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Nota di contenuto	Mutagenesis for Crop Breeding and Functional Genomics -- Chemical and Physical Mutagenesis in Jatropha curcas -- Chemical Mutagenesis and Chimera Dissolution in Vegetatively Propagated Banana -- Mutation Induction Using Gamma Irradiation and Embryogenic Cell Suspensions in Plantain (Musa spp.) -- Optimization of Somatic Embryogenesis in Cassava -- Creation of a TILLING Population in Barley after Chemical Mutagenesis with Sodium Azide and MNU -- Site-Directed Mutagenesis in Barley by Expression of TALE Nuclease in Embryogenic Pollen -- Doubled Haploidy as a Tool for Chimera Dissolution of TALEN-Induced Mutations in Barley -- Field Evaluation of Mutagenized Rice Material -- Root Phenotyping Pipeline for Cereal Plants -- Breeding New Aromatic Rice with High Iron using Gamma

Radiation and Hybridization -- Utilizing NIRS for Qualitative and Non-Destructive Identification of Seed Mutants in Large Populations -- Protocols for Proteome Analyses of *Jatropha curcas* -- Low-Cost Methods for DNA Extraction and Quantification -- A Protocol for Benchtop Extraction of Single-Strand-Specific Nucleases for Mutation Discovery -- A Protocol for Validation of Doubled Haploid Plants by Enzymatic Mismatch Cleavage -- Bioinformatics-Based Assessment of the Relevance of Candidate Genes for Mutation Discovery -- Mutation Detection by Analysis of DNA Heteroduplexes in TILLING Populations of Diploid Species -- Determining Mutation Density using Restriction Enzyme Sequence Comparative Analysis (RESCAN) -- Next-Generation Sequencing for Targeted Discovery of Rare Mutations in Rice.

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#### Sommario/riassunto

This book is open access under a CC BY-NC 2.5 license. This book offers 19 detailed protocols on the use of induced mutations in crop breeding and functional genomics studies, which cover topics including chemical and physical mutagenesis, phenotypic screening methods, traditional TILLING and TILLING by sequencing, doubled haploidy, targeted genome editing, and low-cost methods for the molecular characterization of mutant plants that are suitable for laboratories in developing countries. The collection of protocols equips users with the techniques they need in order to start a program on mutation breeding or functional genomics using both forward and reverse-genetic approaches. Methods are provided for seed and vegetatively propagated crops (e.g. banana, barley, cassava, *jatropha*, rice) and can be adapted for use in other species.

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