



Sustainable Floriculture:

Organic, Natural and Regenerative Practices in Commercial Flowers



ORGANIC
GROWING



NATURAL
SOLUTIONS



REGENERATIVE
PRACTICES



SUSTAINABLE
FUTURE



Marina Narjinary
Manas Mandal
Niladri Sekhar Chakraborty
Ankush Bhawal
Anamay Sarkar

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Authors:

Marina Narjinary

PhD Scholar, Department of Floriculture and Landscape Architecture, Faculty of Horticulture, Bidhan Chandra Krishi Viswavidyalaya, West Bengal

Manas Mandal

Assistant Professor cum Junior Scientist, Department of Floriculture and Landscape Architecture, Birsa Agricultural University, Ranchi, Jharkhand

Niladri Sekhar Chakraborty

PhD Scholar, Department of Floriculture and Landscape Architecture, Faculty of Horticulture, Bidhan Chandra Krishi Viswavidyalaya, West Bengal

Ankush Bhawal

PhD Scholar, Department of Floriculture and Landscape Architecture, Faculty of Horticulture, Bidhan Chandra Krishi Viswavidyalaya, West Bengal

Anamay Sarkar

Lab Assistant, State Seed Testing Laboratory. Directorate of Research, Uttar Banga Krishi Viswavidyalaya, Pundibari, Coochbehar, West Bengal



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1942/2956, Lane R4, Jagamohan Nagar, Khordha, Odisha, 751030, India

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Authors



Marina Narjinary is currently pursuing her Ph.D. in the Department of Floriculture and Landscape Architecture, Faculty of Horticulture, Bidhan Chandra Krishi Viswavidyalaya, West Bengal. She obtained her Master's degree in Floriculture and Landscape Architecture from Uttar Banga Krishi Viswavidyalaya and her B.Sc. (Hons.) in Horticulture from the same university (2014-2018). She was awarded the National Fellowship (2021-2022) by the Ministry of Tribal Affairs, Government of India, to pursue her Ph.D. She also received the Best M.Sc. Thesis Award in 2025. She

has published two research papers and seven book chapters and has presented her research at several national and international conferences.



Dr. Manas Mandal, from Bankura district (Mandal keshra village), West Bengal. He had completed B.Sc (Horticulture), M.Sc and Ph.D from Uttar Banga Krishi Viswavidyalaya. His subject of specialization is Floriculture, Medicinal and Aromatic Plants. He cleared ASRB-NET (ICAR) twice in 2020 and 2021. He published several research papers, book chapters, research article and participate training programme. He served as a SRF on NICRA project under Dhaanya Ganga Krishi Vigyan Kendra, Ramkrishna Mission

Ashram, Sargachi, Murshidabad, West Bengal for two years and later he joined as a Senior Officer (Fertilizer division) under Coromandel International Limited for one year. Currently serving as an Assistant Professor cum Junior Scientist (Department of Floriculture and Landscape Architecture) under Birsa Agricultural University, Ranchi, Jharkhand.



Niladri Sekhar Chakraborty is currently pursuing Ph.D. in the Department of Floriculture and Landscape Architecture at Bidhan Chandra Krishi Viswavidyalaya (BCKV). He completed his M.Sc. from the same institution, where his research focused on the performance studies of Hybrid Tea Rose cv Mohana in response to nano urea. He presented a poster presentation on his M.Sc. research at the 11th Indian Horticulture Congress (2025) held in Bengaluru, Karnataka. His current research focuses on Heat stress Management in

Rose cv Minu Pearle. He received the university Gold Medal (2025).



Ankush Bhawal is currently pursuing Ph.D. in the Department of Floriculture and Landscape Architecture at Bidhan Chandra Krishi Viswavidyalaya (BCKV). He completed his M.Sc. from the same institution, where his research focused on the role of seaweed extract as a bio-stimulant in enhancing the growth and flowering of tuberose. He has published a research paper based on this work in a peer-reviewed journal. He presented an oral paper on his Ph.D. research at the 11th Indian Horticulture Congress (2025) held in Bengaluru, Karnataka. His

current research focuses on standardizing agro-techniques for sustainable turfgrass development.



Dr. Anamay Sarkar, from Coochbehar district, West Bengal, hails from the village of Dudumari. He completed his B.Sc. in Agriculture from B. R. Ambedkar University, Agra, followed by a M.Sc. in Agriculture (Horticulture) from the University of Calcutta and a Ph.D. from Uttar Banga Krishi Viswavidyalaya. His area of specialization is Floriculture and Landscape Architecture. He has published a patent, several research papers, research articles, and book chapters, and has participated in

various training programmes. He received the Student Scientist of the Year Award 2024, presented by COBACAS at UBKV. He served as a Junior Research Fellow (JRF) in a WBDST-sponsored project at Uttar Banga Krishi Viswavidyalaya, West Bengal, and later joined as a Field Assistant under a project sponsored by the Department of Science and Technology, Government of India. Currently, he is serving as a Lab Assistant at the State Seed Testing Laboratory under the Directorate of Research, Uttar Banga Krishi Viswavidyalaya, Pundibari, Coochbehar – 736125.

Preface

Floriculture occupies a distinctive place within horticulture because flowers and ornamental plants combine economic value with cultural, aesthetic and social significance. Commercial floriculture has developed into a highly specialized sector in which visual quality, uniformity, colour, stem strength, fragrance, vase life and timely market supply strongly influence profitability. At the same time, intensive production systems may depend heavily on fertilizers, pesticides, irrigation water, energy, plastics, growing substrates and post-harvest inputs. These realities have created an urgent need to rethink flower production from the perspective of long-term environmental, social and economic sustainability.

This book, *Sustainable Floriculture: Organic, Natural and Regenerative Practices in Commercial Flowers*, has been developed to provide a comprehensive understanding of how commercial floriculture can progress towards more responsible and resilient production systems. Sustainable floriculture is treated throughout the book as a systems-based approach that integrates commercial quality with resource efficiency, ecological integrity, worker safety, traceability and economic viability.

The chapters systematically address the major components of sustainable flower production. The book begins with the concepts and principles of sustainable, organic, natural and regenerative floriculture and then examines agroecology, biodiversity and ecosystem services. It further discusses soil health management through compost, green manures and biochar, along with organic nutrient management and biofertilizers.

Water-smart production, including efficient irrigation, rainwater harvesting and water recycling, is considered an essential element because water management directly affects crop productivity, nutrient efficiency, plant health and flower quality. Equally important are environmentally responsible approaches to pest and disease management. The book therefore covers botanical pesticides, biological control, ecological pest management and integrated disease-management strategies suited to organic and regenerative systems.

Sustainability begins with healthy planting material and extends across nursery management, protected cultivation, crop production, harvest and marketing. Accordingly, dedicated chapters examine sustainable nursery systems, greenhouse and polyhouse production, regenerative practices for major cut flowers, and sustainable cultivation of loose flowers, bulbous

flowers and ornamentals. Climate resilience, carbon management and risk reduction are also addressed in recognition of increasing climatic uncertainty.

The book also extends sustainability beyond the farm gate. Post-harvest handling, eco-friendly packaging, waste reduction and value addition are discussed because poor handling can rapidly convert valuable flowers and the resources invested in their production into avoidable losses. The final discussions connect sustainable production with certification, entrepreneurship, markets and future innovations, emphasizing that environmental claims must be supported by measurable practices, traceability and credible evidence.

This book is intended for students, teachers, researchers, extension professionals, growers, entrepreneurs, nursery managers and other stakeholders associated with floriculture. We hope it will encourage readers to move beyond simple input substitution and adopt an integrated approach in which productivity, profitability and flower quality are pursued alongside soil restoration, water conservation, biodiversity enhancement, responsible resource use and enterprise resilience.

We sincerely hope that this volume contributes to the development of a floriculture sector capable of producing beauty, employment and economic value while conserving the ecological resources on which its future depends.

Authors

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ABBREVIATIONS AND ACRONYMS

Abbreviation	Full Form
AMF	Arbuscular Mycorrhizal Fungi
APEDA	Agricultural and Processed Food Products Export Development Authority
DNA	Deoxyribonucleic Acid
EC	Electrical Conductivity
ET	Evapotranspiration
FAO	Food and Agriculture Organization of the United Nations
FRAC	Fungicide Resistance Action Committee
FSI	Floriculture Sustainability Initiative
GAP	Good Agricultural Practices
GIS	Geographic Information System
ICAR	Indian Council of Agricultural Research
IDM	Integrated Disease Management
IFOAM	IFOAM – Organics International
INR	Indian Rupee
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
IPCC	Intergovernmental Panel on Climate Change
IPM	Integrated Pest Management
IRAC	Insecticide Resistance Action Committee
ISO	International Organization for Standardization
ISTA	International Seed Testing Association
LCA	Life-Cycle Assessment
MRL	Maximum Residue Limit
NHB	National Horticulture Board
NPK	Nitrogen, Phosphorus and Potassium
NPOP	National Programme for Organic Production
PGPR	Plant-Growth-Promoting Rhizobacteria
PPE	Personal Protective Equipment
QR	Quick Response
RH	Relative Humidity
TDS	Total Dissolved Solids
USD	United States Dollar
USDA	United States Department of Agriculture
UV	Ultraviolet
VPD	Vapour Pressure Deficit

Sustainable Floriculture

Organic, Natural and Regenerative Practices in Commercial Flowers

Sustainable Floriculture: Organic, Natural and Regenerative Practices in Commercial Flowers presents an integrated approach to environmentally responsible and commercially viable flower production. It explains how soil restoration, organic nutrient management, water conservation, biodiversity, biological crop protection, climate resilience and resource-efficient protected cultivation can be incorporated into modern floriculture systems.

The book also addresses sustainable nursery management, major cut and loose flower crops, post-harvest handling, eco-friendly packaging, certification, entrepreneurship and emerging innovations. Combining scientific principles with practical applications, it is a useful resource for students, teachers, researchers, extension professionals, flower growers, nursery managers and agribusiness entrepreneurs seeking to improve productivity, flower quality and profitability while conserving natural resources.

AUTHORS

Marina Narjinary

Ph.D. Scholar, Floriculture and Landscape Architecture, BCKV, West Bengal

Manas Mandal

Assistant Professor-cum-Junior Scientist, Birsa Agricultural University, Ranchi

Niladri Sekhar Chakraborty

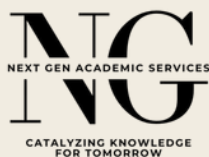
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