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Concerns as India Relaxes Rules Around Gene-edited Crops

India has recently relaxed laws around gene-edited crops, despite concerns about 'unpredictable' risks to health and biodiversity.

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The Indian government relaxed regulations around gene-edited crops on March 30 – despite scientists' warnings about the 'largely unknown' environmental impact and health impacts.

Only last year, hundreds of thousands of rural workers took to the streets by foot, horses, and tractors. Three controversial farm bills implemented were successfully overturned.

But the fight for India's food sovereignty is now up against multinational cooperations pushing advances in gene manipulating technology, such as CRISPR or 'gene-silencing pesticides' – which could open a pandora's box of unintended consequences to the health and the environment.

Conflict

Dr. Pushpa M. Bhargava, is the founder of the *Centre for Cellular and Molecular Biology* and the Vice-Chairperson of the *National Knowledge Commission says:*

> "There are over 500 research publications by scientists of indisputable integrity, who have no conflict of interest, that establish harmful effects of GM crops on human, animal, and plant, health, and on the environment and biodiversity."

A recent paper by Indian scientists showed that the Bt gene in both cotton and brinjal leads to inhibition of growth and development of the plant. On the other hand, virtually every paper supporting GM crops is by scientists who have a declared conflict of interest or whose credibility and integrity can be doubted.

Developers have previously been able to avoid regulations around gene-silencing crops by branding the products as "transient" or providing only "temporary genetic modification",

though this has been refuted by a number of scientific studies that have shown the RNAi pesticides can last up to 80 generations – warned a previous report by *Friends of the Earth.*

Irreversible

"The central government departments that have been acting as peddlers of GM technology-probably in collusion with MNCs marketing GM seeds—have shown little respect for the law." his report says.

In a recent review called *Food Without Choice* published in the Tribune, Prof. Pushpa M. Bhargava warned:

> "The ultimate goal of this attempt in India of which the leader is Monsanto is to obtain control over Indian agriculture and thus food production. With 60 percent of our population engaged in agriculture and living in villages, this would essentially mean not only control over our food security but also over our farmer security, agricultural security, and security of the rural sector."

Dr. Bhargava's strong stance against GM crops is supported by other eminent scientists in various parts of the world. A group of eminent scientists organized under the Independent Science Panel has stated in very clear terms:

> "GM crops have not been proven safe. On the contrary, sufficient evidence has emerged to raise serious safety concerns. If ignored, could result in irreversible damage to health and the environment. GM crops should be firmly rejected now."

Bioweapons

The Independent Science Panel (ISP) is a panel of scientists from many disciplines and countries, committed to the promotion of science for the public good. In a document titled 'The case for a GMO-free Sustainable World,' the ISP has stated further:

> "By far the most insidious dangers of genetic engineering are inherent to the process itself, which greatly enhances the scope and probability of horizontal gene transfer and recombination, the main route to creating viruses and bacteria that cause disease epidemics."

This was highlighted in 2001 by the 'accidental' creation of a killer mouse virus in the course of an apparently innocent genetic engineering experiment.

New techniques such as DNA shuffling, are allowing geneticists to create in a matter of minutes in the laboratory. This opens up the possibility of releasing millions of recombinant viruses that have never existed in billions of years of evolution.

Rejected

Disease-causing viruses and bacteria and their genetic material are the predominant materials and tools for genetic engineering, as much as for the intentional creation of bioweapons.

Several scientists involved in studying the implications and impacts of genetic engineering

got together at the International Conference on 'Redefining of Life Sciences' organised in Penang, Malaysia, by the Third World Network. They issued a statement (the Penang Statement, or PS) that questioned the scientific basis of genetic engineering.

This statement said: "The new biotechnology-based upon genetic engineering makes the assumption that each specific feature of an organism is encoded in one or a few specific, stable genes so that the transfer of these genes results in the transfer of a discrete feature.

"This extreme form of genetic reductionism has already been rejected by the majority of biologists and many other members of the intellectual community. Largely because it fails to take into account the complex interactions between genes and their cellular extracellular, and external environments that are involved in the development of all traits.

Risks

The report continued: "It has thus been impossible to predict the consequences of transferring a gene from one type of organism to another in a significant number of cases.

"The limited ability to transfer identifiable molecular characteristics between organisms through genetic engineering does not constitute the demonstration of any comprehensive or reliable system for predicting all the significant effects of transposing genes."

The world is becoming increasingly concerned about the serious health risks and numerous other adverse impacts of genetically modified crops and genetically modified organisms. Yet billion-dollar GMO multinationals have tried once again to evoke confusion and uncertainty in order to avoid regulation.

Their claim that gene-edited crops should not be subject to the same restrictions as GM crops is an attempt to find a loophole in-laws that are put in place to protect against the risks and dangers related to GMOs.

Mutagenesis

In July 2018, the highest court in Europe ruled that gene-edited crops using CRISPR should be subject to the same strict rules and restrictions as GMOs.

The court ruled: "Considering that the risks linked to the use of these new mutagenesis techniques might prove to be similar to those that result from production and release of a GMO through trans-genesis, since the direct modification of the genetic material of an organism through mutagenesis.

"These new techniques make it possible to introduce genetically modified varieties at a rate out of all proportion to those resulting from the application of conventional methods of mutagenesis.

"The European Commission and the European governments must now ensure that all new GMOs are fully tested and labeled and that any field trials are brought under GMO rules."

Illegal

A review of the legal and scientific facts surrounding this debate by Dr. Janet Cotter and Dr. R. Steinbrecher had concluded:

"It is clear that gene-edited crops and animals need to be assumed as GMOs in the same way as current GM crops."

With gene-editing, researchers can add, delete or modify bits of an organism's genome. Welcoming the court verdict. Franziska Achterberg, Greenpeace EU's food policy director stated:

"Releasing these new GMOs into the environment without proper safety measures is illegal and irresponsible, particularly given that gene-editing can lead to unintended side-effects."

Despite this growing recognition of the risks of gene-edited crops, attempts have been speeded up in India by powerful lobbyists to gain backdoor entry for GM crops using gene-editing.

Their attempts appear to be succeeding as the central government and ministry of environment issued a notification on March 30 exempting some gene-edited crops and organisms from earlier rules framed for GM crops.

Future

SND1 and SND2 genome-edited products, free from exogenous introduced DNA, are to be exempted from 1988-89 rules for GM organisms and will be taken out of the existing approval processes for these.

Those involved in protecting Indian agriculture from the onslaught of GM crops have already stated that these changes made recently are risky and unscientific and that these should be challenged legally.

Another view is that the existing 1988 rules should in fact be strengthened in such a way that such arbitrary changes are not possible in the future.

Without thorough regulations in place to assess and protect against the potential risks of gene-manipulating technologies, the government's decision to relax laws around gene-editing will do little more than further entrench its role as a major driver of biodiversity loss and health problems.

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