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Chapter 1

Application of Genetic Engineering in Crop Improvement

Sitaram Swain
Department of Zoology, School of Applied Sciences
Centurion University of Technology and Management, Odisha, INDIA.
Correspondence may be addressed to email: sitaram.swain@cutm.ac.in

Abstract:
The genetic engineering of crops is one of the most important crop plant improvement technologies for the 21st century in agriculture. Genetic engineering can be used to incorporate new characteristics into plants for improving the production of crops. The first gene transfer was taken place in plant by using Ti plasmids. Genetically modified crops were developed with single gene resistance to herbicides, insects, viruses, and the silencing of undesirable genes. Considerable progress has been made in both scientific understanding and technical capabilities. The first-generation GM crops have been planted increased in spite of resistance in some parts of the world. Now these crops can be used to breed new crop varieties that are resistant to a much broader variety and can able to respond climate change. The advent of modern CRISPR-based technologies makes it possible to contemplate with a much greater degree of accuracy to enhance nutritional efficiency. Moreover, the increased emphasis on food protection, sustainability, the reduction of agricultural inputs and the reduction of pesticides places additional pressure on crops and growers. The vast potential of biotechnology to the good of humanity needs to be explored as GM crops become an integral part of our life.

Key words: crop, resistant, plasmid, biotechnology, sustainability