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Nota di contenuto	1. Genomics today for future-ready forestry -- 2. Breeding without breeding: enabling indirect selection schemes for tropical tree improvement -- 3. Genomics based teak improvement to address the bottlenecks in timber production -- 4. Accelerating sandalwood breeding program by integrating genomic selection strategy: prospects and challenges -- 5. Genomics resources in <i>Shorea</i> spp: implications for conservation and tree improvement -- 6. Approaches for molecular breeding and commercial cultivation of jackfruit (<i>Artocarpus heterophyllus</i> Lam.) -- 7. Genomics of casuarina and its role in conservation and improvement -- 8. Genomics of wild relatives of fruit trees and its application in future breeding program -- 9. Evolution, ecology, and tree improvement of five tropical pine species -- 10. Genomic improvement and conservation of tropical and sub-tropical pines -- 11. Pathogenomics for tropical tree improvement and conservation -- 12. Timber tracing: the drive for greener supply chains -- 13. Towards a genomic-enabled selection in natural tree populations for long-term management and conservation.

Sommario/riassunto

This book offers foundational knowledge to advance genomic approaches in forest tree improvement and genetic resource conservation. The tropical tree breeding sector has fallen behind in genomic breeding not due to a lack of resources but rather a limited understanding and an underdeveloped genomic breeding pipeline. While marker-assisted selection (MAS) has been the preferred method for incorporating genomic data into breeding programs, it primarily targets major genes, overlooking minor gene effects. This limitation makes MAS less effective for enhancing quantitative traits such as heartwood content. The primary goal of statistical methodologies using whole-genome information is to predict promising candidates for breeding advancement/commercialization while efficiently managing resources such as land, labor, and, most critically, time. Given the long rotation period of forest tree crops, the ability to identify, select, and modify genotypes with high heritability for economically valuable traits within a shorter timeframe marks a significant advancement in breeding. This book provides comprehensive guidelines on leveraging genomic data, including pathogenomics, to breed resilient, future-ready trees and manage populations effectively. To reinforce these guidelines, the book presents case studies on species such as *Tectona grandis*, *Santalum album*, *Casuarina*, *Shorea*, *Artocarpus*, tropical and sub-tropical pines, and tropical fruit trees. Additionally, the book explores broader applications of genetic data, including timber tracing and the conservation of germplasm while minimizing genetic redundancy. This book will be a valuable resource for tropical tree breeders and researchers, equipping them with the methods and tools needed to adopt advanced genomic breeding. Additionally, students and scholars will benefit from the comprehensive information it provides, enhancing their understanding of modern breeding techniques.
