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Challenges

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"We have the capacity to eliminate hunger from the face of the earth in our lifetime. We need only the will." John Kennedy, World Food Congress 1963

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Genetically modified plants have the same goal as conventional breeding: to develop better varieties for farmers, the environment and consumers. The will is all we need to concur hunger. This is our challenge at *GM Crops*, our challenge as scientists and above all, our challenge as human beings.

According to the International Service for the Acquisition of Agri-Biotech Crops (ISAAA) there has been a steady increase in GM production since the first commercialization of GM crops in 1996. With a total 134 million hectares, nine million of them were planted in 2009, GM production increased at a rate of nine percent.

Nearly half of the world's GM acreage is planted in the US, with 64 million hectares, Brazil comes in second with 21.4 million hectares. In terms of numbers, 13 million out of the 14 million farmers growing GM crops are based in developing countries.

This has been a busy year for us in GM crops. It is a fast growing community for scientists interested in GM crops worldwide. As we are heading for spring, a milestone was reached for the history of GM crops in Europe. At least 620 acres in Germany, the Czech Republic and Sweden will be planted with Amflora; a genetically modified potato. Amflora is the first approved genetically modified organism to grant approval from the European Union since 1998. Nevertheless, it was approved as a source of starch. John Dalli, EU's health commissioner; EU's health and consumer affairs department said all scientific issues were fully addressed.

One of our missions at *GM Crops* is to transfer knowledge and a better understanding of the real meaning of GM crops. GM crops would be the perfect answer for the global food crisis. It is noteworthy that developing countries are adopting a new policy of accepting GM crops.

"This strong adoption puts to rest the idea that GM crops can only benefit larger farmers and industrialized countries," said Huang Dafang, a researcher at the Chinese Academy of Agricultural Sciences' Biotechnology Research Institute.

"It is unwise to say no to GM technology considering the food crisis the world faces," Clive James, chair of ISAAA, told SciDev.Net. He also added that "the most promising technological strategy at this time for increasing global food, feed and fiber productivity is to combine the best of the old and the best of the new, by integrating the best of conventional crop technology and the best of crop biotechnology applications including novel traits."

This year also will witness the second trial of blight-resistant GM potatoes to take place in Britain. A three-year trail is expected to take place by scientists in John Innes Center where 400 potato plants will be sown in the plot at the Norwich Research Park next May. Thus, Britain has two ongoing GM trials this year; Leeds University is expected to plant more GM potatoes at Tadcaster this year. The British governmental support and the success of the Leeds trial last year would eventually enable the scientific community to approve of more GM research in Britain.

In this issue Kumar et al. tries to find the answer to the most common question: can genetically modified crops be the next green revolution? In their long journey to find the answer, they addressed the rapid increase in approving the commercialization of GM crops in Asia, the USA and Australia. They attribute the reason to the higher yield, the better nutritional values and qualities of GM crops. Also, they demonstrate the need to produce better quality GM crops to help alleviate the hunger and malnutrition around

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the world. They review the impact of GM crops on the contemporary agriculture during the past decades and discuss the possible future implication of GM technology.

Ray and Georges address the nutritional, pharmacological and genetic qualities of the faba bean from a genomic approach. They highlight its superior nutritional value over other legumes. They also studied the medical components of faba beans as well as genes that are likely to be involved in the vicine group of compounds.

Intensive studies were carried out on plant acetohydroxyacid synthase (AHAS) to understand their critical roles in conferring herbicide resistance. Such information will help in the creation of new herbicide-tolerant AHAS which could be used to develop herbicide-resistant transgenic plants. Le et al. summarizes the results of their work on amino acid residues and their substitutions that confer herbicide resistance in tobacco.

On the other hand, Sappington et al. discusses a serious problem that was raised when public scientists conducted their research on commercialized transgenic seed without permission from the companies that produced them. Moreover, they highlighted the company-embossed restrictions. They also report the set of principles designed to protect the legitimate property rights of companies and at the same time allow public scientists to conduct most types of research on their commercialized products without the need for a case-by-case agreements.

Henry I. Miller, Hoover Institution; Stanford University; Stanford, CA USA tries to answer the question, "How accurate is the media?" He also questions the "gold standard" of science and whether some of the worst flawed papers have conveyed false alarms about the safety of GM crops.

The development of an efficient protocol for regeneration and the production of transgenic wheat from mature embryos of hexaploid bread wheat (*Triticum aestivum*) as well as from tetraploid pasta wheat (*Triticum durum*) was discussed by Moghaieb et al. They demonstrate their results regarding the regeneration of transgenic wheat plants expressing the genes present in *A. tumifaciens* binary vectors.

Sano et al. discusses the possible role of RNA silencing in viroid pathogenicity and evolution. They also illustrate their attempt to engineer plants for viroid resistance.

Gene flow is a common phenomenon in plants. With the advent of genetically modified plants, this subject has become of the utmost importance due to the need for controlling the spread of transgenes Faria, et al. studies the occurrence and intensity of outcrossing in transgenic beans.

We at *GM Crops* are grateful for your contributions, submissions that you have sent, the excellent reviews that you have offered and subscriptions.

On a personal note, I have enjoyed the opportunity to share your ideas and research. I look forward to the challenges and accomplishments that I know will be associated *GM Crops.*