

MOLECULAR MARKER AND PLANTS BIOTECHNOLOGY

The process of developing new crop varieties can take almost 25 years. Now, however, biotechnology has considerably shortened the time to 7-10 years for new crop varieties to be brought to the market. One of the tools which can make it easier and faster for scientists to select plant traits is marker-assisted selection (MAS). The differences that distinguish one plant from another are encoded in the plant's genetic material, the DNA. DNA is packaged in chromosome pairs (strands of genetic material), one coming from each parent. The genes, which control a plant's characteristics, are located on specific segments of each chromosome. Together, all of a plant's genes make up its genome. Some traits, like flower colour, may be controlled by only one gene. Other more complex characteristics, however, like crop yield or starch content, may be influenced by many genes. Traditionally, plant breeders have selected plants based on their visible or measurable traits, called the phenotype. This process can be difficult, slow, influenced by the environment, and costly—not only in the development itself, but also for the economy, as farmers suffer crop losses. This book serves not only as a textbook for students, teachers, researchers and industries alike in plant tissue culture and biotechnology, but for general reference.

Contents: Introduction; Biotechnology in Agricultural Development; Plant Breeding versus Plant Genetics; Major Breeding Objectives; Microbiology in Biotechnology; Relation of Bacteria to Agriculture; Prospects and Limitations of Agricultural Biotechnologies

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