the important concept that weeds should not be considered in isolation from other production activities. The chapter on crop diversity contains some of the best discussion of the impacts of crop rotation on weed management that I have encountered.

The book may be longer than needed to meet the objectives of the authors. This was most evident in Chapters 2, 3, 9, and 10 where the discussion seems to diverge from the goal of reviewing the concepts of ecological weed management. I am not suggesting that the basic concepts presented in these chapters are not important to the discussion, but rather that the linkage to ecological weed management could have been more concise and focused.

It is mentioned early in the book that ecological weed management does not exclude herbicides. If there is to be a move to the ecological practices presented in this book, a transition phase that includes herbicides will be needed by most producers. Unfortunately, appropriate methods to integrate herbicides with ecological weed management practices are given little attention. A chapter on integration of all concepts and practices (including herbicides) that can be part of weed management systems would have been a useful component of the book.

While I may have a few quibbles with some of the details, it is my opinion that this is an excellent book that was long overdue. The authors have examined cultural and ecological methods for weed management comprehensively and at a depth seldom attempted. The book is thoroughly referenced and should be of value to researchers and graduate students in weed management and ecology. It may also be appropriate as a text for advanced courses in weed management and as a supplemental reference for undergraduate courses in weed science.

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The primary objective of the editors of this volume was to produce a book that compiles the latest information on evolved resistance to herbicides in weeds that are problems in major grain crops. Furthermore, they wanted the book to offer solutions to this growing problem. The editors hope that this book will “...help lead the way to true integrated weed management in which herbicides play an integral, but not exclusive, role.” It is edited by two experts in this area, who have assembled a highly appropriate group of international authors. Most of the book can be fully comprehended by advanced undergraduates.

The book contains eight chapters, beginning with an overview chapter that is followed by chapters on mechanisms of resistance, population dynamics and genetics, regulatory aspects, economic and sociological aspects, and three crop-specific chapters (maize and soybean, wheat, and rice). The overview chapter by Ian Heap and Homer LeBaron provides a lucid history and current status of herbicide resistance throughout the world. It covers significantly more than herbicide resistance of weeds in grain crops.

This is followed by a review of biochemical mechanisms, inheritance, and molecular genetics of herbicide resistance in weeds by Christopher Preston and Carol Mallory-Smith. The chapter is well illustrated and the treatment is complete. Art Diggle and Paul Neve cover population dynamics and genetics of herbicide resistance, using a modeling approach. This is perhaps the most complicated chapter for the general reader, although the utility and meaning of the models are clear. Early in the chapter the authors refer to Chapter 5, when they must mean Chapter 7.

The next three chapters deal with herbicide resistance in specific crops. Each chapter is organized in roughly the same way, with sections on the crop, the resistance problem, and management options. In most cases, each of these sections is broken down geographically. Michael Owen provides a cogent and clear discussion of herbicide resistance in maize and soybean. The description of the problem is comprehensive, and the author discusses, extensively, management options to deal with the problem. Herbicide resistance in wheat is critically described and analyzed by Donald Thill and Deirdre Lemere. This is followed by an excellent chapter on resistance in rice by Bernal Valverde and Kauyuki Itoh. The editors did a good job in obtaining authors with first-hand, international knowledge of the resistance problems associated with the crops that they covered. These three chapters are unique.

The chapter on economic and sociological factors by David Pannell and David Zilberman is fascinating to me. This is the chapter that should convince policymakers, weed scientists, agronomists, farmers, and others that herbicide resistance is a growing problem that warrants considerable effort in developing and implementing management strategies. The authors are realistic and insightful.

The book ends with a chapter on the regulatory aspects of resistance management for herbicides and other crop protection products by Dale Shaner and Paul Leonard. It provides a good review of this topic for Europe and the USA. The table that provides the acronyms and abbreviations for various organizations, laws, etc. would have been more useful had it been inserted near the beginning of the chapter, and had it included acronyms from Europe also.

Overall, the objectives of the editors were met. All important aspects of herbicide resistance in world grains are reviewed and critically discussed by experts. Anyone working in the area of herbicide resistance should have access to this book.

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The grain legumes represent an important group of crop plants with exceptional nutritional value as food and feed. Unfortunately, these crops are relatively under developed when compared with cereals, a situation that is likely consequence of the disparity in the level of support for research and development for these respective crops. The main purpose of the book is to document what is known of carbohydrates