

# Introduction, scope and applications of plant biotechnology

- **Introduction:**
- Plant biotechnology is a science that allows plant breeders to make precise genetic changes to place beneficial traits such as pest resistance, disease resistance or herbicide tolerance into plants.
- Since the introduction of biotechnology-derived commercial crop in 1996, farmers have used this science to grow plants that yield more per acre with reduced production costs while being resistant to disease and pests and also beneficial to the environment.

# Introduction

- Biotech crops have been adopted by farmers worldwide at higher rates than any other agricultural practice in the history of agriculture. Since the first significant commercial plantings in 1996, acreage devoted to biotech crops has increased 60-fold.
- In the United States:
- Eighty percent of all the corn planted are biotech varieties.
- Ninety-two percent of all the soybeans planted are biotech varieties.

# Scope and applications of plant biotechnology

- Agricultural biotechnology can help farmers feed the world's growing population, while minimizing impacts on the global environment. Biotech crops have helped farmers around the world to increase production, boost farmers' incomes and enable them to farm more sustainably.
- Improvement of varieties according to relevant agronomic features.
- Productivity (resistance to biotic stress: pests, viruses, pathogens, abiotic stress tolerance to drought, salinity, herbicide tolerance. Plant-soil interaction, nutrient absorption, metabolism improvement, etc.)

# Scope and applications of plant biotechnology

- Nutrition improvement: vitamin enrichment, flavor enhancement, nutraceutical foods.
- Post-harvest Physiology (fruit ripening delay)
- Food processing
- Ornamental plants improvement: structure, size, color, smell, fruit absence
- Phytoremediation: contaminants removal
- Biofuels: bioenergy crops (1st, 2nd, 3rd generation)
- Biofactories: biopolymers, therapeutic proteins, biodegradable plastics, etc.
- Natural diversity exploitation and biodiversity protection