Plant Biotechnology:  
the genetic manipulation of plants

Second edition

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Human-directed genetic manipulation began with the domestication of plants and animals through artificial selection in about 12,000 BC. Various techniques were developed to aid in breeding and selection. Hybridization was one way rapid changes in an organism's makeup could be introduced. By modifying the plasmid to express the gene of interest, researchers can insert their chosen gene stably into the plant's genome. The only essential parts of the T-DNA are its two small (25 base pair) border repeats, at least one of which is needed for plant transformation. The genes to be introduced into the plant are cloned into a plant transformation vector that contains the T-DNA region of the plasmid. An alternative method is agroinfiltration. We describe a robust gene replacement strategy to genetically manipulate the smut fungus Ustilago maydis. This protocol...