

**Benckiser, G. and Schnell, S., eds. (2007) *Biodiversity in Agricultural Production Systems*. Boca Raton: CRC Press. ISBN-10: 978-1-57444589-8. 429 pgs.**

Reviewed by Amr Elzawily, December 2008

This book offers a unique look at biodiversity because it focuses on many different issues related to agriculture and biodiversity. Biodiversity of agricultural lands includes numerous microorganisms and plants that are very important to the environment and the earth's equilibrium. One overarching point of this edited volume is that there are many kinds of relationships between the organisms, such as competition and predation.

The goals of the book include analyzing all aspects of soil such as, biodiversity of plant breeding, microbial communities (bacteria, fungi, nematodes, protozoa, tardigrada and lumbricid earthworms), soil enzymes, and environmental factors (food web interaction, greenhouse gas emissions). The prologue also discusses and long term observations for soil quality at agroecosystem levels. Using genetic resources, physical environment, human management practices, and scales dimensions. The book investigates transformation, growth regulation, mutation and bioform formation. This book helps readers to understand the components and the mechanisms of biodiversity.

This book is very specific with its information about the agricultural crops and plants. Microbiologists, ecologists, physiologists, and zoologists will be interested in reading this book. This book consists of twenty chapters which appeal to these different branches. The first chapter is very interesting for ecologists because it gives an overview of the diversity of crop plants and the effects of cultivation on biodiversity. Chapters 3, 7, 8, 19 and 20 are very important to ecologists because these chapters provide them with various information about crops, soils, their diversity and their character. These chapters also provide readers with descriptions of the model

of food chain interactions. Chapter 2, 6, 11, 12, 13,14 and 18 are very valuable to people who are interested in genetics and zoology because these chapters will increase their knowledge about new methods in molecular biology that study geno/phenotype biodiversity through bacteria, fungi, nematodes, protozoa, tardigrada, lumbricid earthworms. Chapters 4, 6, 9, 10 and 16 are fascinating for microbiologists because they describe biodiversity of some microbes and their existence. Also chapters 15 and 17 are more mesmerizing to physiologists because they provide them with different kinds of enzymes and their activities in soil. Chapter 15 is very attractive to those who are interested in genetics, ecology, and zoology because this chapter provides them with new techniques, such as techniques to differentiate soil bacteria, and using the basis of PCR to study the bacterial community.

Although the writers cover many points in detail, there are several weaknesses. First, they informed readers about the effects of plant cultivation on diversity in chapter one, but they did not do the same with the rest of the book. On other words, they did not clarify the effects of genetic diversity on the biodiversity of the plant. Second, the writers mention the effects of plant cultivation on biodiversity such as, allelopathy, and crop rotation, and they mentioned the diseases that can be associated with various kinds of crop rotation. But they did not mention any diseases that can follow biodiversity, such as biodiversity of microbial communities in different kinds of soil. Third, they inform also the readers about biodiversity of agriculture, but are more specific about the soil, and not all the agricultural sides. Also, using many tables is a great idea to help the readers connect the ideas with the facts, but using tables more than the figures is frustrating for readers. Finally, I was interested to see the disadvantages of losing biodiversity or losing the biological diversity, as they are talk about the biological diversity and its importance. However, they did not mention this.

All the chapters of this book are well-written. This book covers many interesting points recognized by researchers in the same field. I am so happy to say that this book achieved many crucial points, such as a wonderful overview of the plant products and crops, and connecting the soil, animals, plants and environment all together. Furthermore, the writers support each chapter with good references and use numbers to support their ideas. They also use the scientific and English names ( such as, wheat “ *Triticum aestivum*,” rice “*Oryza Sativa*,” barley “ *Hordeum Vulgare L.*” ....etc) to increase the knowledge of readers. Defining many terms (such as, allelopathy, isoenzymes, the stable isotope probing (SIP), and soil function) also helps the readers to understand them easily and clearly. Overall, I am glad to recommend this book to all the biologists (microbiologists, ecologists, physiologists, and zoologists) in all areas of study.