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Nota di contenuto	Section 0- Editorial -- Section 1- Plant breeding and Technological Advances -- Chapter 1 Genome editing of gene families for crop improvement -- Chapter 2 Base editing and Prime editing -- Chapter 3 Novel delivery methods for CRISPR-based plant genome editing + Figure -- Chapter 4 Balancing trait improvement with tradeoff side-effects using genome editing technology -- Chapter 5 CRISPR/Cas mutation screening: from mutant allele detection to prediction of protein coding potential -- Chapter 6 Methods and techniques to select efficient and specific guides for CRISPR-mediated genome editing in plants -- Section 2- Applications of Genome Editing -- Chapter 7 Genome editing of a macroalgae with possible global impacts -- Chapter 8 A Short Review of Advances in Plant-Based Antigen Production Strategies and the Production of Viral Vaccine Antigens Derived from CRISPR/Cas9 Genome Edited Nicotiana benthamiana Plants for Enhanced Vaccine Efficacy -- Chapter 9 Precise gene editing of cereals using CRISPR/Cas technology -- Chapter 10 Implementing genome editing in barley breeding -- Chapter 11 Current status and future prospective of genome editing application in maize -- Chapter

12 Using gene editing strategies for wheat improvement -- Chapter 13 Gene Editing of Wheat to Reduce Coeliac Disease Epitopes in Gluten -- Chapter 14 Genome Editing in Horticultural Plants: Present Applications and Future Perspective -- Chapter 15 Application of CRISPR/Cas-mediated genome editing techniques in leguminous crops -- Chapter 16 Genetic improvement in leguminous crops through genome editing -- Chapter 17 Soybean improvement and the role of gene editing -- Chapter 18 Oilseed rape (*Brassica napus* L.) CRISPR/Cas-based precision breeding – recent improvements -- Chapter 19 Targeted gene editing in pome fruit genetics and breeding: state-of-the-art, application potential and perspectives -- Chapter 20 Genome editing in forest trees -- Chapter 21 Genome editing for reduction of bitterness and for production of medicinal terpenes in *Cichorium* species -- Chapter 22 Engineering phytonutrient content of tomato by genome editing technologies -- Chapter 23 Breeding for yield quality parameters and abiotic stress in tomato using genome editing -- Chapter 24 Genome Editing-Based Strategies Used to Enhance Crop Resistance to Parasitic Weeds -- Chapter 25 Genome editing in biotech regulations worldwide -- Chapter 26 Interpreting Precision Breeding: Key legal concepts under international law and current domestic regulatory approaches in the Global South -- Chapter 27 CRISPR Processes Patents in Green Biotechnology: Collaborative Licensing Models -- Section 4- Public and stakeholder perceptions -- Chapter 28 The view of the European seed sector on genome editing tools in plant breeding -- Chapter 29 The awareness of the Polish society on new genomic techniques -- Chapter 30 Improving Science Communication about Genome Editing – Mitigating Strong Moral Convictions through Shared Moral Goals -- Chapter 31 The citizens' awareness and concerns during the transition from Genetically Modified to Genome Edited plants in Europe about their use in agriculture and food production -- Chapter 32 What is the problem with Europe in a philosophical point of view? -- Chapter 33 NGT plant products in the EU. The postulates, the outlooks, and possible consequences of a regulatory system reform in the context of legislative reforms in third countries and detection requirements -- Section 5- Future outlook.

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### Sommario/riassunto

This open access book is an update of genome editing techniques applied to a range of plants. We discuss the latest techniques and applications to cereals, roots and tubers, oilseed crops, fruit and forest trees, vegetables, legumes and algae including resistance to biotic and abiotic stresses, improved quality, drug production, yield and adaptation to climate change. The regulations in different countries worldwide, the patentability and the perception by society of the applications of new genomic techniques are examined. This book is written by a multidisciplinary and multisectoral collective of high-profile scientists and other experts belonging to the COST Action network PlantEd, which is mainly European but with contributions from American, Australian, Canadian, Chinese, Indian, Iranian, Pakistani and Peruvian scientists. The book is aimed at a wide audience consisting of students, academics, private and public breeders, other actors in the food and bioeconomy value chains and policy and law makers.

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