1. Record Nr. UNINA9910298636303321

Autore	He Hong-Wu
Titolo	Environmentally Friendly Alkylphosphonate Herbicides / / by Hong-Wu He, Hao Peng, Xiao-Song Tan
Pubbl/distr/stampa	Berlin, Heidelberg : , : Springer Berlin Heidelberg : , : Imprint : Springer, , 2014
ISBN	3-662-44431-3
Edizione	[1st ed. 2014.]
Descrizione fisica	1 online resource (471 p.)
Disciplina	54 547 572572 577.14 630
Soggetti	Organic chemistry Plant biochemistry Environmental chemistry Agriculture Organic Chemistry Plant Biochemistry Environmental Chemistry
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Overview -- Alkylphosphonates -- Salts of Alkylphosphonates -- Alkylphosphinates -- Cyclic Phosphonates and Caged Bicyclic Phosphates -- Optically Active Alkylphosphonates -- Biochemistry and Mechanism of Alkylphosphonates as PDHc Inhibitors -- Evaluation and Application of Clacyfos and HWS -- General Methodology.
Sommario/riassunto	This book presents essential research on a class of environmentally friendly alkylphosphonate herbicides. This class of herbicides acted as a competitive inhibitor of the pyruvate dehydrogenase complex (PDHc) to control weeds. The bioreasoning and systematic approach, from basic research to field tests of candidate compounds, are introduced. The basic research covers the molecular design, chemical synthesis,

biological activities evaluation, structure-activity relationship analysis and structural optimization. Subsequently, the book reviews the biochemistry of PDHc inhibitors, the selectivity between mammals and plants, and the mechanism of herbicidal activity of novel alkylphosphonates as selective PDHc inhibitors. Field trials for selected alkylphosphonate candidates as herbicides are also included. This book provides a sound basis for the rational design and development of novel herbicides as effective PDHc inhibitors with good enzyme-selective inhibition of plant PDHc between mammals and plants. These studies take full advantages of the low toxicity and low residual impact of selective PHDc inhibitors to design an effective and environmentally friendly herbicide. This book is based on twenty years of research on alkylphosphonates and phosphorus-containing PDHc inhibitors, and demonstrates how to develop these PDHc inhibitors as an effective and “green” herbicide candidate. Hong-Wu He, PhD, is a Professor at the Key Laboratory of Pesticide & Chemical Biology, Ministry of Education of China, and Director of the Institute of Pesticide Chemistry, College of Chemistry, Central China Normal University, China. Hao Peng, PhD, and Xiao-Song Tan are both Associate Professors at the Key Laboratory of Pesticide & Chemical Biology, Ministry of Education of China, College of Chemistry, Central China Normal University, China.