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Nota di contenuto	Plant Genetic Resources: Conservation, Evaluation and Utilization in Plant Breeding -- Applicability of ISAP and RAPD Techniques for Capsicum Collections Genotyping -- SINE-Markers as a Powerful Tool for Assessing Genetic Diversity to Improve Potato -- Improved breeding of high carotene carrots through marker-assisted paternity selection

and Raman spectroscopy -- Traditional and modern molecular cytogenetic approaches to study of mutagen-induced DNA damage - a case of Fagopyrum species -- Improvement of Yield in Cowpea Varieties using Different Breeding Approaches -- Germplasm Diversity and Breeding Approaches for Genetic Improvement of Mungbean -- Mutation Breeding for Adaptation to Climate Change in Seed Propagated Crops -- Induced Mutagenesis-A Reliable Technology to Overcome the Limitations of Low Genetic Variability in Lentils -- Abiotic stress tolerance and nutritional improvement in chickpeas through recombination, mutation, and molecular breeding -- Application of Molecular Markers for Assessing Genetic Diversity in Faba Bean -- Conventional and Molecular Breeding for Genetic Improvement of Maize (Zea mays L.) -- Conventional and Molecular Breeding for Sunflower Nutrition Quality Improvement -- Mendelian to Genomics and Bioinformatics Approaches in cytoplasmic male sterility and fertility restoration in Sorghum breeding -- Induced Mutations for Developing New Ornamental Varieties -- In vitro embryo rescue techniques and applications in hybrid plant development -- Proteomic and Biochemical Research for Exploring the Role of Plant-Derived Smoke in Food Crops -- Genome-wide association study (GWAS): concept and methodology for gene mapping in plants -- Tweaking CRISPR/Cas for developing salt and drought tolerant crop plants -- CRISPR/Cas in improvement of food crops for feeding the world into the future.

Sommario/riassunto

As per the reports of FAO, the human population will rise to 9 billion by the end of 2050 and 70% of more food must be produced over the next three decades to feed the additional population. The breeding approaches for crop improvement programs are dependent on the availability and accessibility of genetic variation, either spontaneous or induced by the mutagens. Plant breeders, agronomists, and geneticists are under constant pressure to expand food production by employing innovative breeding strategies to enhance yield, adaptability, nutrition, resistance to biotic and abiotic stresses. In conventional breeding approaches, introgression of genes in crop varieties is laborious and time-consuming. Nowadays, new innovative plant breeding techniques such as molecular breeding and plant biotechnology, supplement the traditional breeding approaches to achieve the desired goals of enhanced food production. With the advent of recent molecular tools like genomics, transgenics, molecular marker-assisted back-crossing, TILLING, Eco-TILLING, gene editing, CRISPR CAS, non-targeted protein abundant comparative proteomics, genome wide association studies have made possible mapping of important QTLs, insertion of transgenes, reduction of linkage drags, and manipulation of genome. In general, conventional and modern plant breeding approaches would be strategically ideal for developing new elite crop varieties to meet the feeding requirement of the increasing world population. This book highlights the latest progress in the field of plant breeding, and their applicability in crop improvement. The basic concept of this 2-volume work is to assess the use of modern breeding strategies in supplementing the conventional breeding toward the development of elite crop varieties, for obtaining desired goals of food production.