

Preface

The book entitled Biological Nitrogen Fixation and Beneficial Plant–microbe Interactions includes 20 chapters derived from the same number of selected contributions to the XV SEFIN, the National Meeting of the Spanish Society of Nitrogen Fixation (SEFIN in the Spanish acronym) from June 16th to 18th, 2015, with the slogan “The bridge between biotechnology, agriculture and environment.” This event was celebrated together with the 4th Portuguese–Spanish Congress on Nitrogen Fixation and contained more than 100 original scientific contributions. This international event brought together more than 110 scientists from four continents, Europe, America, Asia, and Africa, and was held in the historical city of León in the interior Northwestern Spain, with almost 20 centuries of history.

The book consists of five different parts: The first being about “Ecology, Diversity, and Evolution of Plant Probiotic Microorganisms (PPM)” with five contributions; the second on “Genetics, Genomics and Proteomics of PPM and Their Associated Plants” with two contributions; the third on “Plant–Microorganisms Interactions” with five contributions; the fourth on “Physiology and Biochemistry of Beneficial Microorganisms and Associated Plants” with one contribution; and the final one on “Inoculants For Agriculture and Environmental Science” with seven contributions.

The use of microorganisms for agriculture and environmental applications is gaining importance worldwide to improve crop performance, but also for other environmental applications, such as bioremediation in chemically polluted soils. This book covers the most recent advances in all the topics with which researchers and professionals need to be familiar in order to obtain a better understanding of, and to better exploit, beneficial plant–microbe interactions. The search for an equilibrium between fundamental and applied aspects makes this book useful for professionals at various levels in the value chain of the “microbial biofertilizers.” Microbial biofertilizers contain a completely known microbial community which has been selected based on its functional efficiency and its safety for human health and the environment. For this reason, there are several chapters focused on approaches to assessing bacterial biodiversity associated with plants and on

techniques for a quick and precise identification of microbes. Microbial biofertilizers present clear advantages compared with other kinds of organic fertilizers. The latter contain unregulated bacterial populations/communities, whereas biofertilizers have a constant, known, and safe bacterial population, and these are the reasons for their gaining importance in agricultural and environmental applications. This book combines a solid scientific basis at an undergraduate level, together with a practical approach for scientists and professionals interested in applying knowledge about biofertilizers.

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Interaction

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