

Deliberative workshop report

GENE EDITING IN AGRICULTURE

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Summary and recommendations

This workshop on gene editing brought together stakeholders from diverse backgrounds to discuss the social, ethical, and political aspects of gene editing in agriculture and food in New Zealand. While some participants were not opposed to the use of gene editing tools in laboratory settings, there was widespread concern about potential changing regulations in New Zealand to allow gene editing in agriculture. There were many questions about what “problem” it would be solving, who will benefit and who will lose from its application in agriculture.

Participants agreed that there needs to be a reason to use this technology “that has potential to cause great harm.. that is a solution to a problem, not just a band aid to mask the symptoms of an underlying problem ... and then embed us in a technological trajectory that preserves the problem for which you invented the solution.” That is, if the technology were to be used, it would initiate a technology treadmill that would be difficult to stop. There were widespread concerns expressed around the lack of public engagement on the potential introduction of gene technologies in agriculture in New Zealand. One Maori participant voiced particular concern that, because Maori have sovereignty over their resources, the government has a contractual obligation to engage with indigenous people, but they have not been appropriately consulted in the discussion around gene technology in agriculture.

There was considerable attention to concerns about *who* would control the technology, and how the introduction of patents with gene technology will have significant implications for farmers, breeders and publics. There was broad agreement that patents will hinder fair access, and could lead to control of the agricultural sector by a few patent holders. Plant breeders' rights have been long recognized in New Zealand and are seen as a fairer alternative to patents. Nonetheless there were concerns that proposed updates to the International Union for the Protection of New Varieties of Plants (UPOV) will have fewer protections for farmers and that adopting gene technologies would likely supplant plant breeders' rights in New Zealand. In addition, there was discussion that, overall, farmers have not been informed nor engaged in discussions around these technologies which could have dramatic consequences for their livelihoods.

In terms of public engagement, participants emphasized the importance of transparent communication and education, but were split as to whether it should be the role of government or civil society to ensure public engagement. Although potential technical challenges with labeling gene edited food products were discussed, most participants thought transparency through regulation requiring labeling of gene edited food is essential so that

consumers can choose what to purchase and eat. The labeling discussion was also placed within the unique New Zealand context, where labeling regulations and third-party certification for organic foods were still being formalized.

An important question voiced by all participants is *why* New Zealand agriculture needs gene technology. One participant noted: “The fact of the matter is currently in New Zealand, according to Fonterra, organic farms are more profitable by \$500 a hectare. So what tools do we need?” They suggested that instead of using gene technologies, New Zealand should invest in and highlight its successful and productive agricultural systems and GE-free status which differentiates its export products. Several mentioned that New Zealand has strong plant breeding programs that *are* solving current agricultural challenges, but that suffer from a “lack of funding for good basic fundamental research .. and all this endless money spent on this really crazy solution.”

In contrast, participants expressed concern that using gene technology risks losing international markets that demand GE-free products and diminishes market distinctions such that New Zealand agricultural products would have to compete with industrially-produced agriculture around the world. One participant stated: “we have the minister telling us we’re 25 years behind the times....as far as I’m concerned, we’re light years ahead, because we are an island nation, and we have so much potential to do something different, and better.” Overall participants agreed that New Zealand could lead the world in GE-free sustainable and regenerative agriculture, but the government and proponent scientists are pushing gene technologies. There was concern about how to contain gene editing: “The contamination of gene edited plants unlabeled is not going to be able to be contained, and it will threaten New Zealand’s economy and the people in it, because it’s our livelihood, citizens’ livelihoods.”

Both Maori and non-Maori participants commented that feel they are being subjected to “colonization” processes. “For Maori, at the moment, what we’re going through with the government is this kind of ongoing and relentless wave after wave of colonization.” A non-Maori participant expressed concern that “as a nation .. we are in the process of being recolonized again, and this time by technology and corporations.”

Overall, it is clear that this debate is about more than the technology. It highlights tensions around fundamental values and knowledge systems in New Zealand society, and the need for citizens to be more informed and engaged in critical issues. One Maori participant explained “if we think of indigenous value systems and the environment,

the idea of tinkering with the domains of our guardians, that is not something we would do. We are here to act as guardians of the environment for each generation.” The gene technology issue also raised concern for many participants about the arrogance of gene technology proponent scientists who assume their scientific knowledge should be unquestioned and that it should take precedence over other concerns, values and knowledge systems. Overall, participants expressed pride around New Zealand’s unique status as an island with successful GE-free agriculture that could teach the world, while also acknowledging feeling threatened as a small nation with re-colonization by foreign commercial agriculture interests and technologies.

Although stakeholders differed in their opinions on who should be responsible for informing and engaging publics, three general recommendations emerged from the discussion:

Need for balanced public information and greater engagement about new gene technologies

It is important that balanced information about potential benefits and risks of gene technology use in agriculture be provided to enhance public information and engagement. Citizens know very little about gene technologies, their applications in agriculture and food as well as the broader implications. There is a need for increased engagement opportunities such as forums that encourage citizens to participate and voice their concerns. In addition, Maori sovereignty around natural resources needs to be respected by formally involving them in decision making processes about gene technologies.

Promote and invest in current sustainable food systems

The success and productivity of GE-free agricultural systems in New Zealand should be supported and highlighted. Increased investments in conventional agriculture research and breeding would benefit the sector. New Zealand’s status as a small island nation with substantial GE-free exports translates into concerns about maintaining their market advantages as well as threats from being ‘colonized’ by foreign companies and technologies. There was also concern that foreign companies may want to use New Zealand as a test site for new gene technologies because they could be contained from release while devastating the island’s environment and economy. Gene editing in agriculture would bring dramatic changes through patenting, which would overwhelmingly benefit foreign companies and a small number of patent holders.

Ensure Transparency and Labeling for Farmer/Consumer Choice

Maintain farmer and consumer choice through labeling and regulation. There is widespread concern that the Gene Technology Bill as currently proposed would de-scope certain gene technologies from regulation. It would also not require labeling of products that are gene-edited. These proposed regulatory changes would take away consumer choice to not purchase gene edited foods and put the burden on organic and other farmers to segregate crops in order to maintain GE-free crops. These changes could have dramatic impacts on the New Zealand economy and on environmental health and safety, and further study of their implications is needed.

Introduction

On August 15th 2025, a deliberative workshop brought together stakeholders from several organizations and academic institutions in New Zealand to discuss the societal, ethical, political, and scientific implications of gene editing in agriculture and the food industry. The meeting examined current regulations, public engagement, and the broader potential impact of genetic modification techniques like CRISPR-Cas.

This workshop was part of an international comparative research project on stakeholder visions for the future of gene editing in agriculture and food. The aim of this project, funded by the US National Science Foundation (NSF), was to compare the interests, considerations and concerns of various stakeholders across countries with different regulatory contexts.

The primary goal of this workshop was to facilitate a thorough dialogue between various stakeholders on the regulation of gene editing and its impact on society. Special attention was paid to how citizens could be involved in policymaking and how consumer freedom of choice can be guaranteed.

The meeting was facilitated by an environmental sociologist from SUNY-ESF in Syracuse, New York in the US with technical support from a graduate student at the University of Wellington in New Zealand. The nine stakeholders represented research institutions, organic agriculture certification organizations, a Maori organic agriculture certification organization, and several NGOs that focus on environmental sustainability issues and sustainable and regenerative agriculture. There were no stakeholders representing the conventional agriculture or biotechnology industries or government agencies. The selection of participants was an intentional effort to hear from stakeholders whose perspectives on gene technology in agriculture and food have not been considered in policymaking circles or represented in the mainstream media in New Zealand. The workshop activities included a presentation on the project's recent research related to media coverage of gene editing in agriculture and food (from SUNY ESF). This presentation was followed by moderated discussions on the following topics:

1. Public involvement: Should citizens be actively involved in policy making around gene editing?
2. Labeling: Is labeling important for gene edited foods so that consumers can choose whether to buy non-edited products? Is labelling possible?
3. Patents: How do concerns about gene editing in agriculture and food interact with concerns around patents?

Meeting Agenda

- 10:00 Welcome and Introductions (Theresa Selfa and All Participants)
- 10:15 The research project: Preliminary research findings and context for this workshop (Theresa Selfa, SUNY ESF, USA)
 - Preliminary Findings
 - Why A Workshop?
 - Ground Rules
 - Rathenau Institute's work on Public Engagement
- 11:00 Discussion on Citizen Involvement in Policy Making around Gene edited Agriculture and Foods in New Zealand
- 12:30 Lunch
- 13:30 Discussion round on labelling
- 14:00 Discussion round on patents
- 14:30 Wrap-Up: Discussion of new knowledge gained about gene editing
- 15:00 Closing

Presentation about the research project

The presentation summarized the research project "Comparing Sociotechnical Imaginaries for Gene Editing in Food and Agriculture," which analyzes how different countries shape societal and regulatory approaches to gene editing in food and agriculture. It focuses on sociotechnical imaginaries—the implicit assumptions, values, and futures that shape how this technology is perceived and applied. Through media analysis, interviews, and deliberative workshops, the project examines differences in public and policy perceptions between the United States, New Zealand, Japan, the Netherlands, and Canada. Initial findings (Das et al., 2024) indicate that the global debate is strongly technologically optimistic, emphasizing the role of influential actors. At the same time, societal concerns vary across countries, with some countries placing more emphasis on environmental and safety risks. Negative perspectives focus primarily on technological uncertainties, while broader ethical and systemic questions about agricultural transformation are less discussed. This emphasizes the need for a more inclusive public dialogue and balanced regulations that are not solely driven by industry and technological progress imperatives.

Following this, a brief overview was presented on the work of the Rathenau Institute (2023) that has done significant work on public engagement around science and technology issues, and especially on societal values and concerns that publics have concerning contentious technologies, such as gene editing in agriculture and food. In addition, the moderator explained that the New Zealand workshop is following the structure of the deliberative workshop held in the Netherlands. This set the stage for the public engagement discussion.

Public engagement

After the presentation, the first discussion asked participants to physically place themselves in a line that represents a continuum from “I strongly agree” to “I strongly disagree” with the statement: “Citizens must be actively involved in policymaking around gene edited foods.”

All participants strongly agreed with the statement that citizens *must* be actively involved in policymaking around gene edited foods, but many clarified that citizen involvement is essential to any policy decision, and there is nothing unique about gene editing. Several participants lamented that New Zealand citizens, including farmers, were being “railroaded” into accepting gene technology without adequate discussion, and that the timing and manner in which the Gene Technology Bill was introduced in Parliament was intentionally deceptive and undemocratic. Concerns were expressed that politicians who are not well informed on the science are leading the charge to approve new gene technology based on rhetoric that New Zealand is “falling behind” the rest of the world in agricultural technology advances. Others stated that especially for contentious issues like changing regulations to allow gene technology into the food system, citizens need information and education in order to make informed decisions. Another person countered that for most citizens in New Zealand, something as technical as gene edited foods is “just so far outside their technical understanding, that they’re just not interested.” Many agreed that both scientists and government are introducing new technical terms, such as gene editing (GE) or new genomic techniques (NGT) as opposed to the recognized term GMO, in an intentional effort to obfuscate information and “manipulate” publics.

There was debate about *who should be responsible* for ensuring citizen participation and engagement in the gene technology issue. Some thought it should be the responsibility of the government to make sure that citizens are well informed and involved in decision making, others highlighted the role of civil society organizations, while others suggested that responsibility should be equally on citizens themselves to be engaged. However, there was broad agreement about the difficulty of being engaged in something about which you are not well informed. However, if citizens are going

to “have a say” in what they eat, they need to be involved. There were concerns that New Zealand society has “maneuvered us into not being involved and not being informed. And you know, we can say it's actually up to the government to lead this, but the government's very obviously leading us in a particular direction, and we as the people. I keep asking myself, what is my role here?” Participants expressed that there needs to be a fundamental shift in New Zealand citizenry to coalesce grassroots efforts to be politically engaged, and suggestions included creating forums to get information out about how this technology could completely change the food system.

Several lamented that genuine public engagement and consultation have been replaced by a “passive” parliamentary process in New Zealand. They critiqued the constrained opportunities for engagement, as the current government believes it has a mandate to proceed with policies that support proponent scientists and crown research institutes. Many citizens consequently feel disempowered by this, such that they assume “..well, if the government says it's okay, they've got all the experts, they've consulted with the experts, it must be okay. But it does actually then usually remove any citizen's voice in that consultation.” Others pointed to the narrow opportunity for citizen participation in the parliamentary lawmaking process. Citizens are not able to participate in the writing of Acts but are only able to comment on them after they have been written. Even so, one person mentioned that there were over 15,000 public comments opposing deregulation of gene technology, which have been largely ignored. The parliamentary process was described as very “convoluted” and discourages involvement.

Several ways to get more citizens informed and involved in issues such as the use of gene technology in agriculture were proposed. Connecting these issues to activities and responsibilities of daily life, such as eating and food shopping, and by sharing information about farming and environmental issues through community groups and students. Another participant suggested the government needs to involve citizens in “an appropriate time frame” such as with a “road show” that travels the country with information sharing over an extended time period. An academic scientist also noted that academics in New Zealand have a “duty to the public to communicate [science of gene editing]..to help the public understand.”

Several people noted that what needs to be further interrogated is the “underlying ethical and value and moral systems, what [scientists] believe and what they consider to be right...it's actually part of a much bigger fundamental problem about the role of science and technology in the whole food

system, not just agriculture.” Several participants pointed to the arrogance of many scientists, and their blind belief that western science should be dominant and that it is always correct. “They have this strong, almost religious belief that what they’re doing is right and good and for the betterment of the world. And why should anybody disagree with them?” Others also questioned the dominance of western scientific perspective: “Why is the science viewpoint more important than the farmers, or the consumers, why does it hold more weight? ... There’s only five of you over there, and five million of us.”

Some also pointed to the role and responsibility of the mainstream media in this issue. One participant stated that the media and journalism have key roles in informing citizens, but that “journalism is not in a good space in New Zealand, or internationally, so their ability to take on that role as well, is challenging.” The mainstream media tends to amplify information about the positive implications of scientific research and neglects the problematic aspects, and one participant mentioned that “it’s actually more of an editorial than an actual news piece.” At the same time, the media are limiting the voices of critics of gene technologies, and it was suggested that the media should be an area for people to “start questioning.”

In the next part of the workshop, two specific issues were chosen by participants for discussion: Labeling and Patents.

Labeling and Patents

The proposal to not require labeling of gene edited foods in the Gene Technology bill was strongly opposed by all participants. First and foremost, the lack of labeling takes away citizen/consumer rights to know what is in their food and represents “an erosion of ability to choose and to have some autonomy and power .. in our own health.” Many stakeholders pointed out concerns about food allergies and health impacts and how difficult it would be to trace potential allergens without labeling. Several participants brought up the lack of adequate testing in previous gene technology applications in New Zealand, and that any proposal to introduce gene editing must have thorough testing for environmental and human safety, not just modelling, of potential impacts.

Labeling was identified as “part of the social contract” in capitalist societies, where consumers have a right to know and right to be able to purchase specific traits in the market. Others pointed out that without labeling, New Zealand would become another

agricultural commodity producer without any point of differentiation. The lack of differentiation and marketing labels, such as GE Free or Clean and Green, would have negative economic consequences for agricultural export products. Discussion continued that the proposed Gene Tech law would “de-scope” certain gene editing processes from requiring labelling on final products, and by descopeing, New Zealand is not technically exempting gene editing. However, in effect, the law removes products from labeling requirements.

Labeling as a consumer right led into a discussion of patents and farmers’ rights. Concerns expressed included that if a farmer inadvertently grows a gene-edited crop by virtue of drift from another farmer’s field, he/she would still be liable. One respondent summarized patents as a threat to farmers’ sovereignty: “So very much from an agroecological perspective, farmers need to have sovereignty over their farming systems. And for me, plant variety rights, patents on genetic technology produced organisms... it's all in that same basket. It's basically removing the sovereignty from farmers and also potentially from consumers as well. It's who has control over the food system; it is removing control from farmers and consumers in that situation.”

Participants were concerned that the introduction of “utility” or “process” patents through gene editing agricultural crops represents “corporate capture” and biopiracy. One participant explained that: “gene editing, because it's also faster and can be done at a larger scale.. will rapidly increase the ability to claim living things by virtue of simply describing the change you made in them using the process.” Not only were participants concerned about the power and control of the agricultural sector being held by a small number of patent holders, but also that gene technology disregards natural systems and through the insertion of gene edits appropriates all the history and culture that created the genome. The claim that gene editing is indistinguishable from conventionally-bred crops and therefore challenging to “label” was contested, because patent holders need detection techniques to identify gene edits and gain commercial benefits from the editing process. The reason that industry wants to deregulate and not require labeling is “so that industry can have all the benefits of the patent and none of the liabilities of regulation.” One Maori participant shared that from an indigenous perspective, the most important thing is Whakapapa, so traceability is essential. The group again highlighted concerns that any patent owners will likely not be a New Zealand company, and that they feel they are being “colonized” by foreign companies and interests.

Final Thoughts

The final section asked participants to reflect on what they had learned or if they had gained new perspectives about gene editing. Many commented that they felt they had learned new information about the technology and issues around patents and labelling. Participants commented that the possible introduction of gene editing in agriculture seemed to be repeating many of the same promises and claims made for GMOs and that it is problematic that New Zealand is looking for a new “techno fix”. Instead, several participants restated that there should be more focus and investment in conventional agricultural systems in New Zealand which are sustainable and productive. There was widespread agreement that “we’ve got a lot to harness yet in that space before we start tinkering with our food systems. And New Zealand could be, we could lead the world.” Another respondent summarized that “we can show that conventional breeding, sticking with what is right, rather than tinkling around the edges. I don’t think gene editing has yet got a place in Aotearoa’s growing seasons.”

References

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