



Beyond GM Farm to Fork Strategy Response and Recommendations 20/03/20

We welcome the Farm to Fork Strategy. Its stated objectives are laudable and we are pleased to see the strategy acknowledge the scientific evidence about the unsustainability of the current EU food systems.

Beyond GM is based in the UK but is European in its scope and outreach. As our name suggests we are focused on the use of genetic engineering in food and in particular in stimulating deeper more nuanced debate in this area. But we also work 'beyond' the genetic engineering discussion with a focus on sustainable food systems

Beyond GM is currently involved in a series of discussions with a wide range of stakeholders as part of our A Bigger Conversation initiative¹. This involves bringing together groups of people from across the GMO 'belief spectrum' for in-depth, values-based discussions which acknowledge both differences and commonalities with regard to genome editing in plants² and in animals³.

Based on our findings to date, our first comment, therefore, is that it is not clear to us whether, when the Commission uses the word 'sustainable', it means the same thing that we and others like us mean. For instance, what may be sustainable in an economic sense, as part of the triple bottom line, may not be sustainable in an environmental or social sense. There is no possibility of a coherent and equitable strategy unless we all mean the same thing when we say 'sustainable'. We would therefore urge the Commission to cast a wide net and strive to understand the multiple different definitions of sustainable and understand where they agree and crucially where they conflict.

In addition we offer the following for consideration:

SDG's don't go far enough

We are pleased to see the Commission acknowledge the multidimensional nature of the sustainability concept. However we would argue that the triple bottom line of social, environmental and economic (aka people, profit and planet), derived from the original Bruntland definition of sustainability, is both limited and open to abuse.

¹ A Bigger Conversation, www.abiggerconversation.org

² The Boundaries of Plant Breeding – Report of the World Café, March 2020, A Bigger Conversation/Beyond GM, Full Report: https://abiggerconversation.org/wp-content/uploads/2020/03/Boundaries-of-Plant-Breeding_Report_Full_FINAL.pdf; Executive Summary: https://abiggerconversation.org/wp-content/uploads/2020/03/Boundaries-of-Plant-Breeding_Report_Exec-Summary_FINAL.pdf

³ Gene-edited Animals In Agriculture – Report of the Roundtable, A Bigger Conversation/Beyond GM, September 2019, https://abiggerconversation.org/wp-content/uploads/2019/09/Gene-edited-Animals-in-Agriculture-Roundtable-Report_27-Aug-2019_Final.pdf

Running through the triple bottom line is a political and a corporate subtext which very much supports the notion 'business as usual'. Each of these measures is tradeable – so who, or by what process, will you judge which is most important?

The triple bottom line is also problematic because while profit can be measured in a simple mathematical way, culture and environment, which are far more complex and fluid, can't. This makes the three measures difficult to compare let alone balance and tends to favour economic bottom line thinking over other types of thinking.

This is the kind of the 'business as usual' that has already been shown to unbalance our climate, empty our oceans, destroy our biodiversity and reduce our ability to feed ourselves.

While worthy as broad ambitions, the Sustainable Development Goals largely fail to address the core causes of things like poverty, hunger and inequality. They are difficult to quantify and therefore monitor and they do not address infrastructure or the necessary costs attached to creating change.

The most radical thing the Food to Fork strategy can do is to depart from the superficial mantra of the triple bottom line and its tendency towards quick fixes and enact radical solutions, policies and infrastructures that support deeper systemic change.

Beyond carbon counting

To this end, climate destruction, as worrying as it is, is not the only issue in agriculture and sustainable solutions cannot simply focus on carbon, energy, waste/resources and pollution to the detriment of other equally important issues.

True sustainability must encompass health, wellbeing, equality, longevity, tradition and culture as well as technology, logistics and social and political cohesion. Perhaps most importantly of all it demands trade-offs.

Although it remains a politically popular idea, it is a fact that as a species we cannot 'have it all' and survive. To be a truly radical proposal F2F must decide and make tough recommendations about what we can have and what we can no longer have.

We recommend that a sustainable food policy should at minimum include the following:

- The inclusion of health as a public good with measures to support and make available to people at an affordable price fresh, ecologically produced food especially EU grown fruit vegetables and arable crops, and ethically, environmentally sound meat
- The maintenance of robust inspections and regulations governing food health and safety and the creation of equitable supply chains
- The growth of and a major role for organic and other agro-ecological farming systems in UK farming and land management
- More positive animal welfare through management and system change rather than more drugs and genetic engineering
- The prohibition of genetically engineered crops and ingredients in EU farming and food
- Robust evaluation and labelling of any genetically engineered technology in farming and food in the EU

Genome editing – promises, possibility and the need for regulation

Genome editing is currently being proposed as a way of improving sustainability in both plant and animal agriculture. For the last 30 years these benefits have been presented as future possibilities.

We would, therefore, ask the Commission to consider the lack of evidence upon which such claims continue to be made and the number of years already wasted waiting for them to materialise.⁴

While genetic modification in agriculture is often bundled in with broader aspirations towards ‘technological innovation’, it stands wholly apart from other agricultural technologies in that it fundamentally alters living material at a genetic level, with unknown and largely unknowable consequences for health and environment.

Newer genome editing techniques such as CRISPR are promoted as being more precise – and because they use materials from related species – ‘safer’ than older trans-genesis techniques.

However, precise is not the same as predictable or controllable. It is a scientific fact that altering the genome in this way raises the risk of multiple off-target effects⁵ which the current regulatory system is ill equipped to look or legislate for.

In addition, it is clear that the aspirations for these new techniques are very much mired in old, and damaging, industrial ‘business as usual’ paradigms. For example, many are being used to produce herbicide tolerant⁶ and insect repelling⁷ plants – both of which have been shown to increase the use of environmentally damaging chemicals in the fields which ultimately encourage resistance amongst weeds and insects.

Genetic engineering in farming and the food system is a disruptive technology. Like all ‘disruptive technologies’ – driverless cars, social media and e-cigarettes – it cuts across multiple sociological, environmental, economic, scientific and regulatory areas. Even if it proves to be a ‘tool in the toolbox’ with some limited uses, the abandonment of regulation and transparency through labelling will be a red line that civil society and European citizens will not allow the Commission to cross.

Rather than simply acquiescing to the idea that biotech innovation is the high tide that raises all ships, we would encourage you to demand concrete proof that this is the case.

On the issue of genome editing we would also ask you to maintain perspective. Our discussions with plant breeders of all kinds, have brought home to us that plant breeding on its own is only one part of the agricultural sustainability picture. How a crop is farmed and how an animal is raised – the agricultural systems in which we invest – are, arguably far more influential.

Evidence-based regulation is better than science-based regulation

The F2F strategy acknowledges a role for science in determining what is sustainable. We do not dispute this but would ask ‘which science?’ and ‘whose science?’ and would argue that the calls for science-based regulation do not insulate policy from intractable ideology. We applaud scientists who

⁴ GM crops: rebuttal of claims on safety and benefits, Corporate Observatory Europe, 13 June 2016

<https://corporateeurope.org/en/food-and-agriculture/2016/06/gm-crops-rebuttal-claims-safety-and-benefits>

⁵ Schaefer KA et al, Unexpected mutations after CRISPR–Cas9 editing in vivo, Nature Methods, 2017; 14: 547-8;

<https://www.nature.com/nmeth/journal/v14/n6/full/nmeth.4293.html>. See also Kuzman E et al, Systematic analysis of complex genetic interactions, Science 20 Apr 2018: Vol. 360, Issue 6386, eaao1729;

<http://science.sciencemag.org/content/360/6386/eaao1729>. See also: Shin HA et al, CRISPR/Cas9 targeting events cause complex deletions and insertions at 17 sites in the mouse genome, Natural Communications, 2017; 15464;

<https://www.nature.com/articles/ncomms15464>; and Mou H et al, CRISPR/Cas9-mediated genome editing induces exon skipping by alternative splicing or exon deletion. Genome biology, 2017; 18:108;

<https://genomebiology.biomedcentral.com/articles/10.1186/s13059-017-1237-8>

⁶ Kaskey J, Technology BASF to Crank Up R&D ‘Two Gears’ With Bayer Seeds, Next CEO Says, Bloomberg News, April 12, 2018; <https://www.bloomberg.com/news/articles/2018-04-12/basf-to-crank-up-r-d-two-gears-with-bayer-seeds-next-ceo-says>

⁷ Borel B, CRISPR, microbes and more are joining the war against crop killers, Nature, March 12, 2017;

<https://www.nature.com/news/crispr-microbes-and-more-are-joining-the-war-against-crop-killers-1.21633>

want to 'feed the world' and 'fight climate change', but would like to emphasise that the belief that high-tech-fixes are the best or only solutions is highly ideologically-driven. Moreover, this ideology, however well-meaning, addresses only a small piece of a complex puzzle.

Progress, rational regulation and depolarisation of the GMO debate can only evolve from a wider, more systemic view of the problems agriculture faces and an honest look at all the evidence around all proposed solutions.

We would also draw attention to the fact that there is no evidence to back up claims by the biotech industry that continued regulation of genome editing would harm small and medium sized businesses and hamper efforts to fight climate change through agriculture.⁸

Compared with product development costs, regulatory costs to get a GM plant trait approved for marketing are relatively low. For this reason it is not regulation but the business model of the large companies (with the emphasis on the 'profit' part of the triple bottom line) that own and control the technology that sets the bar higher than an SME can reach by itself.⁹

Do not conflate innovation with 'high-tech

We note your emphasis on stimulating research and innovation.

We are aware that part of the current argument for deregulating agricultural GMOs is that farmers are in urgent need of innovations to help them farm sustainably. This may be so, but it is wrong to conflate technology – particularly high-tech solutions like genetic engineering – with innovation.

Some of the most innovative solutions involve low tech, open source and affordable methods that all farmers and growers can use right now. These include agroecological approaches such as crop rotation, intercropping, soil enrichment, and integrated crop and livestock systems.

High-tech solutions, when they are used in plant breeding, should be both purposeful and responsible. Many breeders, for instance, now use 'molecular markers' to track genes of interest through the breeding process using marker assisted selection (MAS).

MAS is an example of responsible and effective technology that results in a conventionally-bred plant by using our knowledge of genes and genomes to select varieties with desirable traits. Examples of MAS-bred varieties include flood tolerant rice, cassava that is resistant to mosaic disease, and wheat resistant to stripe rust fungus. Although MAS varieties are subject to patents, the approach to development is 'bottom up' e.g. farmers and growers bring their knowledge to the table and work with scientists to breed new varieties that work for them wherever they farm.

To this end we would encourage you to ask – as many citizens do – if the same endpoint can be achieved without genome editing – why do we need to use it?

⁸ Foote N, MEPs slam gene-editing court ruling as damaging for SMEs, Euractive, 22 Nov 2019; <https://www.euractiv.com/section/agriculture-food/news/meps-slam-gene-editing-court-ruling-as-damaging-for-smes/>

⁹ Robinson C, Why regulation of gene editing will not hurt small and medium size companies, GM Watch, 28 Nov 2019; <https://www.gmwatch.org/en/news/archive/2019/19239>