

Emerging Trends in Vegetable Crop Improvement

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Dr. Santosh Kumar

Senior Scientist cum Head, ICAR KVK CIARI

Mr. R. S. Pandey

CEO & Director of Research IFSA Seeds Pvt Ltd.
Sri Ganganagar, Rajasthan



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Office Address:

VITAL BIOTECH PUBLICATION

772, Basant Vihar, Kota,
Rajasthan-324009 India

Visit us at: <http://www.vitalbiotech.org>

Contact No. +91-9784677044

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Preface

Vegetable crops play a vital role in ensuring global food and nutritional security by providing essential vitamins, minerals, dietary fiber, and health-promoting bioactive compounds. With increasing population pressure, climate change, emerging pests and diseases, and shrinking natural resources, the development of improved vegetable cultivars has become a major priority for sustainable agriculture. *Emerging Trends in Vegetable Crop Improvement* has been written to provide a comprehensive overview of the latest scientific advances and innovative breeding strategies shaping the future of vegetable production.

Recent developments in genomics, molecular breeding, marker-assisted selection, genomic selection, genome editing, speed breeding, artificial intelligence, high-throughput phenotyping, and precision agriculture have revolutionized vegetable improvement. These technologies are accelerating the development of high-yielding, climate-resilient, nutritionally enriched, and disease-resistant cultivars while reducing the time required for variety development.

This book presents the fundamental principles and modern approaches to vegetable crop improvement, integrating classical breeding with cutting-edge biotechnological tools. It also highlights advances in genetic resource conservation, stress tolerance, quality improvement, hybrid breeding, seed production, and sustainable crop management.

The author sincerely acknowledges the valuable contributions of researchers, breeders, academicians, and scientific organizations whose work has advanced the field of vegetable science. It is hoped that this book will serve as a valuable reference for students, researchers, teachers, plant breeders, extension professionals, and policymakers, fostering innovation and supporting sustainable vegetable production for future generations.

Dr. Santosh Kumar
Mr. R. S. Pandey

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