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Mandatory labelling of crop biotechnology-derived foods: the evidence shows this is a failed regulatory policy

Agricultural economist Graham Brookes warns that the practical experience of mandatory labelling of genetically modified (GM) food products on both sides of the Atlantic has resulted in reduced choice, increased food industry costs and higher prices for consumers.

Mandatory labelling of crop biotech-derived foods – a review

Proponents of mandatory labelling of foods containing or derived from genetically modified (GM) crops have long claimed that their primary objective is to facilitate informed consumer choice. Based on a review of more than 20 years of evidence in countries or regions where mandatory GM labelling has been implemented, that policy has failed. The main outcomes have been increased food industry costs across the supply chain, higher prices and reduced choice for consumers. In contrast, in cases where labelling is voluntary, consumers and taxpayers have had more food choices with lower costs.

Labels based on 'product' versus 'process'

In the UK, European Union (EU) and in many other countries the underlying rationale for mandatory food labelling has been to protect consumers: to help them stay healthy (eg, by providing nutritional information); to keep them safe and aware of the presence of possible ingredients that might cause harmful reactions; and to help prevent fraud. As a consequence, labelling regulations have focused on the final product and its contents, not on how it was produced or processed.

In cases where food labels have focused on process or production related issues, these were voluntary in nature. Producers have long labelled a product according to a particular production feature or practice to appeal to a particular segment of consumers that value a specific attribute. Labels reflecting religious-based dietary laws, like Kosher or Halal restrictions have been in use for decades. The organic industry has long relied on this voluntary labelling system, as have proponents of products promoted as, for example free range eggs or chickens.

GM foods treated differently

Foods with GM content or origin have been regulated differently, subject to mandatory labelling in many countries. This is a departure from voluntary labelling of foods according to production process to appeal to consumers that value a specific attribute of the production process or the mandatory labelling of foods to protect consumers based on the contents of the final product. The development of mandatory labelling requirements for GM content and origin is therefore an inconsistency or departure from mainstream food labelling *per se*.

In the UK, the current mandatory labelling requirements stem from the EU mandatory GM content and origin labelling, introduced more than 20 years ago. At that time, the rationale given was to facilitate consumer choice as the then EU Health and Consumer Protection Commissioner David Byrne stated *'so people can make a full and informed choice'*[1].

In contrast, in the United States (US), at the time the GM crop technology approval system was set up in the late 1980s, the relevant regulatory authority, the Food and Drug Administration (FDA) concluded that mandatory labelling of GM foods was not necessary because GM foods present no unique or higher risks than other foods derived from conventionally bred crops. In other words, the FDA's approach to GM labelling stayed consistent with the long-standing principle that required mandatory labelling of foods only if a warning was necessary to protect consumers. It also embodied the global standard then in place to require mandatory labelling based on the product, rather than the process.

However, in 2016, in response to criticism from groups opposed to crop biotechnology, the US amended its stance, by introducing national, mandatory GM food (referred to as bio-engineered foods) labelling requirements that took effect at the beginning of 2022.

The rationale cited for this recent change of stance according to the US Department of Agriculture, was to "*increase transparency….and ensure clear information for consumers about the ingredients in their food*" [2], even though the new requirement undermined both the logic and consistency of long-standing consumer protection focused on a product-based food labelling system.

The impact of mandatory GM labelling rules

Not only is mandatory GM food labelling inconsistent with the long-standing consumer protection principles of food labelling, it has failed to meet the stated, primary objective of the legislation in both the EU and the US: '*to facilitate more informed consumer choice'*. In addition, there have been negative consequences: higher costs of supply and hence higher prices for consumers than would otherwise have occurred if no labelling requirement existed. These can be attributed to the ways in which the supply chain has responded to the regulatory labelling requirements. The outcomes in both the EU and the US have been similar but arose from two different market perspectives:

- **European Union**

As the labelling requirements go back more than 20 years, they were introduced from a baseline in which almost all food products did not contain or were not derived from GM crops. The food industry started from a position of GM avoidance (to avoid even trace amounts of GMOs) in the belief that most European consumers would wish to avoid GM ingredients and GM derived foods altogether. As a result, very few foods with GM content or origin were marketed in the EU. Hence, there was next to no positive labelling for GM content in foods, with all the significant costs of the GMO avoidance policies and practices such as the inherent higher cost of production of non-GM crops relative to GM crops, re-formulation of products, change of ingredients and segregation of different raw materials through the supply chain [3, 4,5,6] hidden in the higher price of products that used only non-GM ingredients. EU consumers were (and remain) largely unaware that cheaper (and equally safe) alternatives could be made available if the supply chain chose to use them.

It is important to note here that consumer research and monitoring of buying behaviour on this topic consistently shows that the vast majority of consumers have been, and are, largely indifferent to whether the ingredients in the foods they eat, contain or are derived from GMOs[7,8]. In the UK, where the Food Standards Agency conducted research into consumer attitudes towards a range of food-related issues, concern about GMOs has been consistently low, at 5-7 per cent (unprompted) over the past 10 years[7]. Therefore, the costs of GM avoidance have been, and today remain imposed on this, large majority segment of consumers even though, if given the active choice in retail outlets to choose between GMO derived products and those without GMOs, would likely choose the GMO (cheaper) product.

The original legislative rationale for facilitating consumer choice has never materialised as the favoured and executed outcome across the EU food supply chain to the legislation has been to provide only non-GM derived products. The primary beneficiaries of this policy have been the small segment of consumers who actively wish to avoid foods with GMO derived ingredients, companies in in the production base and supply chain of these products, and businesses involved in certification, testing and traceability.

- **United States**

Labelling requirements are much more recent than in the EU. They were proposed in several US states but only passed in Vermont, which briefly had its own mandatory labelling requirement in 2016. This was effectively nullified by a federal level labelling requirement passed in July 2016 (little more than one month after the Vermont law became applicable) and implemented at the beginning of 2022.

The introduction of mandatory GM labelling requirements in the US started from a completely different baseline to the EU. GM derived food ingredient use has been commonplace in the US since GM crops were first widely grown in the country in the mid-1990s. As a result, when faced with mandatory GMO labelling requirements, most companies in the US food product supply chain decided to simply label most of their products with a positive 'GM presence' label. All additional costs with meeting this requirement (eg, tracking, tracing and changing labels) add to production costs[9,10] which in the long run are passed onto consumers in the form of higher prices.

As in the EU, most US consumers have been and remain largely indifferent as to whether the ingredients in the foods they eat contain or are derived from transgenic GMOs or gene edited crops. The small minority of consumers who wish to avoid GM ingredients were already being served by the market before legislation was enacted through voluntary labelled products[11]. To serve these customers, food companies adopted GM ingredient avoidance policies, developed and marketed their products as 'non-GM', often embracing the nationwide 'non-GM' (private label) voluntary initiatives.

In sum, the minority pro-labelling and anti-GMO segment of consumers did not need any legislation to help them avoid GM derived foods as the market delivered for them. They have evidently been prepared to pay price premiums given the expanding nature of the voluntary non-GM label initiatives. The non-GM food supply chain incurred the higher costs of GM avoidance but passed these onto consumers of these products.

The mandatory labelling rationale of facilitating better consumer choice has not materialised because most companies in the US food supply chain have decided to label most of their products as containing GMOs with the additional costs of complying with the legislation passed onto all consumers in the form of higher prices. Again, the majority consumer segment that did not actively seek the 'new' labelling choice/information has largely borne the additional costs although the costs are largely hidden and consumer buying behaviour has not altered[11]. In addition, the taxpayer has incurred a cost associated with compliance monitoring and testing.

The US food market had been adequately delivering consumer choice before the introduction of the federal mandatory labelling legislation via the active marketing of non-GM products to the segment that wants to buy such products. All the legislation has done is impose compliance costs on the rest of the food supply chain, consumers of those products and the taxpayer.

While the EU and US outcomes are broadly the same, the EU's outcome has been more costly because the higher cost GM (ingredient) avoidance policy has effectively been imposed on all

consumers. Also, those who wish to avoid GM ingredients have obtained a free ride off the larger sector of consumers who would not otherwise actively seek such foods. In the US, the higher costs imposed on the majority of consumers who do not actively seek out non GM ingredients relates only to the compliance costs of labelling legislation.

What are the lessons learned ? Has labelling legislation better informed consumers and delivered more product choices ?

To the majority of consumers, labelling GM ingredients has been a 'non issue' for which they are incurring additional costs. The primary beneficiaries are the minority of consumers who wish to avoid products derived from GM technology as well as businesses in the production and supply chain of non-GM products who benefit from the price premiums and ancillary services like GM trace testing.

In addition, it is important to recognise that the mandatory labelling requirement for GM-derived products is inconsistent. A consistent labelling system would require reversion to a product, not process-based approach (as was applied by the US FDA until the beginning of this year) or the introduction of a comprehensive mandatory labelling requirement for all products derived from other plant breeding methods such as radiation or chemical-induced mutagenesis, or cytoplasmic male sterility, or embryo rescue that have been widely used for many years to improve crop varieties used in all forms of agriculture (including organic)?

On consistency grounds a case could be made to extend compulsory labelling to broader production-related issues like with/without fertiliser, with/without irrigation, with/without fossil-fuels, etc? The list of differentiated production methods that could be labelled on consistency grounds is long.

However, this is <u>not</u> a call to extend mandatory production process-based labelling requirements to other 'types/features' of production method. It is, however, a call for policymakers to take note of the evidence if they are considering extending mandatory labelling requirements to foods and food ingredients derived from next generation plant breeding methods including gene editing.

The evidence is clear: compulsory GM product labelling is a case of *'inconsistent and poor regulation leading to a poor outcome'. V*oluntary labelling initiatives are better able to deliver more informed consumer choice at a lower net cost to society. Policymakers around the world should not repeat these mistakes when considering the issue of labelling for gene edited foods.

Graham Brookes
Agricultural Economist with PG Economics, UK. He has more than 35 years' experience of analysing the impact of technology use and policy change in agriculture and has authored many papers in peer reviewed journals on the impact of regulation, policy change and GM crop technology.
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