Standardising the Debate Over Genetically Modified Foods for the Citizenry: Some Perspectives[*]

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Abstract

The following article seeks to explore the inter-play of scientific developments and their social inferences. Many times it happens that a particular scientific development is either not received well by the society, or else it causes a division amongst experts on the issue of its adoption for the societal benefit. One such instance concerns the commercial production of genetically modified (GM) food in India. The adoption of GM food has been marred with numerous controversies starting from Bt Cotton to Bt Brijnal, and Bt Mustard. The article seeks to explore the nature of this debate. It argues that the two sides of the debate – supporters of GM food and those who oppose it – do not argue in direct opposition to each other; they instead argue along different coordinates, and in a rather convincing manner. The contradiction only springs from the stand they take in the debate. However, for the common populace, the debate is perceived completely along ideological lines; in total ignorance of the "constituent arguments" of the debate. It is concluded that the "knowledge gaps" which exist out of the contestation between scientific facts and ideological positions, need to be embraced in order to achieve a more informed position in any debate. This is the lesson GM food debate teaches us.

Keywords: GM Food, Food Security, Scientific Knowledge, Law and Policy, Informed Choices, Cultural Theory

Preface

The scientific debates over genetically modified genetically (GM) food in India is difficult to grasp for both the policy-makers as well as for the wider public. The ideological stands which

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leading scientists of the country have taken, has opened up debates over the nature of scientific studies as well as the understandings built around them.

Analysing the recently published works of P C Kesavan & M S Swaminathan and Deepak Pental, we argue that there does not seem much contradiction between most of the scientific concerns (also some conclusions) raised by both the proponents and opponents of the GM food debate, even though there remain stark differences in their ideological positions. The public discussion on surrounding issues, therefore, needs to be more informed.

Recently concluded studies show that public opinion is shaped more by ideological positions and less by scientific facts. Social perception of risk has never been objective (Douglas and Wildavsky, 1982); cultural values, belief and mindsets shape how the public responds to novel threats. In the context of risks where system uncertainties are high, scientific facts contested and decision stakes urgent – policy decisions need to be based on a broader public discourse (Funtowicz & Ravetz, 1995). Science does not drive policy in these cases, neither should it ought to. This is what we also argue in the context of the GM food debate.

"Self-assessed knowledge"

In a recent study conducted by Fernbach *et al*. (2019), the authors have identified some of the fundamental fissures in our assessment of the intersection of science and policy. The identified gaps cover the following areas – the constitution of scientific knowledge; our perception of scientific truth; ideological positions marked through public debates; and, the policy choices undertaken in such situations. The authors highlight the fact that 'knowledge and ideology both contribute to polarisation and impasse around divisive science and policy issues' and the way we treat any such issue tends to be informed by 'the relative strength of these forces.'

The work studies the abovementioned trends in the light of the debates over genetically modified foods in the context of Europe and the United States. It concludes with the hypothesis that scientific knowledge cannot be the sole basis to remedy the problems arising out of the lack of appreciation of scientific facts; rather more fundamental is the realisation that there always exist 'gaps in our knowledge' on any given issue at any given point of time.

The authors identify that this gap is usually situated in 'self-assessed knowledge', i.e., what people think they know. They also highlight that such knowledge reflects 'attitudes' of people, often coloured by ideologies, far more than an evident appreciation of the relevant facts at hand (Fernbach *et al*. 2019).

Debate over GM Foods in India

With the utility of GM crops being mired in innumerable controversies, we can extend the present study to the Indian context, asking whether the debate over GM foods in India is essentially informed; whether the public perception is based on correct scientific reasoning; whether ideological positions have any role to play in shaping the attitudes of people; and finally, whether the combination of scientific reasoning and ideological choices have guided the policy objectives on GM crops in India so far.

This would be an interesting investigation, keeping in mind that the controversy over GM crops does not seem to die. The Government has kept on hold the commercial production of Bt Mustard developed by the Centre for Genetic Manipulation of Crop Plants, University of Delhi. As per the information provided by the Ministry of Agriculture and Farmers Welfare (July 2, 2019), Bt Cotton remains the only Genetically Modified (GM) crop approved in 2002 for commercial cultivation by the Genetic Engineering Appraisal Committee (GEAC) of the Ministry of Environment, Forest and Climate Change (MoEFCC). This means that the cultivation of other unapproved GM crops, which include Bt Brinjal and Bt Mustard, are banned in India.

Deepak Pental from the University of Delhi, who is behind the development of Bt Mustard, has recently written a paper critiquing the works of Kesavan and Swaminathan in the context of GM crops (Pental 2019). The paper argues on two points quite vehemently – first, that there already exists scientific consensus around the safety of GM foods; and, second, that there are gross misunderstandings about the transgenic crops which are propagated by employing non-scientific knowledge-based arguments.

The critiqued papers deal with an almost similar subject matter. Kesavan and Swaminathan arguing along similar issues, had arrived at completely different, rather in multiple instances, conflicting conclusions. They argued that – first, there exists no scientific consensus around

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the safety of GM foods; and, second, while similar results could be achieved using other methods, the transgenic method of developing GM foods seems highly overrated (Swaminathan and Kesavan 2018; Kesavan and Swaminathan 2018; Kesavan and Swaminathan 2018).

Both proponents and opponents cite scientific research

What could be the reason behind such contrasting opinions, when both of them are derived from serious scientific investigations? Does this make scientific investigations subjective? If the answer is yes, how do we arrive at relevant conclusions about the utility of GM crops?

In simplistic terms, the answer may be framed as follows - that both opinions about GM crops are correct; that the differential opinions about the utility of GM food do not make scientific investigations redundant; and, that the solution to the GM controversy lies in appreciating the "gaps" in our knowledge, as highlighted by Fernbach *et al* (2019). If all of this is true, we need to explore how could we appreciate "gaps" in our knowledge and in what manner filling these gaps could contribute towards more informed conclusions about GM food.

On the issue of the safety of GM foods, Pental (2019) argues that there is a growing scientific consensus that GM crops are safe for consumption. He observes that the problems of pests/pathogens (including superweeds), which are often cited to criticise the cultivation of GM crops, are not unique. It is already accepted within the scientific community that pests/pathogens ultimately gain resistance to any changes (including at a genetic level) in the crop over long periods.

Kesavan and Swaminathan (2018), on the other hand, argue that the long-term effects of the consumption of GM food are unknown and that GM crops hinder the natural selection process of plant breeding that generates allelic diversities, giving rise to more robust varieties of crops.

While Pental (2019) argues from a scientific viewpoint and contextualises the debate in 'food security', Kesavan and Swaminathan (2018) attempt to bring in the aspect of 'nutritional security', again, employing the scientific method. Ideologically speaking we can, therefore, identify their works as either supporting or opposing GM food. Pental's argument supporting the commercial production of GM crops stems from 'our current understanding' about the

science of GM food. However, Kesavan and Swaminathan criticise GM food, basing their arguments mainly on its 'long term effects or implications' on health and the environment.

Looking closely, at the level of interpretation, the arguments actually do not contradict each other. In fact, both seem to address different issues - while Pental's approach critically takes account of the need to feed the growing world population which is expected to touch 9.7 billion by 2050 (United Nations 2019), Kesavan and Swaminathan seem to focus more on rising inequality and malnutrition in the world.

At the level of application, however, the arguments seem to collide directly with each other. Any answer to the question, 'Whether GM food should be commercially produced or not?' would, from its applicatory aspect, yield contradictory results depending upon who we support – Pental (supporting) or Kesavan and Swaminathan (opposing).

Parting note

How do we, as common people, understand the issue of GM food then? We believe the answer is simple. We need to be conscious about what the GM food debate, like any other ideological debate, hides. It is evident that not all issues in any debate create ideological rifts between its participants. There are only a few components upon which the contestation happens; on many others, the opposing parties seem to agree. For instance, while both Pental (2019) and Kesavan & Swaminathan (2018) recognise that GM Foods increase food production and has economic benefits, the latter are concerned about the long-term impacts in terms of increased use of pesticides on both soil productivity but also other features of the local ecology. So their disagreements rather stem from the relative utility GM food produces in the context of growing demands for food production around the world. The baseline remains – how could we feed the rising population amid increasing inequality around the world?

In a nutshell, therefore, it is prolonged discussions upon a few contested issues that any debate is framed for the third parties, and similarly understood by them. The outsider, might not be able to understand the debate in its entirety. However, they would render their support to any of the sparring sides based purely on ideological stands. The process, nevertheless, takes away their freedom to make informed choices. This is what Fernbach *et al* (2019) allude to while underlining the importance of "knowledge gaps" in the contestation between scientific facts and ideological positions.

We propose that it is necessary for our understanding to embrace the knowledge that is not coloured by the existing ideological positions at the very outset. While we may support any of these positions in the longer run, the process need not hinder our capacity to gain relevant knowledge. After all, democracy thrives on informed choices, though these choices might eventually find meaning in ideological jargon. The recent scientific literature on GM food quite incisively teaches us this lesson.

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Notes:

1. Ibn Battuta is reported to have said, 'Traveling leaves you speechless, then turns you into a storyteller.' The ideas discussed in the article owe their origin to a conversation between a law researcher and a natural scientist. The other author joined somewhere along the way.
2. The authors would like to thank Dr. Md. Iqbal Raja Khan, Assistant Professor, Department of Botany, School of Chemical and Life Sciences, Jamia Hamdard, New Delhi, and the Indian Railways which facilitated the initial exchange of ideas with Dr. Khan.

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