

# Preface

Plants have evolved in contact with a huge number of microorganisms, especially soil microorganisms. This contact during millions of years has forced a coevolution between plants and microorganisms. Some microorganisms are considered pathogens to plants, and both pathogens and plants have codeveloped mechanisms of infection and defense, respectively. However, not all microorganisms are pathogens; there are also beneficial microorganisms which improve the performance of the plants under both optimal and stressful conditions. Some of these beneficial microorganisms live inside the plant tissues and they are called endophytes. At the same time, most of these endophytes can be considered symbionts in the wider meaning of the term: mutualist association between two living organisms.

The most recent knowledge about all plant endophytes known so far is summarized in this Soil Biology volume: rhizobial and actinorrhizal bacteria, endophytic plant growth-promoting rhizobacteria, arbuscular mycorrhizal fungi, and other endophytic fungi including yeasts.

Some chapters deal with the presymbiotic communication and establishment of the symbiosis between rhizobial, actinorrhizal, and arbuscular mycorrhizal symbionts. Other chapters examine the abiotic and biotic factors that may alter the symbiotic relationships, especially the nitrogen fixation by rhizobial and actinorrhizal bacteria and the nutrient uptake by arbuscular mycorrhizal fungi. Finally, some chapters are devoted to the functional diversity of these symbionts.

Overall, the book updates all the information available about these symbiotic endophytes, and it will serve also for specialized researchers as well as for graduate students, since each chapter is a compendium of basic concepts and the most advance knowledge. It will satisfy everyone who reads it.

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Symbiotic Endophytes

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2013, VIII, 348 p. 36 illus., 16 illus. in color., Hardcover

ISBN: 978-3-642-39316-7