

1. Record Nr.	UNINA9910298304803321
Titolo	Automation : the future of weed control in cropping systems // Stephen L. Young, Francis J. Pierce, editors
Pubbl/distr/stampa	New York : , : Springer, , 2014
ISBN	94-007-7512-1
Edizione	[1st ed. 2014.]
Descrizione fisica	1 online resource (xii, 265 pages) : illustrations (some color)
Collana	Gale eBooks
Disciplina	338.161 632/.5
Soggetti	Weeds - Control
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	Forward; Simon Blackmore -- Preface; Stephen L. Young -- Acknowledgements -- Introduction: Scope of the Problem – Rising Costs and Demand for Environmental -- Safety for Weed Control; Stephen L. Young, Francis J. Pierce, and Pete Nowak -- Part I Agricultural Production Systems -- Current State of Organic and Conventional Cropping Systems; Alec F. McErlich and Rick A. Boydston -- Part II Principles and Merging of Engineering and Weed Science -- Engineering Advancements; John K. Schueller -- Plant Morphology and the Critical Period of Weed Control; J. Anita Dille -- The Biological Engineer: Sensing the Difference between Crops and Weeds; David C. Slaughter -- Part III Primary Weed Control Tools for Automation -- Precision Planting and Crop Thinning; Scott A. Shearer and Santosh K. Pitla -- Automated Mechanical Weeding; M. Taufik Ahmad, Lie Tang, and Brian L. Steward -- Targeted and Micro-Dose Chemical Applications; Stephen L. Young and D. Ken Giles -- Part IV Field Applications -- Field Applications of Automated Weed Control: Western Hemisphere; Steven A. Fennimore, Bradley D. Hanson, Lynn M. Sosnoskie, Jayesh B. Samtani, Avishek Datta, Stevan Z. Knezevic, and Mark C. Siemens -- Field Applications of Automated Weed Control: Northwest Europe; Jan Willem Hofstee and Ard T. Nieuwenhuizen -- Field Applications of Automated Weed Control: Asia; Hiroshi Okamoto, Yumiko Suzuki, and Noboru Noguchi -- Part V Economies for Automated Weed Control -- Economics of Technology for Precision

Weed Control in Conventional and Organic Systems; Florian Diekmann and Marvin T. Batte -- Future Adoption of Automation in Weed Control; Josse De Baerdemaeker -- Automation for Weed Control in Least Developing Countries (LDCs); Renan Aguero, Noel M. Estwick, and Edgar Gutierrez -- Part VI Future Directions -- Future Directions for Automated Weed Management in Precision Agriculture; Stephen L. Young, George E. Meyer, Wayne Woldt -- Appendix -- Glossary -- Index.

Sommario/riassunto

This book shifts the paradigm that weeds can only be controlled using broadcast applications of chemical and mechanical techniques in distinct spatiotemporal scales, also referred to as integrated weed management. In fact, true integrated weed management is more than just diversification of techniques and for the first time could be achieved using advanced technologies. Automated weed control is not the proverbial 'silver bullet', but an entirely new approach in cropping systems where multiple weed control strategies are available for use at the same time. In an automated system, sensor and computer technologies onboard a robot would first categorize each and every plant in a farmer's field as either weed or crop, and then go on to identify the species of weed. Once those identifications were made, multiple weed fighting strategies located on a single platform could be applied to individual plants based on their biology. If the system identified a weed that's resistant to Roundup™, for example, it could be sprayed with a different herbicide. Or an onboard cutting or flaming micro-tool could be used to kill the plant instead. The production of a book that addresses weed control of the future will have profound impacts on current and future cropping systems across the globe. To date, no other resource exists on this important and rapidly advancing topic of automated weed control in cropping systems. In the near future, a new approach will be needed for managing weeds, especially with the challenges of weed resistance to herbicides, off-site movement of soil, fertilizers, and chemicals, an increasingly non-agrarian public, labor shortages, economies in recession, and the continued rural to suburban land use conversion. Automation is part of the solution.