Opinion: Why scientists' failure to understand GM opposition is stifling debate and halting progress

July 8 2016, by Sarah Hartley

GM protest in Montpellier. Credit: Peter/Flickr, CC BY-SA

Genetically modified crops are safe for human consumption and have the potential to feed the world and improve human health, scientists have been telling us for years. On June 30, 110 Nobel laureates from around the world signed a letter demanding that the environmental pressure group Greenpeace stop its campaign against GM crops. How many people must die before we consider this a "crime against humanity"? the

letter asks.

The scientists are accusing Greenpeace of ignoring facts, misrepresenting risks and benefits, failing to recognise the authority of science and relying on emotion and dogma. They are particularly concerned about Greenpeace's opposition to Golden Rice, which has an added gene that boosts vitamin A levels – something scientists claim is much needed in many poor populations.

But Greenpeace argues that there are cheaper and more effective alternatives to Golden Rice and that GM rice developers are out of touch with the needs of local populations. It also claims developers are downplaying the risk that GM rice will contaminate traditional and organic rice crops.

The eminent scientists appear to have learned little about opposition to GM crops over the last 20 years. *Social science research* suggests they are misinformed and their approach is misguided. Opposition to GM crops is not always based exclusively on scientific risks and benefits and neither is it grounded in emotion or dogma. To characterise opposition in this way only serves to inflame the relations between proponents and opponents. It is therefore unlikely to help us realise the potential of GM crops in feeding the world.

Flawed debate

Together with Frøydis Gillund, Lilian van Hove and Fern Wickson from the Norweigian GenØk Centre for Biosafety, I have been studying the acrimonious debate about agricultural biotechnology for several years. Our research has identified five requirements for advancing a responsible debate about GM crops. These are a commitment to honesty; recognition of the values underlying the practice of science; involvement of a broad range of people; consideration of a range of alternatives; and

a preparedness to respond.

Golden Rice (right) versus regular rice. Credit: International Rice Research Institute (IRRI) / wikimedia, CC BY-SA

We believe that this approach will moderate the debate, offering a workable approach to considering the role of GM crops. But the attitudes of many scientists stand in the way of such progress.

Discussions about GM crops need honesty about the quality of the available scientific knowledge and the degree to which claimed benefits can be realised. It must take concerns seriously, even those beyond scientific risk. The lack of openness about when Golden Rice will be

finished and who it will benefit is cause for concern and can lead to significant misunderstandings and mistrust between scientists and the public. Golden Rice is being developed in the Philippines, not in Africa and Southeast Asia, which you may believe if you read the letter. And even in the Philippines, it is not expected to be ready for several years.

We also need to think about how values and assumptions shape the way we govern GM crops. We know that hiding values and choices from public scrutiny continues to be a source of controversy. With Golden Rice, there is an assumption that technology is the appropriate fix for a complex social problem. Such values must be recognised and addressed openly rather than hiding them within a narrow debate about human and environmental risk. This would in turn allow more transparent decision making and effective dialogue between Golden Rice developers, policymakers and civil society.

Decisions about GM crops need to include different scientific disciplines (for example, molecular biology and ecology) and stakeholders such as farmers, citizens, and organisations like Greenpeace. When the GM crop debate is confined to human and environmental risk, it limits who can participate in decision-making and privileges scientists – in this case, Nobel laureates who are not necessarily experts on GM crops or GM rice. However, the GM crop debate is not only a technical debate about scientific risks: it involves other ethical and social concerns such as community empowerment, patents and nutrient availability. Inclusive decision-making about GM will make the process more democratic and create a more comprehensive knowledge base.

We also need to talk about the range of alternative ways to frame the problem of global food security, as well as the range of alternative solutions. As the Nobel laureates recognise, agricultural systems are under severe stress from converging problems associated with soil deterioration, lack of water, chemical pollution, climate change, and

population growth. Current policies to address these problems typically focus on technological fixes that deliver economic benefits. For example, alternative ways of addressing vitamin A deficiency through fortification, rather than genetic modification, in the Philippines have had dramatic results since 2003.

Ultimately, GM crop developers, risk researchers, regulators, and policy makers need to be willing and prepared to consider and respond to societal needs and concerns as well as to new scientific knowledge. This is important not only for ensuring the democratic accountability of science and technology but also as a means to enable us to reverse decisions and adapt policies in the face of change.

It is clear that the scientists accusing Greenpeace of crimes against humanity feel deeply frustrated about what they see as shackles on a technology that for them has clear benefits for the world's poor. However, by signing the inflammatory letter, they reveal a flawed and naïve understanding of the debate. This approach is likely to result in further agitating and polarising the debate rather than achieving the desired outcome. Indeed, some may even see these scientists as using their privilege and authority to promote a particular technological solution to a political problem.

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