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Genetic Gain, Gene Diversity and Fertility Variation in Forest Populations

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Message from the Guest Editors

Genetic gain is the improvement in phenotypic or genetic value due to selection in a forest population over cycles of tree breeding. It can be improved through a shortened cycle period by integrated breeding strategies. Gene diversity serves as a way for populations to adapt to changed environments. Seed orchards are a tree improvement delivery system between tree breeding and forest regeneration and are leading suppliers of genetically improved seeds. The management of seed orchards should be fine-tuned accordingly to maximize genetic progress, while maintaining a sufficient adaptive diversity in forest stands, and to improve climate resilience. The tree improvement delivery system encompasses all aspects of tree breeding, starting with phenotypic selection and ending with the production of genetically improved seeds and seedlings. This process is paramount in determining the genetic gain and gene diversity trade-off to ensure that the maximum genetic gain and gene diversity in future forests are attained.



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