

Preface

Mycorrhizae are the most common symbiotic species on earth in almost all ecosystems. They are symbioses between the roots of most plant species and fungi and today more than 90% of all plant taxa ranging from thallophyte to angiosperms form associations of one type or another with mycorrhizal fungi, as the productivity, species composition and the diversity of natural ecosystems are frequently dependent upon the presence and activity of mycorrhizae. Several studies have demonstrated that mycorrhizal associations play vital role in plant nutrition. They greatly increase the efficiency of nutrient and water uptake, enhance resistance to pathogens, buffer plant species against several environmental stresses and drought resistance. Mycorrhizae also improve plant growth and survival in soils contaminated by heavy metals.

These benefits of mycorrhizal symbioses, both agronomically by increased growth and yield as well as ecologically by improved fitness, indicate that mycorrhizal plants are often more competitive and better able to tolerate environmental stresses. While the term biotechnology has been used for the last three decades, major advances have generated new set of tools, which allow the development of commercial mycorrhizal inoculants for use in agriculture, horticulture, forestry and environmental reclamation due to a recent surge of interest in the subject by geneticists, biochemists, microbiologists and biotechnologists.

In this context, *Mycorrhizal Biotechnology* emphasizes strongly on the biotechnological application of mycorrhizae to promote the production of food while maintaining ecologically and economically sustainable production systems. It contains fourteen chapters written by leading experts in their respective fields of knowledge and expertise. In the first chapter, M. Miransari provides a review on the interactions of arbuscular mycorrhiza and soil microbes. In the second, L. Montecchio and L. Scattolin supply an overview on the ectomycorrhizae and forest plants fitness. In Chapter 3, V. Davamani, A.C. Lourduraj, R.P. Yogalakshmi and M. Velmurugan discuss the role of VAM in nutrient uptake of crop plants. In the next chapter A. Khaliq, D.J. Bagyaraj and M. Alam elaborate the mass production technology of arbuscular mycorrhiza. Biomass production, arbuscular mycorrhizae and soil plant-available P under water stress in perennial grasses is the subject matter of Chapter 5 by C.A. Busso and A.I. Bolletta. Y. Ismail and M. Hijri discuss

about the role of arbuscular mycorrhizal fungi on induced resistance in plants in Chapter 6. Influence of VAM in bioremediation of environmental pollutants is the theme of seventh chapter by V. Davamani, A.C. Lourduraj and M. Velmurugan.

Rhizosphere management practices in sustaining mycorrhizae are discussed by C. Harisudan, M. Velmurugan and P. Hemalatha (Chapter 8). The next chapter deals with importance of mycorrhizae for horticultural crops by P. Hemalatha, M. Velmurugan, C. Harisudan and V. Davamani. In Chapter 10, M.S. Velázquez and M.N. Cabello discuss about mycobization. Biotechnological procedures involving plants and arbuscular mycorrhizal fungi are explained in chapter 11 (S.E. Hassan, M. St-Arnaud, M. Labreque and M. Hijri). Molecular characterization of genetic diversity among arbuscular mycorrhizal fungi is explained in the next chapter by M. Velmurugan, P. Hemalatha, C. Harisudan and D. Thangadurai. In Chapter 13, the use of primers to detect genetic diversity in arbuscular mycorrhizal fungi is discussed by F. Covacevich. Finally, the impact of climate change on arbuscular mycorrhiza is detailed in the last chapter by F. Covacevich and R.L.L. Berbara.

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