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Review: Plantation Forestry in the Tropics. 3rd edn

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This is the third edition of *Plantation Forestry in the Tropics*, the first having been published over 20 years ago. In the intervening years an increase in the demand for wood has seen the area of forest plantations in the tropics increase considerably and now some half the area under plantations is in the tropics and subtropics. The importance of plantations in general is likely to increase further as it is expected that plantations will become the principal source of wood fibre in the near future.

The book now comprises 467 pages and continues to provide an excellent overview of plantation silviculture using examples from tropical and sub-tropical areas. In addition to being a silviculture textbook it also gives much useful background to the history of plantations and their role in providing social, environmental and financial benefits. The authors have succeeded in doing an excellent job of making the subject matter accessible through their straightforward writing style and the inclusion of many informative photographs, tables and diagrams. As in the second edition, but not the first, the provision of a species index (trees, plants and animals), in addition to the subject index, has improved ease of use.

The latest edition is a revision and update of the previous one and, although much of the text remains the same as the previous edition, every chapter has been revised and plenty of new information and current references have been incorporated. A number of recent advances in silviculture and issues relating to tropical forestry, such as genetic modification, have also been added. The same basic structure has been adopted, being divided into four main parts, but with 24 chapters rather than the 22 of the previous editions. The two new chapters cover clonal plantations and tree planting for eco-system rehabilitation and restoration, respectively.

The first part begins by describing the tropical environment and how it differs from temperate areas. This is important in providing background for the reader because, despite the basic principles of silviculture being universal, differences in the social, ecological and financial environments mean that some technologies or practices cannot be adopted from temperate areas. In the rest of the section the authors examine the history of the expansion of the area of plantations and discuss the reasons and general characteristics that have led to their success. Generally such attributes relate to the use of exotic species, the simplification of structure and greater regularity of conditions in the stand. These have enabled greater and more predictable production and simpler management than that of natural forest. Those familiar with growth rates from temperate forests will be impressed with those achievable in intensively managed plantations in the tropics, particularly the wet tropics.

Part II looks at the role of plantations as a land use, the social and economic factors that have encouraged plantations and planning processes for forest plantations. The section starts with a chapter that discusses the role of land evaluation and zoning in ensuring plantations are located where they will most benefit society. The constraints to plantation development as a land use are

described, including physical limitations such as soils and climate but also other influences such as tenure and competing land uses. A whole chapter is devoted to social and economic issues, which is appropriate as it is often these factors rather than technical ones that govern the success of plantation forestry. The chapter that follows covers the planning processes involved in establishing and managing plantations, across a range of scale from large projects to small-scale initiatives. The important factor of stakeholder participation is dealt with only briefly, but the reader is directed to other texts for more detail.

Part III comprises chapters on plantation silviculture and makes up 190 of 467 pages in the book. This section provides the reader with an overview of the silvicultural practices applied to artificial stands, from regeneration to harvest. It starts in a logical manner with plantation establishment, first describing the variables that influence species choice starting with the objectives for planting. The authors go on to discuss the merits of the use of exotic or native species before examining the process of matching species to site, including an overview of abiotic and biotic site factors. This chapter is followed by chapters on seed collection, supply and storage and the management of forest nurseries. A new chapter on clonal forestry is a welcome addition, expanded from a few pages in the previous edition. This is timely, as the use of hybrid and pure species clones is an area with considerable potential for intensive, industrial plantations. The chapters on establishment end with a chapter covering site preparation and planting, including taungya, inter-cropping and enrichment planting, techniques that are uncommon in developed temperate countries.

The latter half of the third part is devoted to a straight-forward, informative description of plantation maintenance. Both the content and structure are similar to the previous edition, but with the incorporation of useful new information. There are seven chapters in total, with the first two focusing on maintenance immediately after planting and stand nutrition. Ones on the inter-related topics of growth, thinning, pruning and rotation follow these. The final chapter is on protection, covering damage from biotic, abiotic and man-induced factors.

The fourth and final part looks at the broad benefits that trees can provide to agriculture, local development and the environment. The final chapter examines the sustainability of plantation forestry, describing plantation forests' role in biodiversity conservation and also what the authors call narrow sense sustainability or long-term site productivity. A short chapter has been added in this edition on tree planting for rehabilitation and restoration of biodiversity in ecosystems. The chapter begins with defining the progressive states of site degradation and the approaches required to rehabilitate sites under such conditions. This includes brief sections on management strategies, species selection, plantation design and site management practices. The chapter ends with a series of case studies on the use of tree planting to restore degraded areas in six countries.

The revisions in the latest edition have successfully brought the text up-to-date and expanded it to cover recent developments in plantation forestry in the tropics. The publication makes an excellent text book, not only for forestry students but also those studying tropical aspects of environmental science. It covers the factors encouraging the expansion of plantation forests in the tropics but also provides a good overview of plantation silviculture with a tropical perspective. In addition to being highly suitable for student study the text is sufficiently technical in its approach to also be of interest to the professional forester and yet accessible enough to be read by those with a more general interest in forestry.