

Tough questions, tougher answers

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Genetically modified (GM or GMO) foods, bio crops, biotech crops; call it what you will, these terms are among the words that have confused consumers with regard to what should be eaten and what should not. The concern does not end with the consumer. With the effects of climate change being discussed in earnest, the time seems ripe for adaptation to take place, with research pointing in the way of the versatility of bio crops in withstanding climatic conditions amongst others. However, with the backlash GMO foods have received in the recent past, this may not be a simple process as it seems.

Sri Lanka and biotech crops seem to have a very ambiguous agreement of sorts. According to Dr. Kalaivani Vivehananthan, Head of the Department of Biotechnology, Faculty of Agriculture and Plantation Management, Wayamba University of Sri Lanka, biotech food may be commercially available in Sri Lanka. For example in the form of cereals of soya products, maize as well as canola oil. “However those products have not been labeled in the Sri Lankan market. Since it has not been labelled, consumers may not aware of those,” she stated.

Biotech crops and the present

Genetic modification is a technology used to alter genetic material of living cells or organisms in order to make them capable of producing new substances or perform new functions.

Are bio crops and GM foods the same? Well in a sense, yes. Bio crops are also known as GM crops/ genetically modified crops/biotech crops. In GMOs, the genetic characteristics are changed through genetic manipulation or modification. GM foods are foods derived from organisms whose genetic material (DNA) has been modified. For example, certain vaccines, drugs, food additives and many processed, canned and

preserved foods. They can also include corn and soya bean derivatives used in many foods.

Biotech crops have allowed farmers to use less and environmentally-friendly energy and fertilizer, and practice soil carbon sequestration according to research.

Climate change has been talked about as one of the reasons why food production may drastically decline, however, according to the International Service for the Acquisition of Agri-biotech Applications (ISAAA), biotechnology may help offset the effects and help increase food production.

Reports state that an ISAAA briefing paper, *Biotechnology and Climate Change* notes that “Biotech crops, for the last 16 years of commercialization, have been contributing to the reduction of carbon dioxide emissions”.

The paper states that crops can be modified faster through biotechnology than conventional crops, thus hastening implementation of strategies to meet rapid and severe climatic changes. Voting for green biotechnology, it states that bio crops offer a solution to decrease greenhouse gases which, in turn, mitigates climate change.

Although somewhat unpopular, GMOs may hold the probable key to survival, in the face of the following reports.

A report ‘World Resources Report: Creating a Sustainable Food Future’,” by the United Nations (UN), World Resources Institute (WRI) and the World Bank found the world will need 70% more food, as measured by calories, to feed a global population of 9.6 billion in 2050, and must achieve this through improvements in the way people produce and consume.

It also found that boosting crop and livestock productivity on existing agricultural land is critical to saving forests and reducing greenhouse gas emissions.

The world faces a great challenge and opportunity over the next several decades with regard to food security, development and the environment. The report emphasizes that the food gap must be closed in a way that creates opportunities for the rural poor, limits clearing of forests, and reduces greenhouse gas emissions



from agriculture.

A study published by the Singapore-based by the Center for Non-Traditional Security (NTS) Studies states, “Higher temperatures have significant ramifications for food production. (*Impact of climate change on ASEAN food security: Downscaling analysis and response*).

The NTS publication cites three other reasons as well:

- continuous impacts –changes in yield due to temperature increase, shifting season lengths, and increased salinity in coastal areas;
- discontinuous impacts –increases in harvest failure due to extreme weather- and climate-related events, pests, and disease outbreaks;
- permanent impacts –the loss of land due to inundation as a result of sea-level rise.

Studies have also shown that rice could benefit from higher levels of carbon dioxide in the atmosphere, though an increase in temperature would “nullify any yield increase.”

Sri Lanka and the future of biotech crops

In the face of all available data, would bio crops survive climate change in Sri Lanka?

“While there is a trend to produce biotech crops that would survive

climate change in Sri Lanka, (for example salt tolerance, drought tolerance and cold tolerance crops) it is, as yet, only being produced globally. Unfortunately, no genetically modified crops/foods have, as yet, being produced in Sri Lanka” Dr. Vivehananthan said.

According to Dr. Vivehananthan, Sri Lanka is, as yet, at a nascent stage in the development of GMOs.

“Recently, a Biosafety Regulatory framework for GMOs has been completed with the support of National Science Foundation, Colombo. However the potential of biotechnology is still greatly underexploited and people have not had the opportunity to reap the maximum benefits from global developments in Biotechnology. Research and Development in Biotechnology too has progressed at a very low pace,” she added.

The Ministry of Science and Technology and the Ministry of Environment and Natural Resources have already identified Biotechnology is an important area for development in Sri Lanka (National Report of Sri Lanka, 2002).

Thus, the most pertinent question that needs to be asked is how long will it take before we kick start adaptability measures to ensure adequate crop production in the face of oncoming climatic changes?

GMOs are highly controversial, but there are legitimate arguments on both sides of the debate.

Advantages:

Heavily tested: There have been a great number of studies tracking the effects of GMOs on animals. Overwhelmingly, these studies indicate that GMOs are safe to consume.

Impact on farming: GMOs allow plants to be modified to grow in environments that would be normally inhospitable.

Cheaper food: Easier farming means more food which, in turn, means less expensive food. This is not only beneficial for the average consumer, but it can have global implications: less expensive food makes it easier to feed hungry populations around the world.

Increased nutritional value: GMOs can be modified to have greater nutritional value than the organism would have naturally. For example, scientists, hoping to eliminate the need for post-harvest processing, have genetically modified rice to contain significantly higher amounts of vitamin A. This “golden rice” is not yet legal in most countries, but experts expect it to be within the next few years.

Concerns:

Health concerns: There have been no studies tracking the long-term effects GMOs may have on humans. Researchers fear that the health risks may include: Exposure to allergens, antibiotic resistance, endocrine disruption, reproductive disorders and accelerated aging.

Ethics: Some feel that GMOs are a violation of nature and an infringement on a natural organism’s intrinsic value.

Need for labels: In January 2000, an international trade agreement for labeling GMOs was established. It required that international food exporters label all genetically modified foods in order to allow a country to decide if they would receive the food or reject it. More than 130 countries, including the US, signed the agreement. However, it’s up to the individual country to decide whether or not to label products made with GMOs after they are imported from abroad.

Foods to watch out for

Today, at least 85% of soybeans, corn, sugar beets and canola are grown from GMO seeds. Because of this, it is particularly important to avoid packaged foods with corn and soy if you are trying to cut GMOs out of your family’s diet. If you don’t normally buy organic, be sure to check your food labels to avoid foods that come from these five crops, which are likely to contain genetic modifications:

- Canola
- Corn
- Soy
- Papaya
- Sugar Beets

If you want to use non-genetically modified oil, you can swap your canola or vegetable oil for olive oil or safflower oil as these are less likely to contain genetic modifications.

(Source: doctoroz.com)

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