific definitions of safety](#), diminishing public awareness and debate of the broad array of issues surrounding new technologies.

3. The need to focus on values

Private values

The increasingly close relationship between science and private industry privileges economic actors in the shaping of policy decisions. It prioritises the delivery of private value and perpetuates the assumption that private value will deliver public value. Industry representatives sit on science funding boards and have sharpened calls for reduced regulation of NPBT products. The biotechnology industry exerts influence over the direction of biotechnology innovation and the use of taxpayers' money to develop technologies of financial benefit to the industry.

Reductionist science

Workshop participants shared the view that science is informed by and embedded in society and nature, yet scientific knowledge is too often interpreted in a narrow, reductionist manner. The German term 'Wissenschaft' captures that view of science as a broader endeavour that includes other academic disciplines in the social sciences and humanities. In this context, the social and ethical issues are not separated from the science as they are in existing regulatory frameworks for GM/NPBT.

4. The exclusion of governance issues

NGOs and the public interest

Governmental organisations have removed GM-critical groups from discussion and advisory groups. For example, civil society groups have been progressively removed from UK governmental committees and conversations since the time of the Blair Government, being replaced with industry and the National Farmers' Union to represent agricultural interests. There is a sense that civil society groups are no longer respected or welcome as representatives of public interest on GM and on a wide range of other issues.

Subordinating the political

Civil society groups' arguments are often dismissed as political. 'Political' is used as a pejorative term to counter arguments against GM/NPBT, rendering the social and ethical

issues subordinate to scientific perspectives which are assumed to be free of politics and values.

Diversifying expertise

A broad range of (potentially contrasting) expertise needs to be employed in regulatory decision-making, including: 1] systems-based scientists, such as ecologists to advise on the environmental release of large numbers of GM/NBPT crops; and 2] social scientists who can analyse public perceptions of biotechnology innovations. More broadly, social science involvement must be more than tokenism and all experts must be committed to trying to understand other disciplinary perspectives. School and university students should be taught a wide array of disciplinary knowledge beyond their own speciality, in order to understand the global context of their scientific discipline.

Ignoring publics

The assumption that debates over GM/NPBT should be restricted to scientific questions has the effect of excluding publics and stakeholders from decision-making processes. Public consultations on regulatory decisions commonly limit the extent to which publics can be included because the consultation remit usually focuses on a narrow definition of risk, thus demanding certain types of evidence. Some areas of risk assessment and regulatory approval involve public values and therefore publics should be involved in these decisions. For example, in the case of GM maize in Mexico, local people considered the definition of harm more broadly than experts (who focussed on possible harm to biodiversity) and included the presence of the transgene in local varieties, or landraces, as harm because of the cultural significance of these varieties. Beyond such questions of harm, we also need a better understanding of public concerns about governance.

Alternatives to GM/NPBT

GM/NPBT are seen as part of an industrial agriculture model focused on global markets, cost savings and technological inputs. Alternative strategies such as agroecology are sidelined in favour of GM crops as the future of UK agriculture. Macro-level agricultural trends are overlooked in the narrow regulatory framework. For example short-term price reduction and economic growth are prioritised over realities of environmental degradation even though this can negatively impact on yield and food security in the longer term. Alternatives are also marginalised by the narrow range of experts making decisions, particularly decisions concerning the Global South.

5. The implications of the 'crisis narrative' or 'emergency rhetoric'

GM/NPBT are often justified by a 'crisis narrative' or 'emergency rhetoric' leading to pressures to use these crops without full consideration of alternatives or potential harm and risks. World population statistics and Zika are prominent examples of a crisis narrative widely employed by science funders and media, even when GM/NPBTs products that might address such problems are not actually available. Current concerns and public debate are often dismissed in favour of theoretical futures.