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An Overview on Genetically Modified Plants

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Abstract

Transgenic pants of GMO are now a day in great demand, the present paper highlights the advantages, disadvantages and prospectus of GMO.

Keywords: GMO, Applications, Disadvantages

Introduction

Genetically modified plants, also called transgenic plants, are designed to acquire useful quality attributes such as insect resistance, herbicide tolerance, abiotic stress tolerance, disease resistance, high nutritional quality, high yield potential, delayed ripening, enhanced ornamental value, and male sterility.

Genetically engineered crops were first commercialized in 1994 and since then have been rapidly adopted, enabling growers to more effectively manage pests and increase crop productivity while ensuring food, feed, and environmental safety.

The first genetically modified plant (GMP) was a tobacco resistant to antibiotics in 1983. In 1996, the first genetically altered crop, a delayed-ripening tomato was commercially released. In the year 2003, the estimated global area of GM crops for was 67.7 million hectares.

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Disadvantages

- It can be dangerous to other insects that are important to our ecosystem.
- It sparks concerns on changing the field of agriculture.
- It can damage the environment.
- It causes unwanted residual effects.
- It can create more weeds.
- It threatens crop diversity.
- It has trade issues.

Applications

Some benefits of genetic engineering in agriculture are increased crop yields, reduced costs for food or drug production, reduced need for pesticides, enhanced nutrient composition and food quality, resistance to pests and disease, greater food security, and medical benefits to the world's growing population.

GM crops grown in Colorado include corn, alfalfa, sugar beet, soybeans, and canola. Potential future applications of the technology include nutritional enhancements, stress tolerance, disease resistance, biofuel efficiency, and remediation of polluted sites.

Potential GM crops of the future

Some potential applications of GM crop technology are:

- Nutritional enhancement: Higher vitamin content; more healthful fatty acid profiles;
- Stress tolerance: Tolerance to high and low temperatures, salinity, and drought;
- Disease resistance: For example, orange trees resistant to citrus greening disease or American chestnut trees resistant to fungal blight;
- Biofuels: Plants with altered cell wall composition for more efficient conversion to ethanol;
- Phytoremediation: Plants that extract and concentrate contaminants like heavy metals from polluted sites.

Crops

Genetically modified crops are genetically modified plants that are used in agriculture. The first crops provided are used for animal or human food and provide resistance to certain pests, diseases, environmental conditions, spoilage or chemical treatments (e.g. resistance to a herbicide).

There are three main aims to agricultural advancement; increased production, improved conditions for agricultural workers and sustainability. GM crops contribute by improving harvests through reducing insect pressure, increasing nutrient value and tolerating different abiotic stresses.

Food

The majority of GM crops have been modified to be resistant to selected herbicides, usually a glyphosate or glufosinate based one. Golden rice is the most well known GM crop that is aimed at increasing nutrient value.

Biopharmaceuticals

Plants and plant cells have been genetically engineered for production

of biopharmaceuticals in bioreactors, a process known as Pharming.

Biopharmaceuticals produced include cytokines, hormones, antibodies, enzymes and vaccines, most of which are accumulated in the plant seeds.

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