

Preface

This book provides comprehensive insights into the field of plant biology. It talks in detail about the biotic and abiotic stress in plants. It outlines the processes and applications of the subject in detail. Abiotic stress refers to negative impact of non-living things on plants and animals whereas, biotic stress refers to the living organisms which cause problems for other living beings like weeds or harmful insects. The topics covered in this extensive book deal with the core subjects of biotic and abiotic stress in plants. For all those who are interested in this subject, the textbook can prove to be an essential guide. It attempts to assist those with a goal of dealing into the field of biotic and abiotic stress.

A detailed account of the significant topics covered in this book is provided below:

Chapter 1- Living organisms, such as viruses, parasites and fungi, usually damage plants. The stress caused by this damage is known as biotic stress. Biotic stress, unlike abiotic stress is not caused by non-living factors such as wind, sunlight and drought. This section will provide an integrated understanding of biotic stress.

Chapter 2- The various biotic stressors are plant viruses, viroids, insects, herbivores and parasitic plants. The virus that affects plants is known as plant virus whereas the infection that occurs in the plants is referred to as viroid. Likewise this text also explains to the reader, stressors such as insects, herbivores and parasitic plants. The chapter strategically encompasses and incorporates the major components and key concepts of biotic stress, providing a complete understanding.

Chapter 3- Oomycetes are absorptive organisms that reproduce sexually and asexually. These cause devastating diseases in plants, such as late blight of potatoes and the sudden death of oak trees. Oomycete has numerous types; some of these are phytophthora, *Phytophthora infestans*, *Phytophthora cinnamoni* and *Phytophthora capsici*. The major categories of oomycete are dealt with great detail in the chapter.

Chapter 4- Fungus is among the most widely distributed organisms on Earth. They are in large numbers and can be found in every part of our world. The types of fungus discussed in this section are ascomycota, *Sclerotinia sclerotiorum*, *Magnaporthe oryzae*, *Sclerotium* and *Armillaria*. This text is an overview of the subject matter incorporating all the major aspects of fungus.

Chapter 5- Bacteria can be found in a number of shapes and sizes. They are usually a few micrometers in length. It is the oldest habitant of this world and is very important for the process of recycling nutrients. Some of the bacteria discussed in the content are beet vascular necrosis, phytoplasma, *Rhodococcus fascians*, *Agrobacterium tumefaciens*, *Xanthomonas* etc. The chapter provides the reader with an in-depth understanding on bacteria.

Chapter 6- Abiotic stress is the negative stress caused by non-living factors. Abiotic stress causes the most damage to the growth and the productivity of crops across the globe. In agriculture, abiotic stress causes stress by natural environment factors such as high winds, droughts and floods. This chapter elucidates all the factors related to abiotic stress.

Chapter 7- The basic abiotic stressors are wildfire and drought. Wildfire is the fire that occurs either in forests or in rural areas whereas droughts are the shortage of water supply in a particular area. Droughts can last for months or even years, and it certainly has substantial impact on the ecosystem. The text discusses the major stressors of abiotic stress in critical manner providing key analysis to the subject matter.

Chapter 8- The study of the diseases found in plants is known as plant pathology. The diseases discussed in this section are blackleg (potatoes), soybean rust, clubroot, citrus canker and cherry X disease. The topics elaborated in this chapter will help in gaining a better perspective about the effects of biotic and abiotic stress.

Chapter 9- Precautions need to be taken to prevent plants from biotic as well as abiotic stress. Some of these conservation methods are pesticide, insecticide, herbicide, fungicide and bactericide. Insecticides are used to kill insects, whereas pesticides are meant for attracting and then destroying any pests. This chapter discusses in detail the conservation methods of biotic and abiotic stress.

It gives me an immense pleasure to thank our entire team for their efforts. Finally in the end, I would like to thank my family and colleagues who have been a great source

Editor