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Challenging the Flawed Premise Behind Pushing GMOs into Indian Agriculture

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A common claim is that genetically modified organisms (GMOs) are essential to agriculture if we are to feed an ever-growing global population. Supporters of genetically engineered (GE) crops argue that by increasing productivity and yields, this technology will also help boost farmers' incomes and lift many out of poverty. Although in this article it will be argued that the performance of GE crops to date has been questionable, the main contention is that the pro-GMO lobby, both outside of India and within, has wasted no time in wrenching the issues of hunger and poverty from their political contexts to use notions of 'helping farmers' and 'feeding the world' as lynchpins of its promotional strategy. There exists a 'haughty imperialism' within the pro-GMO scientific lobby that aggressively pushes for a GMO 'solution' which is a distraction from the root causes of poverty, hunger and malnutrition and genuine solutions based on food justice and food sovereignty.

Last year, in the journal Current Science, **Dr Deepak Pental**, developer of genetically engineered (GE) mustard at Delhi University, responded to a previous paper in the same journal by eminent scientists **PC Kesavan** and **MS Swaminathan** which questioned the efficacy of and the need for genetically modified organisms (GMOs) in agriculture. Pental argued that the two authors had aligned themselves with environmentalists and ideologues who have mindlessly attacked the use of genetic engineering (GE) technology to improve crops required for meeting the food and nutritional needs of a global population that is predicted to peak at 11.2 billion. Pental added that aspects of the two authors' analysis are a reflection of their ideological proclivities.

The use of the word 'mindlessly' is telling and betrays Pental's own ideological disposition. His words reflect tired industry-inspired rhetoric that says criticisms of GE technology are driven by ideology not fact.

If hunger and malnutrition are to be tackled effectively, the pro-GMO lobby must put aside this type of rhetoric, which is designed to close down debate. It should accept valid concerns about the GMO paradigm and be willing to consider why the world already produces enough to feed 10 billion people but over two billion are experiencing micronutrient deficiencies (of which 821 million were classed as chronically undernourished in 2018).

Critics: valid concerns or ideologues?

The performance of GE crops has been a hotly contested issue and, as highlighted in Kevasan and Swaminathan's piece and by others, there is already sufficient evidence to question their efficacy, especially that of herbicide-tolerant crops (which by 2007 already accounted for approximately 80% of biotech-derived crops grown globally) and the devastating impacts on the environment, human health and food security, not least in

places like Latin America.

We should not accept the premise that only GE can solve problems in agriculture. In their paper, Kesavan and Swaminathan argue that GE technology is supplementary and must be need based. In more than 99% of cases, they say that time-honoured conventional breeding is sufficient. In this respect, conventional options and innovations that outperform GE must not be overlooked or sidelined in a rush by powerful interests like the Bill and Melinda Gates Foundation to facilitate the introduction of GE crops into global agriculture; crops which are highly financially lucrative for the corporations behind them.

In Europe, robust regulatory mechanisms are in place for GMOs because it is recognised that GE food/crops are not substantially equivalent to their non-GE counterparts. Numerous studies have highlighted the flawed premise of 'substantial equivalence'. Furthermore, from the outset of the GMO project, the sidelining of serious concerns about the technology has occurred and despite industry claims to the contrary, there is no scientific consensus on the health impacts of GE crops as noted by Hilbeck et al (Environmental Sciences Europe, 2015). Adopting a precautionary principle where GE is concerned is therefore a valid approach.

As Hilbeck et al note, both the Cartagena Protocol and Codex share a precautionary approach to GE crops and foods, in that they agree that GE differs from conventional breeding and that safety assessments should be required before GMOs are used in food or released into the environment. There is sufficient reason to hold back on commercialising GE crops and to subject each GMO to independent, transparent environmental, social, economic and health impact evaluations.

Critics' concerns cannot therefore be brushed aside by claims that 'the science' is decided and the 'facts' about GE are indisputable. Such claims are merely political posturing and part of a strategy to tip the policy agenda in favour of GE.

In India, various high-level reports have advised against the adoption of GE crops. Appointed by the Supreme Court, the 'Technical Expert Committee (TEC) Final Report' (2013) was scathing about India's prevailing regulatory system and highlighted its inadequacies and serious inherent conflicts of interest. The TEC recommended a 10-year moratorium on the commercial release of all GE crops.

As we have seen with the push to get GE mustard commercialised, the problems described by the TEC persist. Through her numerous submissions to the Supreme Court, Aruna Rodrigues has argued that GE mustard is being pushed through based on outright regulatory delinquency. It must also be noted that this crop is herbicide tolerant, which, as stated by the TEC, is wholly inappropriate for India with its small biodiverse, multi-cropping farms.

While the above discussion has only scratched the surface, it is fair to say that criticisms of GE technology and various restrictions and moratoriums have not been driven by 'mindless' proclivities.

Can GE crops 'feed the world'?

The 'gene revolution' is sometimes regarded as Green Revolution 2.0. The Green Revolution too was sold under the guise of 'feeding the world'. However, emerging research indicates

that in India it merely led to more wheat in the diet, while food productivity per capita showed no increase or actually decreased.

Globally, the Green Revolution dovetailed with the consolidation of an emerging global food regime based on agro-export mono-cropping (often with non-food commodities taking up prime agricultural land) and (unfair) liberalised trade, linked to sovereign debt repayment and World Bank/IMF structural adjustment-privatisation directives. The outcomes have included a displacement of a food-producing peasantry, the consolidation of Western agri-food oligopolies and the transformation of many countries from food self-sufficiency into food deficit areas. And yet, the corporations behind this system of dependency and their lobbyists waste no time in spreading the message that this is the route to achieving food security. Their interests lie in 'business as usual'.

Today, we hear terms like 'foreign direct investment' and making India 'business friendly', but behind the rhetoric lies the hard-nosed approach of globalised capitalism. The intention is for India's displaced cultivators to be retrained to work as cheap labour in the West's offshored plants. India is to be a fully incorporated subsidiary of global capitalism, with its agri-food sector restructured for the needs of global supply chains and a reserve army of labour that effectively serves to beat workers and unions in the West into submission.

Global food insecurity and malnutrition are not the result of a lack of productivity. As long as these dynamics persist and food injustice remains an inbuilt feature of the global food regime, the rhetoric of GE being necessary for feeding the world will be seen for what it is: bombast.

Although India fares poorly in world hunger assessments, the country has achieved self-sufficiency in food grains and has ensured there is enough food (in terms of calories) available to feed its entire population. It is the world's largest producer of milk, pulses and millets and the second-largest producer of rice, wheat, sugarcane, groundnuts, vegetables, fruit and cotton.

According to the United Nations Food and Agriculture Organization (FAO), food security is achieved when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.

Food security for many Indians remains a distant dream. Large sections of India's population do not have enough food available to remain healthy nor do they have sufficiently diverse diets that provide adequate levels of micronutrients. The Comprehensive National Nutrition Survey 2016-18 is the first-ever nationally representative nutrition survey of children and adolescents in India. It found that 35 per cent of children under five were stunted, 22 per cent of school-age children were stunted while 24 per cent of adolescents were thin for their age.

People are not hungry in India because its farmers do not produce enough food. Hunger and malnutrition result from various factors, including inadequate food distribution, (gender) inequality and poverty; in fact, the country continues to export food while millions remain hungry. It's a case of 'scarcity' amid abundance.

Where farmers' livelihoods are concerned, the pro-GMO lobby says GE will boost productivity and help secure cultivators a better income. Again, this is misleading: it ignores

crucial political and economic contexts. Even with bumper harvests, Indian farmers still find themselves in financial distress.

India's farmers are not experiencing financial hardship due to low productivity. They are reeling from the effects of neoliberal policies, years of neglect and a deliberate strategy to displace smallholder agriculture at the behest of the World Bank and predatory global agri-food corporations . Little wonder then that the calorie and essential nutrient intake of the rural poor has drastically fallen.

However, aside from putting a positive spin on the questionable performance of GMO agriculture, the pro-GMO lobby, both outside of India and within, has wasted no time in wrenching these issues from their political contexts to use the notions of 'helping farmers' and 'feeding the world' as lynchpins of its promotional strategy.

GE was never intended to feed the world

Many of the traditional practices of India's small farmers are now recognised as sophisticated and appropriate for high-productive, sustainable agriculture. It is no surprise therefore that a recent FAO high-level report has called for agroecology and smallholder farmers to be prioritised and invested in to achieve global sustainable food security. It argues that scaling up agroecology offers potential solutions to many of the world's most pressing problems, whether, for instance, climate change and carbon storage, soil degradation, water shortages, unemployment or food security.

Agroecological principles represent a shift away from the reductionist yield-output industrial paradigm, which results in among other things enormous pressures on soil and water resources, to a more integrated low-input systems approach to food and agriculture that prioritises local food security, local calorific production, cropping patterns and diverse nutrition production per acre, water table stability, climate resilience, good soil structure and the ability to cope with evolving pests and disease pressures. Such a system would be underpinned by a concept of food sovereignty, based on optimal self-sufficiency, the right to culturally appropriate food and local ownership and stewardship of common resources, such as land, water, soil and seeds.

Traditional production systems rely on the knowledge and expertise of farmers in contrast to imported 'solutions'. Yet, if we take cotton cultivation in India as an example, farmers continue to be nudged away from traditional methods of farming and are being pushed towards (illegal) GE herbicide-tolerant cotton seeds. Researchers Glenn Stone and Andrew Flachs note the results of this shift from traditional practices to date does not appear to have benefited farmers. This isn't about giving farmers 'choice' where GE seeds and associated chemicals are concerned. It is more about GE seed companies and weedicide manufactures seeking to leverage a highly lucrative market.

The potential for herbicide market growth in India is enormous and industry looked for sales to reach USD 800 million by 2019. The objective involves opening India to GE seeds with herbicide tolerance traits, the biotechnology industry's biggest money maker by far (86 per cent of the world's GE crop acres in 2015 contain plants resistant to glyphosate or glufosinate and there is a new generation of crops resistant to 2,4-D coming through).

The aim is to break farmers' traditional pathways and move them onto corporate biotech/chemical treadmills for the benefit of industry.

Calls for agroecology and highlighting the benefits of traditional, small-scale agriculture are not based on a romantic yearning for the past or 'the peasantry'. Available evidence suggests that (non-GMO) smallholder farming using low-input methods is more productive in total output than large-scale industrial farms and can be more profitable and resilient to climate change. It is for good reason that the FAO high-level report referred to earlier as well as the United Nations Special Rapporteur on the Right to Food, Prof Hilal Elver, call for investment in this type of agriculture, which is centred on small farms. Despite the pressures, including the fact that globally industrial agriculture grabs 80 per cent of subsidies and 90 per cent of research funds, smallholder agriculture plays a major role in feeding the world.

That's a massive quantity of subsidies and funds to support a system that is only made profitable as a result of these financial injections and because agri-food oligopolies externalize the massive health, social and environmental costs of their operations.

But policy makers tend to accept that profit-driven transnational corporations have a legitimate claim to be owners and custodians of natural assets (the 'commons'). These corporations, their lobbyists and their political representatives have succeeded in cementing a 'thick legitimacy' among policy makers for their vision of agriculture.

From World Bank 'enabling the business of agriculture' directives to the World Trade Organization 'agreement on agriculture' and trade related intellectual property agreements, international bodies have enshrined the interests of corporations that seek to monopolise seeds, land, water, biodiversity and other natural assets that belong to us all. These corporations, the promoters of GMO agriculture, are not offering a 'solution' for farmers' impoverishment or hunger; GE seeds are little more than a value capture mechanism.

To evaluate the pro-GMO lobby's rhetoric that GE is needed to 'feed the world', we first need to understand the dynamics of a globalised food system that fuels hunger and malnutrition against a backdrop of (subsidised) food overproduction. We must acknowledge the destructive, predatory dynamics of capitalism and the need for agri-food giants to maintain profits by seeking out new (foreign) markets and displacing existing systems of production with ones that serve their bottom line. And we need to reject a deceptive 'haughty imperialism' within the pro-GMO scientific lobby which aggressively pushes for a GMO 'solution'.

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