

Genetic modification of crop plants: issues and challenges

ABSTRACT

The growing area of genetically modified (GM) crops has significantly expanded since they were first commercialized in 1996. Currently 400 million acres of the fertile land worldwide are used to cultivate genetic engineering (GE) crops such as rice, corn, cotton, and soybeans. Genetically modified crops are increasingly gaining acceptance and their adoption has brought huge economic and environmental benefits. In the past 17 years, these achievements have been primarily supported by two simple traits of herbicide tolerant and insect resistant crops. Concurrently GM crops generated intense consumer debate in many parts of the world. The issues under debate include the costs and benefits of the GM crops and the inherent safety concerns. It is widely claimed, however, that biotechnology, particularly genetically engineered food offers dramatic promise for meeting some of the twenty-first century's greatest challenges; as do all new technologies, it also poses certain apprehensions and risks, both known and unknown. The introduction of *Bacillus thuringiensis* (Bt) genes into the plants has raised issues related to its risk assessment and biosafety. The chapter presents an overview of the production of GM crops, their adequacy, detection strategies, biosafety issues, and potential impact on society. Furthermore, the future prospects of the GM crops are also highlighted.

Keyword: GM crops; *Bacillus thuringiensis*; Biotechnology; Crop resistance