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Descrizione fisica	1 online resource (509 pages)
Collana	Concepts and Strategies in Plant Sciences, , 2662-3196
Disciplina	633.72
Soggetti	Agronomy Agricultural genome mapping Genetics Agricultural Genetics Genetics and Genomics
Lingua di pubblicazione	Inglese
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Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	1. Tea plant: A millennia-old cash crop for a healthy and happy life worldwide -- 2. Botany, taxonomy of tea ( <i>Camellia sinensis</i> , Theaceae) and its relatives -- 3. The main quality and functional chemical composition of tea -- 4. Tea genetic resources: diversity and conservation -- 5. Classic genetics and traditional breeding of tea plant -- 6. Tea plant genetic transformation and gene function research techniques -- 7. Achievements and prospects of QTL mapping and beneficial genes and alleles mining for important quality and agronomic traits in tea plant ( <i>Camellia sinensis</i> ) -- 8. Achievements and prospects of QTL mapping and beneficial genes and alleles mining for important quality and agronomic traits in tea plant ( <i>Camellia sinensis</i> ) -- 9. Genome assembly of tea plants ( <i>Camellia</i> spp.) -- 10. Genomic variation and adaptative evolution of tea plants -- 11. Tea plant chloroplast and mitochondrial genome -- 12. Transcriptomics for tea plants -- 13. Metabolomics of tea plants -- 14. Proteomics for tea plant -- 15. Small RNA and DNA methylation of tea plants -- 16. Abiotic resistance of tea plant in the functional genomic era -- 17. Response and resistance mechanisms of tea plants to biotic stress -- 18. Development and utilization of high-density genome-wide SNP array for tea plants -- 19. Tea plant genomic, transcriptomic and

metabolic databases -- 20. Future perspectives in the omics era for tea breeding.

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## Sommario/riassunto

This edited volume is focused on genomic study of tea crop. This book includes 20 chapters that cover the most relevant and hot topics in tea plant genetics and genomics. A first set of chapters includes its global economic and healthy importance, the botany and taxonomy, main quality and functional components. A second group of chapters deals with genetics, breeding and includes genetic resources, commercial breeding, genetic transformation techniques, as well as the use of marker assisted selection (QTL, GWAS). This will be followed by a set of chapters on omics, including the genomics, transcriptomics, metabolomics, proteomics, organelle genome, small RNA and DNA methylation. Two chapters are devoted to biotic and abiotic stresses, continued by two others more chapters focused on the SNP array, and databases for molecular design breeding. Finally, a chapter deals with future perspectives in the omics era for tea breeding. The tea plant is a cross-pollinated, self-incompatible, high heterozygosity, very large genome (~3.2 Gb) which have greatly hindered research and breeding in this crop. In the recent years, modern genetic and genomic tools have contributed to the development of significant valuable resources for the tea genetic improvement. This book is of interest to teachers, tea researchers, tea breeders and tea lovers. Also, the book serves as additional reading material for undergraduate and graduate students of agriculture, forestry, horticulture, beverage plant sciences.

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