

## BOOK REVIEW

### Clonagem e doenças do eucalipto

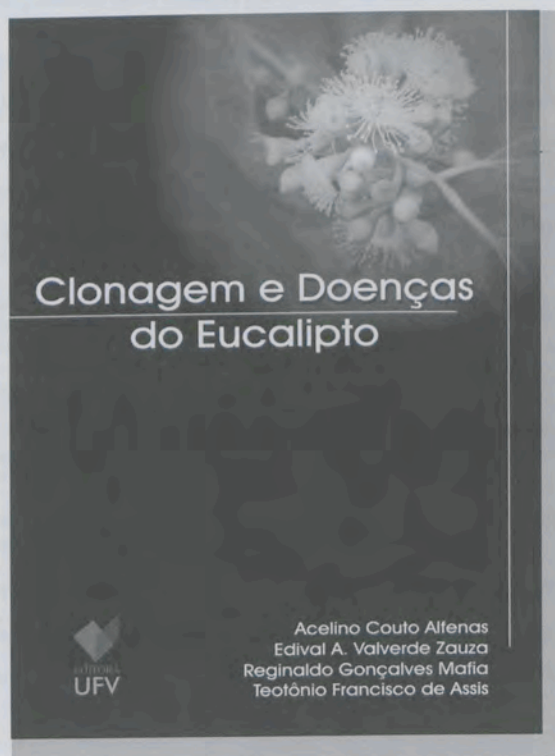
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Eucalypt plantations make up the majority of the world's exotic hardwood forest covering almost 20 million hectares worldwide. Fast growth rates and a wide range in adaptability have contributed to the great interest that *Eucalyptus* species receive in many countries. Planted eucalypt stands meet the demand for high quality wood as raw material for industrial purposes in a rational way that would otherwise be supplied out of native tropical forests. During the last 40 years, Brazilian foresters, including breeders, silviculturists, nurserymen, phytopathologists and wood technologists both from the public and private sectors, have undoubtedly played a worldwide recognized role in the development of high productivity and quality eucalypt forests. Innovation has been the key word that has led to breakthrough technologies in breeding, cloning and disease description and control, shaping the way that eucalypt forests are established and managed today. In this context, the book **Clonagem e doenças do eucalipto** (*Cloning and diseases of eucalypt*), by Alfenas and collaborators, draws a detailed picture of Brazil's world leading position in eucalypt forestry, in an outstanding contribution to the field of forestry worldwide. The leading authors have many years of expertise in the two areas, and are well known for their valuable practical contributions to eucalypt breeding, cloning and disease control.

The well crafted hard-bound book is divided into two major sections, the first one on cloning techniques and the second on eucalypt diseases of both biotic and a-biotic origin. Easily, two separate books could have been published. However, as the book clearly demonstrates the two areas are in fact interrelated. Besides, by bringing cloning and disease of eucalypts together in a single work, a larger and more manifold group of readers shall find this

book highly useful. Differently from many scientific books that rely mostly on the organization and review of published information, "*Cloning and diseases of eucalypt*" brings together a large amount of extremely useful information that cannot be found in other books, scientific papers or any kind of publication so far. The authors did a remarkable job at compiling several well tested procedures currently used for cloning and disease control of eucalypts in real-life operational settings in an organized and well illustrated manner. As pointed out by the authors in the preface, the book is based not only on their numerous years of practical experience but also on the intensive information exchange and input from the day-by-day accumulated experience of researchers and technicians working in several Brazilian forest companies. This incomparable feature makes this book a one-of-a-kind.



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After introducing the reader to the theme of eucalypt cloning, by making a brief yet accurate historical review of the first experiments carried out by French, Australians, Congolese and Brazilians, the authors describe several possible methods to establish clones from elite trees and discuss the physiology of rooting. Once clones are established, clonal trials follow and once superior trees successfully tested as clones are identified, the issue arises how to mass produce clonal forests operationally. The traditional macro-cuttings method introduces the topic, only to respect the historical events that led to the much more efficient and genotype independent Brazilian methods of mini or micro-cutting. The bulk of the cloning section of the book therefore describes in much detail all the technical aspects related to micro-cutting propagation of eucalypts, that currently drives the large clonal plantation programs in Brazil. Aspects related to the nutrition, irrigation, temperature, light, substrate, and the overall management of micro-cutting clonal gardens, nurseries and field-ready clonal plant production are discussed. A section of particular interest to breeders is also presented describing the legal protocol adopted in Brazil for eucalypt clonal variety protection including the validated morphological and molecular marker descriptors and the pros and cons of protecting clones. The cloning section ends by presenting some preliminary data on the application of the same eucalypt micro-cutting procedures for cloning pines and other tree genera.

The second section devoted to eucalypt diseases is divided into six chapters covering everything from basic concepts in plant diseases to all the biotic (including fungi, bacteria and insects) and abiotic diseases known in eucalypt including principles and procedures for disease severity measurements and sample collection for diagnosis. The disease section contains an impressive assembly of photographs detailing all the most prevalent diseases in eucalypts both at the nursery and field level. For each disease, besides describing the symptoms, damages, causal agent and hosts, practical measures for control are also explained. The chapter focusing on disease assessment is particularly interesting as it relates to the need to establish simple yet precise methods to assess disease incidence and severity in the context of breeding programs geared toward disease resistance. The short chapter on insect diseases does not intend to make a thorough discussion of the topic, but rather only show, again by colorful detailed photos, the damages that are frequently confounded with microorganism based diseases.

"Cloning and diseases of eucalypt" certainly deserves a presentation to the worldwide forestry community, and in that respect, English and Spanish translations are urgently needed. In this unique compilation of previously scattered knowledge and protocols from several sources seasoned with the authors' long standing experience, foresters, agronomist and biologists, not necessarily working with eucalypt plantation forestry, will find this book an indispensable addition to their personal library.