

Genetics is comparatively a new science which has the potential to work wonders for the welfare of mankind in the years to come. There are mainly two areas in which genetics is likely to help us—medicine and agriculture. Genetic engineering is man's newest weapon against disease and experts believe it will enable us to effectively combat some killer medical problems such as cancer, heart disorder, blood pressure and diabetes in the near future.

Just a few months back, scientists proudly announced to have mapped out the entire human genome—one of the greatest scientific breakthroughs ever and significant step forward towards disease control. In agriculture, genetics is helping us to create new varieties of crops which will supposedly have many advantages over the ordinary crops. Scientists hope to develop varieties of rice, wheat and cotton that will defend themselves well against disease, help in producing their own fertilisers and grow even in arid areas. More importantly, the genetically modified (GM) crops will be rich in nutritional value.

The GM foods hold great promise for humanity. Hunger and malnutrition are two of our most serious problems and the genetically engineered crops can prove very helpful in overcoming them. World population stands at over 6 billion at present and this number is likely to rise sharply in the coming decades. That means the demand for foodgrain, both for human consumption and for animal feed, is bound to go up by in a big way during this period. On the other hand, the planet's water resources are dwindle

The promise of GM foods

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ling and experts predict severe water shortage in the near future. In such a scenario, the GM crops will be nothing short of a blessing.

The commercial production of such foods was launched in mid-90s. However, the news of the first revolutionary GM crop came in 1999. It was the golden rice developed by a Swiss scientist Ingo Potrykus and his colleagues. Unlike ordinary rice, this new variety contains considerable quantities of vitamin A. About 3 billion people, half of the world population, take rice as their staple food. Many of them are among the poorest earthlings. The poor people who eat rice, commonly suffer from vitamin A deficiency which is a cause of several medical problems. Every year, over 1 million children die because of such problems and another 350,000 go blind due to insufficient intake of vitamin A. The golden rice can improve the lives of many of the world's poor and save many of them from death by providing good nutrition to them.

If the genetically engineered crops are the source of new hope, they have also aroused new fears. Eversince they went into commercial production in some parts of the world, the GM crops have been the subject of a heated

controversy throughout the globe. At one level, there are countries that on the whole support or oppose them. America, Canada and Argentina are the three largest producers of GM products and advocate biotechnology, as they stand to reap huge profits from its export. Britain, France and several other European nations are strongly anti-GM foods. While China and India have shown a keen interest in the new technology as it can be immensely helpful in feeding their huge population.

Strong opposition to agricultural biotechnology has been expressed by many farmers and environment activists in recent years. The former have staged violent protests against it in India, France and elsewhere. Consumer groups in Europe have also voiced concern over the safety of GM foods. On the other hand, some large corporations which produce agricultural equipment and chemicals seek to promote the new technology. Over the years, they have invested heavily in the research on genetically modified crops.

The scientists who have spent years in their labs to develop transgenic foods also speak warmly in favour of them. Professor Ingo Potrykus says

he was led to work on the golden rice by his desire to do something for the world's poor and he was dismayed at the negative response to the application of genetics to agriculture. He remarked, "It would be irresponsible, even immoral, not to use biotechnology to try to solve the problem of hunger".

What's wrong with genetically altered agricultural products? Two kinds of objection have been raised against them so far. First, some scientists and experts fear that the cultivation of the GM crops on a large scale could create serious problems. It is still uncertain what diverse effects they would have on other plants, animal life and the environment. For instance, transgenic plants can possibly cause changes in the existing species of weeds and insects which may become harder and more difficult to control than they are now. Many people point out that the Frankenfoods (as the opponents of GM foods call them) may even do harm to humans who eat them.

The second objection is based on the perception that the multi-national corporations and the developed nations seek to control the agricultural sector in the poor countries through the promotion of biotechnology. Farm-

ers and many others in the Third World fear that the large companies based in the US and other Western countries will be able to do so because of their resources and expertise. Large amounts of money and most sophisticated technology are required to create the GM seeds. Once a biotech corporation develops a new GM crop or a technique to be used for this purpose, it gets a patent to protect it. Nobody else can grow that crop or employ that technique without its permission.

Professor Potrykus and his team could create the golden rice only after they obtained permission from six companies to use their technologies for this purpose, after lengthy negotiations. Some people believe the giant biotech corporations will behave like the world's leading pharmaceutical companies which don't allow the production of cheap AIDS medicines in Africa. They hold licences to manufacture these drugs, and their prices are so high that the middle class and poor victims of the deadly epidemic cannot buy them.

Agricultural biotechnology can play a vital role in dealing with hunger and malnutrition if extensive research is carried out to improve the safety of transgenic foods and poor nations are allowed to grow GM crops freely by the Western companies. Like several other developing nations, Pakistan too urgently needs genetically engineered food, given its rapidly increasing population and a severe shortage of water. Just as we are trying hard to import information technology, we should also import biotechnology and experiment with developing GM crops which suit our soil and weather conditions.