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Nota di contenuto	Molecular Markers in Plants; Contents; Contributors; Preface; 1 Evolution of DNA Marker Technology in Plants; Introduction; Early Marker Technologies; DNA-Based Methods; Restriction Fragment Length Polymorphism; PCR-Based Methods; Arbitrary Methods; Random Amplified DNA Polymorphism; Amplified Fragment Length Polymorphism; Diversity Array Technique; Specific Sequence-Based PCR; Sequence Characterized Amplified Region; Reverse Transcription-Polymerase Chain Reaction; Simple Sequence Repeat; Single Nucleotide Polymorphism; Discovery; Analysis; Impact of Advancing DNA Sequencing Technology Whole-Genome SequencingOrganellar Sequencing; Transcriptome Sequencing; Amplicon Sequencing; Enriched Genome Sequencing; Genotyping by Sequencing; Evolving Range of Applications of DNA Markers in Plants; Plant Identification for IP Protection; Plant Variety Identification for Production and Quality Control; Applications; Biosecurity Applications; Applications in Conservation Biology; Application in Evolutionary Biology; Applications in Understanding

Biological Functions; Application in Plant Improvement; Food Industry Applications; Future Developments; References
2 Whole-Genome Sequencing for Marker DiscoverySequencing Strategies; Sequencing Technologies; Sanger Sequencing; Second-Generation Sequencing Methods; Major SGS Systems; Third-Generation Sequencing Developments; Epigenetic Markers; Genome-Wide Selection; Data Analysis Resources; References; 3 Amplicon Sequencing for Marker Discovery; Introduction; Background; Maximizing Efficiency Through Sample Pooling; Pooling of cDNA or Genomic DNA; Pooling PCR Products; Tissue Pooling; Other Considerations for Pooling; Barcoding Genotypes Prior to Amplification and MPS; Haplotyping Limitations of Amplicon-Based MPSPCR-Based Limitations to Amplicon Sequencing; Effects of End Bias in MPS Sequence Coverage; Limitations Associated with Internal Coverage Nonuniformity; Mitigating Problems Introduced During Sample Preparation; Gene Paralogs; Some Solutions to Obvious Pitfalls of MPS of Amplicons; Bioinformatics; Concluding Remarks; Acknowledgments; References; 4 Transcriptome Sequencing for Marker Discovery; Introduction; Basic Approach; Profiling Platforms; Advantages; Disadvantages; Pipelines; Applications; Conclusions; References; 5 Molecular Markers in Plant Improvement IntroductionPlant Domestication and Traditional Breeding; Application of Molecular Markers to Breeding; Next-Generation Approaches to QTL Discovery; Conclusion; References; 6 Applications of Molecular Markers in Plant Conservation; Introduction; Traditional Approaches; Maintaining Viable Populations-Quantifying Diversity; Identifying Lineage Boundaries-Defining Provenances; The Way Forward; An Integrated Approach-Landscape Genetics; The Future Is Here-Conservation Genomics; Conclusion; References; 7 Molecular Markers for Plant Biosecurity; Introduction
The Present-PCR for Specific Diagnosis and for DNA Barcoding

Sommario/riassunto

Molecular Markers in Plants surveys an array of technologies used in the molecular analysis of plants. The role molecular markers play in plant improvement has grown significantly as DNA sequencing and high-throughput technologies have matured. This timely review of technologies and techniques will provide readers with a useful resource on the latest molecular technologies. Molecular Markers in Plants not only reviews past achievements, but also catalogs recent advances and looks forward towards the future application of molecular technologies in plant improvement. Openi