

Preface

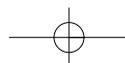
An increasing number of global threats such as climate change, poverty, declining agricultural production, scarcity of water, fertilizer shortage and the resulting social and political unrest seem overwhelming. The urgency to address these threats creates an ever increasing demand for solutions that can be implemented now or at least in the near future. These solutions need to be widely implemented both locally by individuals and through large programmes in order to produce effects on a global scale. This is a daunting and urgent task that cannot be achieved by any single technology, but requires many different approaches.

One such approach is biochar for environmental management. Biochar has unique properties that make it not only a valuable soil amendment to sustainably increase soil health and productivity, but also an appropriate tool for sequestering atmospheric carbon dioxide in soils for the long term in an attempt to mitigate global warming. The recent broad interest in biochar has been chiefly stimulated by the discovery that biochar is the primary reason for the sustainable and highly fertile dark earths in the Amazon Basin, Terra Preta de Indio. Even though biochar has been used in many other places at other times, and has even been the subject of scientific investigation for at least a century, efforts have been isolated or regionally focused. The present global effort followed the demonstration that biochar has properties which sets it fundamentally apart from other organic matter in the environment.

The past two years have witnessed substantial growth in the biochar community with the founding of the International Agrichar Initiative at the World Congress of Soil Science in Philadelphia in 2006. This group formed the International Biochar Initiative (IBI) at the first international conference dedicated exclusively to biochar in Terrigal, Australia, in 2007. The International Biochar Initiative is instrumental not only in staging highly important international meetings, but also in providing a face for biochar research and outreach efforts as the authoritative organization with respect to information and policy on biochar. Over the past decade, scientific and technological information on biochar has been steadily increasing. The objectives of this first book on the subject are to capture this information in a comprehensive way in order to make it more accessible to a wider audience interested in the fundamental science behind biochar management. Biochar is a rapidly emerging area with enormous potential for growth. This publication marks the starting point of biochar as a fundamental technology.

The book is divided into four main areas:

- 1 the basic properties of biochar, with chapters characterizing and classifying physical, chemical and biological features that are the foundation of its behaviour in the environment;
- 2 biochar production and application, in order to introduce the multiple ways in which biochar systems can be imple-



- mented and established, using existing and projected scenarios as templates;
- 3 environmental processes that are affected by biochar and that highlight element flows such as leaching or gaseous losses from soil, as well as the changes that biochar undergoes in the environment which influence its longevity and effectiveness as a management technique;
- 4 biochar implementation, with chapters discussing the framework for commercialization, emissions trading, the economics of biochar systems, and policy opportunities and constraints.

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