

# Modern food crops (GM crops): For whom?

**B**y harnessing nature's methods of gene transfer, scientists have been able to genetically alter a number of common crops, creating new varieties that are better suited to farmer's needs. Special techniques in genetic engineering allow scientists to produce new varieties of plants with selected characteristics. These new varieties are known as transgenic varieties and they have features for improved production. Genetic engineering transfers genes from one plant to another in order to create new characteristics. When two plants are crossbred, they contribute all their genetic traits to the new plant.

Studies attempting to analyze the breakdown of profitability of GM crops between biotechnology seed firms and farmers have shown good trend for biotech companies and not so-favorable results for farmers. Only the very rich farmers would be able to afford this more expensive seeds. Moreover, these crops have led to increased flexibility in agricultural practices, such as simplified weed control, conservation in tillage, broad spectrum control etc. all of which have led to significant adverse economic impact on labor intensive developing country leading to acute unemployment problems in rural areas.

Intellectual Property Rights are ensured through the legal right known as patent. A patent is a legal monopoly granted by a national government to an inventor, which allows him to exploit his invention by preventing anyone else from copying or infringing it for a limited number of 20 years. The intellectual property rights system intrinsic to the World Trade Organization is heavily biased against de-

veloping countries. Not only does it provide MNCs the right to seize and patent genetic resources without any adequate compensation, but it also prevents farmers from saving and reusing the modified seeds. This is a very serious concern as traditionally, farmers have relied upon saved seeds for their cropping activities in the following year. Moreover, being forced to come back to seed giants year after year for seed purchases would be financially unviable for the farmers leading to their increased vulnerability.

Several countries have started introducing GM crops since 1990's, claiming higher yields, lower chemical inputs and higher nutritional value, as an answer to the challenge of population growth and suitable adaptation to climate change. Many countries have introduced specific frameworks to regulate their release and commercialization while developing countries are still weighing their options. However, GM technology is better suited to capital intensive farming only. In developing countries, there are further reservations over the capacity to es-

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establish regulatory frameworks needed to manage inevitable conflicts of interests between the local stakeholders such as farmers, consumers, government and agricultural biotech companies who possess intellectual property rights. GE techniques are primarily applied to resist biotic and abiotic stress, higher productivity, better seed and nutritional quality. This technology is helpful in resistance breeding, introducing gene, irrespective of their presence in nature. Many genetically modified crops such as golden rice, Bt.brinjal and Bt. cotton have been introduced.

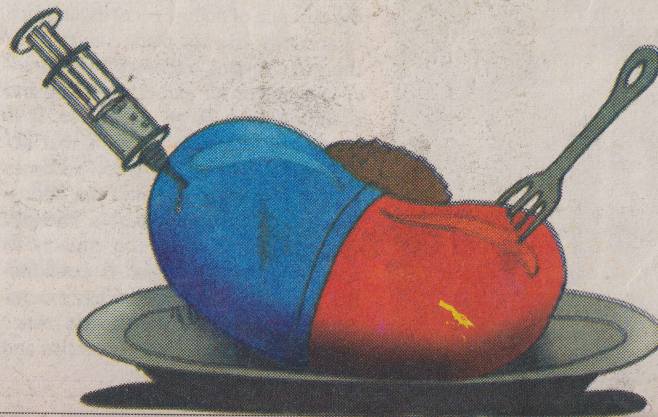
**Golden Rice:** Between 100 and 140 million children are affected by Vitamin A deficiency in the world. It is a public health problem in 118 countries, especially in Africa and South-East Asia, which affects young children and pregnant women in low-income countries hardest. An estimated 250,000 to 500,000 Vitamin A deficient children become blind each year, half of them dying within 12 months of losing their sight.

Rice grain is the world's most important source of food. However, it is a poor source of many essential micro nutrients and vitamins. The endosperm, the starchy portion of the grain left after milling, does not contain provitamin A also known as beta-carotene, from which humans can make Vitamin A. The Golden Rice variety, however, contains three new genes; two from the dafodil and one from bacteria so that the rice plants produce provitamin A. The plant variety was produced by researchers collaborating in Switzerland and Germany. The golden rice is currently in the testing phase and so may not be released publicly until a few years time.

All rice producing countries suffer significant losses from rice borer. Bt. rice has the potential to raise yields up to 8 per cent and reduce pesticide use by 80 per cent which would have an extensive increase on the prosperity of rice-producing farmers. The improved GM phytase maize will facilitate pig and poultry to easily digest phosphate, improving the animal's growth and reducing the amount of nutrient excreted. At present, phosphate is purchased and added to feed which contributes to environmental pollution.

Drought tolerant biotech maize is expected to be deployed in USA and Sub-Saharan Africa soon. Other crops expected to be approved soon are disease resistance potato, banana and sugar cane with quality traits. Despite the enthusiasm of USA, Canada, Brazil, South Africa, Australia, Spain, Poland, China and India, only Burkino Faso in Sub Saharan Africa has adopted GM crops.

Therefore, Nigeria should also join the group of other countries in permitting the application and commercial use of genetically modified food crops for achieving self sufficiency in food grains production as well as to alleviate poverty and hunger in the country.



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