

Longjun Ci
Xiaohui Yang

Desertification and Its Control in China



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With 63 figures



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Preface

Desertification is defined by the United Nations Convention to Combat Desertification (UNCCD) as “land degradation in arid, semiarid and dry sub-humid areas resulting from various factors, including climatic variations and human activities”. More than 100 countries on six continents and one-fifth of the world’s total population are affected by desertification. Desertification throughout the world expands at an annual rate of 0.5 million km².

China is one of the countries affected seriously by desertification. It is estimated that the areas of dryland and susceptible dryland in China (excluding hyperarid areas) are 357.05 and 331.70 million ha, respectively, and in 2004, 263.62 million ha had suffered or was suffering from desertification. The desertification affected area covers seven main dryland provinces and autonomous regions (Xinjiang, Inner Mongolia, Tibet, Qinghai, Gansu, Ningxia and Sha’anxi) and 12 main deserts and sandy lands (the Taklimakan, Gurban Tonggut and Kumtag Deserts, the Deserts in the Qaidam Basin, the Badain Jaran, Tengger, Ulan Buh and Qubqi deserts, and the Mu Us, Otindag, Horqin, and Hulun Buir Sandy lands). The direct economic loss caused by desertification is estimated to be upwards of 5.4 billion RMB annually, and thus desertification and desert expansion have become a bottleneck for sustainable development in the drylands of China. In the past 60 years, the Chinese government has made great efforts to combat desertification, and the tendency of overall expansion of desertification has been initially contained, although desertification continues to expand in some parts.

There are a large number of books available on desertification and related topics in China. This book is not intended to include all the desertification topics in China. We attempt to cover some key topics related to deserts and desertification characteristics and their distribution. We discuss the processes and features of wind erosion, water erosion, soil salinization and vegetation degradation in rangeland, and detailed measures used in the struggle against desertification at field scale. We also consider the eco-productive paradigms for sustainable dryland management at a regional scale.

Desertification is a global environmental issue, and its control needs collective efforts from international societies, including techniques transfer and

information exchange. We hope international societies can better understand the seriousness of desertification problems in China and some successful experience and techniques can be shared through this book.

This book stems from the long-term accumulation of scientific knowledge and experience by all the authors. At the same time, a large number of valuable published books and research papers as well as unpublished documents enrich this book. We are indebted to both those who are cited and those who are not cited in this book.

This book was written and compiled by Prof. Longjun Ci and Dr. Xiaohui Yang. To maintain a systematic, uniform style, they reviewed and synthesized the contributions by the varied authors while preserving as much as possible their original style and thoughts. A brief introduction to the main authors of each chapter is presented in the Contributors.

We would also like to thank Higher Education Press and Springer for encouraging and supporting this endeavor. We are indebted to Youlin Yang and Prof. Victor Squires for their collaborative work. Thanks are extended to Xiaoli Li, Sanda Chang, Hong Yu and Yange Wang for their efforts in editing, and the assistance of the Edanz Group in copyediting. Sincere thanks are also given to all the authors and staff involved in putting this book together. It was only with their energy and diligence that this book could be completed successfully. This book was also supported partly by the State Key Sci & Tech Support Project (2006BAD26B05) and the National Nature Science Foundation Projects (30671722, 30571529).

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Due to the inherent limitations of knowledge of the contributors, it is possible that errors may occur in the book. Any criticisms and corrections would, therefore, be much appreciated.

Longjun Ci
Xiaohui Yang
Beijing, 2009

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