# Preface

Tree species are indispensably supportive to human life. Due to their long life cycle and environmental sensitivity, breeding trees to suit day-to-day human needs is a formidable challenge. Whether they are edible as apple, cocoa, mango, citrus, litchi, pear, dates, and coconut or industrially essential as rubber or beverages like coffee and tea, improving yield under optimal, suboptimal, and marginal areas calls for a unified effort from scientists around the world. While the uniqueness of coconut as '*kalpavriksha*' (Sanskrit-meaning tree of life) makes its presence in every continent from Far East to South America, tree crops like cocoa, oil palm, rubber, apple, peach, grapes, and walnut prove their environmental sensitivity toward tropical, subtropical, and temperate climates. Desert climate is quintessential for date palm. Thus, from soft drinks to breweries to beverages to oil to tyres, the value addition offers a spectrum of products to human kind, enriched with nutritional, environmental, financial, social, and trade-related attributes.

Taxonomically, tree crops never confine to few families, but spread over a cross-section of genera, an attribute so unique that contributes immensely to biodiversity even while cultivated on commercial scale. Many of these species encourage other flora to nurture in their vicinity, thus ensuring their integrity toward preserving biodiversity. While wheat, rice, maize, barley, soybean, cassava, and banana make up the major food staples, many fruit-yielding tree species contribute toward nutritional enrichment in human life. The edible part of these species is the source of several nutrients that make additives for the daily human diet, for example, vitamins, sugars, aromas, and flavor compounds, and raw material for food-processing industries. Tree crops face an array of agronomic and horticultural problems in terms of propagation, yield, appearance, quality, diseases and pest control, abiotic stresses, and poor shelf life.

Shrinkage of cultivable land and growing demand has enforced these crops to be grown under marginal conditions that call for concerted efforts from breeders to improve these crops substantially. Concerted efforts have not been incurred to bring out the compilation of research done on tree crops grown under both traditional and nontraditional environments. Even if available, they

are scattered and also lack comprehensive treatment and wholesomeness. The task of improving yield in tree crops is foremost in the acumen of global agricultural research, and the advancements made in this arena are immense both at conventional and molecular means. This two-volume series on *Breeding Plantation Tree Crops* dealing both tropical and temperate species separately is a sincere effort toward compiling the research available worldwide and bring them to the reference of scientists, researchers, teachers, students, policy makers, and even planters. It is worthwhile to note that in the forthcoming years, tree crops are to be given much importance on par with annual crops due to carbon trading and nutritional upgradation of the daily diet.

Since tropical species are more diverse, the first volume on tropical species contains 16 chapters on fruits and nuts (banana, mango, guava, papaya, grape, date palm, litchi, avocado, and cashew), oil crops (coconut, oil palm, and olive), industrial crops (rubber), and beverages (coffee, tea, and cocoa). The second volume contains temperate fruit species including apple, apricot, almond, citrus, pear, plum, raspberry, and walnut.

The chapters were authored by crop-specific experts worldwide. We appreciate the untiring efforts rendered by the authors in ensuring the inclusion of latest advancements and their cooperation in revising their manuscripts timely. A few reviewers spared their precious time in improving the quality manuscripts. We are immensely thankful to them for their valuable help. Finally, we thank Springer for bringing out this series to the readers.

Helsinki, Finland — S. Mohan Jain
Agartala, India — P.M. Priyadarshan

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