

CONTENT

1. INTRODUCTION TO PLANT BIOTECHNOLOGY	5
2. PLANT TISSUE CULTURES	9
2.1 Totipotency and morphogenesis	9
2.2 Plant growth hormones	11
2.3 Nutrition medium	15
2.4 Types of cultures	20
2.5 Micropropagation	25
2.6 Somaclonal variation	26
3. GENETIC MATERIAL AND ITS ORGANIZATION	28
3.1 Genetic material in plant cell	28
3.2 Structure of plant genome	28
3.3 Genome of plant cell organelles	34
3.4 Eukaryotic gene structure and regulation	38
3.5 Plant genomes biodiversity and biotechnology	41
4. RECOMBINANT DNA TECHNOLOGIES	42
4.1 Recombinant DNA molecule	42
4.2 Transfer of recombinant DNA to plant organism by <i>Agrobacterium tumefaciens</i>	44
4.3 Mechanical techniques for the transfer of recombinant DNA to plant organisms	48
5. DNA MARKERS IN PLANT BIOTECHNOLOGIES	56
5.1 Genetic markers	56
5.2 DNA polymorphism analysis methods	59
6. APPLICATIONS OF PLANT BIOTECHNOLOGIES	67
6.1 Germplasm collection, storage and conservation	67
6.2 Biotechnological approaches for phytoremediation	72
6.3 Cell suspension and secondary metabolites	76
6.4 Plants as factories for pharmaceuticals, biomaterials and bioenergy	82
6.5 Genomics and bioinformatics in Plant Biotechnologies	85
7. TERMINOLOGY	87
References	90