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Descrizione fisica	1 online resource (LII, 629 p. 133 illus., 110 illus. in color.)
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Livello bibliografico	Monografia
Nota di contenuto	Introduction -- History of Wheat Breeding: A Personal View -- Defining Target Wheat Breeding Environments -- Global Trends in Wheat Production, Consumption and Trade -- Breeding Methods: Line Development -- Breeding Methods: Population Improvement and Selection Methods -- Achieving Genetic Gains in Practice -- Wheat Rusts: Current Status, Prospects of Genetic Control and Integrated Approaches to Enhance Resistance Durability -- Globally Important Non-Rust Diseases of Wheat -- Abiotic Stresses -- Wheat Quality -- Nutritionally Enhanced Wheat for Food and Nutrition Security -- Experimental Design for Plant Improvement -- Seed Systems to Support Rapid Adoption of Improved Varieties in Wheat -- Crop Management for Breeding Trials -- A Century of Cytogenetic and Genome Analysis: Impact on Wheat Crop Improvement -- Conserving Wheat Genetic Resources -- Exploring Untapped Wheat Genetic Resources to Boost Food Security -- Disease Resistance -- Insect Resistance -- Yield

	Potential -- Heat and Climate Change Mitigation -- Drought -- Micronutrient Toxicity and Deficiency -- Pre-breeding Strategies -- Translational Research Networks -- High Throughput Field Phenotyping -- Sequence-based marker assisted selection in wheat -- Application of CRISPR-Cas-based Genome Editing for Precision Breeding in Wheat -- Accelerating Breeding Cycles -- Improving Wheat Production and Breeding Strategies Using Crop Models -- Theory and Practice of Phenotypic and Genomic Selection Indices.
Sommario/riassunto	This open-access textbook provides a comprehensive, up-to-date guide for students and practitioners wishing to access in a single volume the key disciplines and principles of wheat breeding. Wheat is a cornerstone of food security: it is the most widely grown of any crop and provides 20% of all human calories and protein. The authorship of this book includes world class researchers and breeders whose expertise spans cutting-edge academic science all the way to impacts in farmers' fields. The book's themes and authors were selected to provide a didactic work that considers the background to wheat improvement, current mainstream breeding approaches, and translational research and avant garde technologies that enable new breakthroughs in science to impact productivity. While the volume provides an overview for professionals interested in wheat, many of the ideas and methods presented are equally relevant to small grain cereals and crop improvement in general. The book is affordable, and because it is open access, can be readily shared and translated -- in whole or in part -- to university classes, members of breeding teams (from directors to technicians), conference participants, extension agents and farmers. Given the challenges currently faced by academia, industry and national wheat programs to produce higher crop yields --- often with less inputs and under increasingly harsher climates -- this volume is a timely addition to their toolkit.