CHAPTER

3

Role of Rhizobacterial Secondary Metabolites in Crop Protection Against Agricultural Pests and Diseases

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OUTLINE

3.1 INTRODUCTION

For more than a century, farmers and scientists have been aware of the existence of the so-called "suppressive soils." In these soils, the manifestation of soilborne plant diseases—caused by a preexistent or an inoculated pathogen—is either kept to a minimum or completely absent, even if a susceptible plant host is cultivated in there. The reasons explaining this lack of infectivity are diverse: the pathogens may either fail to colonize or persist in these soils; if they are established, they may cause little or no damage to crops; or they may infect crops and cause some disease symptoms at first but, with successive cropping, the disease declines [1,2].

Even though some abiotic factors may account for this *suppressiveness* (including pH, organic matter, and/or clay content), this intriguing phenomenon is very often the consequence of soil microbial activity [3]. Indeed, when a plant pathogen is introduced into a naturally suppressive soil, the severity of the disease it causes is attenuated or suppressed by the activity of the indigenous microbial communities. This suppression may be either general (i.e., due to the antagonistic activity of the entire microbial community) or specific (i.e., due to the

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