

Preface

In the symbiotic associations of plant and fungi, arbuscular mycorrhiza, which is formed between plants and Glomeromycota fungi, has the widest distribution in the nature. Arbuscular mycorrhizal (AM) fungi inhabit a variety of ecosystems including agricultural lands, forests, grasslands and various stressful environments, and colonize the roots of most plants, including bryophyte, pteridophyte, gymnosperm and angiosperm, etc.. They are recognized as an important, widespread component of most terrestrial ecosystems, benefiting plant establishment by enhancing plant nutrient acquisition, improving soil quality, and increasing resistance to environmental stresses, and also playing significant roles in maintaining plant biodiversity, ecosystem variability and productivity, and in remediating environmental problems.

According to the latest taxonomy, AM fungi belong to the Glomeromycota phylum, including 14 families and 26 genera. To date, although only fewer than 200 species of AM fungi have been described, numerous studies on AM fungal diversity in different ecosystems worldwide have shown that AM fungi distribute globally. A total of 134 AM fungi species within 13 genera, including 12 new species, have been reported in various environments in China since the earliest studies in 1980's. Although considerable research efforts have been carried out on AM fungal biodiversity, these studies are unsystematic and not enough. China has a large area of land and diverse ecosystems with various environmental factors, thus AM fungal resources and diversity may be abundant and need study systematically.

The book provided the authors' latest research results. The first four chapters summarily reviewed AM fungal biodiversity in China, and then typically studied AM fungal biodiversity in forest ecosystems, desert ecosystems, and the saline-alkali soil. The latter six chapters focused on the application of AM fungi in improving plant nutrition, accelerating the environmental remediation of polluted sites, and improving the quality and safety of agricultural products.

Dr. Fayuan Wang wrote approximately 146 000 words in Chapter 1, Chapter 4, and Chapters 6-10, and Dr. Zhaoyong Shi wrote another 140 000 words in Chapters 2-3, and Chapter 5.

We have referred much previously published papers in the whole manuscript (especially in the first Chapter). The references are provided in the final section of the book, but we wish to give special thanks to all the authors and publishers. The studies involved in this book were financed by the National Natural Science Foundation (Grant Nos. 40801120 and 40971150) and the China Postdoctoral Science Foundation. We also thank the Scholarly Monograph Publication Funds of Henan University of Science and Technology, for providing financial support towards publication of the manuscript.