

# **TRENDS IN AGRICULTURAL SCIENCES**



# TRENDS IN AGRICULTURAL SCIENCES

## **Mangi Lal Jat**

M.Sc. Research scholar, Department of Extension Education,  
College of Agriculture, JNKVV, Jabalpur, MP

## **Vijay Kumar**

PhD Research Scholar,  
Department of Agronomy,  
College of Agriculture  
JNKVV, Jabalpur, MP

## **Narendra Jat**

PhD Research Scholar,  
Department of Agronomy,  
Rajasthan College of  
Agriculture MPUAT, Udaipur, Rajasthan

## **Ram Narayan Kumhar**

M.Sc. Research scholar,  
Department of Nematology,  
Rajasthan College of  
Agriculture MPUAT, Udaipur, Rajasthan

## **Kunal Narwal**

Ph.D. Research scholar,  
Department of Agronomy,  
CSK Himachal Pradesh Agriculture  
University Palampur, HP



## **VITAL BIOTECH PUBLICATION**

Kota, Rajasthan, India

<http://www.vitalbiotech.org/bookpublication/>

An International Publishers

VITAL BIOTECH get Accredited by following International organization



<https://www.portico.org/publishers/vital/>

101 Greenwich Street, 18th Floor  
New York, NY 10006

**Copyright © 2022 VITAL BIOTECH PUBLICATION**

Published by Vital Biotech Publication

Second Edition: 2022

---

**All Rights Reserved**

No part of this book may be reproduced in any form, by photostat, microfilm, xerography, or any other means, or incorporated into any information retrieval system, electronic or mechanical, without the written permission of the publisher.

**Product Form:**

Digital download, online and Paperback

**Edition:**

ISBN: 978-93-92953-04-0

**Head, Production (Higher Education and Professional) & Publishing Director**

Dr. Jitendra Mehta

**Product Manager**

Dr. K.S Nama

**Graphic Designer**

Mukesh Kumar

Information contained in this work has been obtained by Vital Biotech Publication (India), from sources believed to be reliable. However, neither Vital Biotech Publication (India) nor its authors guarantee the accuracy or completeness of any information published herein, and neither Vital Biotech Publication (India) nor its authors shall be responsible for any errors, omissions, or damages arising out of use of this information. This work is published with the understanding that Vital Biotech Publication (India) and its authors are supplying information but are not attempting to render engineering or other professional services. If such services are required, the assistance of an appropriate professional should be required.

Office Address:

**VITAL BIOTECH PUBLICATION**

772, Basant Vihar, Kota,

Rajasthan-324009 India

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

Contact No. +91-9784677044

Printed at: Vinayak Printers, Kota

## Preface

This book is entitled; "Trends in Agricultural Sciences" will provide in-depth information on the topic and to meet the needs of students and other professionals. Globally, the agricultural food sector has a major role to play in food security and economic development, especially in low-income countries. It is responsible for producing nutritious and affordable food for the farmer the world's population, as well as income generation and large-scale employment of people involved in the agricultural food chain. Therefore, the agri-food sector contribution only expands the production of the first food products on the farm level that will include the food processing industry, wholesale and retail. The success the agricultural food industry is able to meet these obligations is enormous depends largely on the capacity of the original producers, at the farm level, to provide original food products that meet strictly strict requirements and quality. Without adequate supply, some participants are not valued chain will not be able to meet the needs of consumers. The main purpose of this book is to provide an overview of the potential role and challenges of farming in this global vision, as evidenced by various perspectives such as sustainability, food security and fair trade. This book contains valuable chapters is suitable for students and professionals inside agriculture, rural development, and related sectors assess the use of information and communication technologies within global agriculture, based on ongoing studies and exploring concepts and frameworks for use, agricultural market information systems, additional agricultural resources, e-agriculture policies, and institutions and regulations. Charts and statistics are included everywhere. Each chapter covers the theme, conclusion and references

We express our gratitude to all who contributed collaborating and sharing their important ideas and knowledge in practice this book is very instructive. We also thank Dr. Jitendra Mehta, Vital Biotech Publication, Kota, Rajasthan, for professional publication of this book care and enthusiasm. Co-operation of the office of the editors of the publication house, from the beginning to the last edition is much appreciated.

**Dated: 28-5-2022**

**Editor(s)**



## ACKNOWLEDGEMENT

First and foremost, 'Lord', praise and thanks to the Almighty, for showering his blessings on the successful completion of my book.

The editors would like to acknowledge the help of all the people involved in this book and more specifically, to the authors, publisher, graphic designer and reviewers that took part in the review process. The editors wish to acknowledge the valuable contributions of the reviewers regarding the improvement of quality, coherence, and content presentation of chapters. Most of the authors also served as referees; we highly appreciate their double task. Without their support, this book would not have become a reality.

I am also very much thankful to my respected sir Dr. Bheru Lal Kumhar, Assistant Professor, Agriculture University, Jodhpur, Dr. J.P. Tatarwal, Associate Professor, Agriculture University, Kota, who helped me in every way when I was in need of their help.

We also thank Drs. Jitendra Mehta, Vital Biotech Publication, Kota, Rajasthan, for professional publication of this book care and enthusiasm.

Finally, I would like to acknowledge with gratitude, the support and love of my all authors, family - my parent's, my sisters and my brother Sukhram godara (Agriculture Supervisor) for their appreciation, affection and moral support.

I want to thank everyone who ever said anything positive to me or taught me something. I heard it all, and it meant something.

Finally, I want to thank all those people who helped me direct or indirect ways but whose names I failed to write here.

**Dated:**

**28-5-2022**

**Editor(s)**



# CONTENTS

| S. NO. |                                                                                                                                                               | PAGE NO. |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 1.     | <b>Agriculturally Important Micro-Organisms for Enhancing Nutrient Use Efficiency</b><br><i>Anil Nath, Dropati Saran, Arvind Kumar</i>                        | 1-16     |
| 2.     | <b>Nutrient Use Efficiency and Nutrient Budgeting</b><br><i>Manish Yadav, Suwa Lal Yadav, Laxman Kumawat, Devilal Birla</i>                                   | 17-34    |
| 3.     | <b>Soil Properties under Different Land Use Systems</b><br><i>Basta Ramand Anil Nath</i>                                                                      | 35-46    |
| 4.     | <b>Interaction of Bio char with Soil Organic Matter: Effect on Carbon Sequestration</b><br><i>Basta Ramand Anil Nath</i>                                      | 47-56    |
| 5.     | <b>Fertigation Technology for Improvement in Soil Fertility and Productivity of Cereal Crops</b><br><i>Arvind Kumar, Vijay Pal Singh and Anil Nath</i>        | 57-70    |
| 6.     | <b>Rhizospheric Engineering: Importance and Management for Improving Soil Health and Crop Productivity</b><br><i>Arvind Kumar Anil Nath and Dropati Saran</i> | 71-99    |
| 7.     | <b>Crop Residue Management in Conservation Agriculture</b><br><i>Suwa Lal Yadav, Manish Yadav, Laxman Kumawat, Devilal Birla, Indra Raj Yadav</i>             | 100-115  |
| 8.     | <b>Status and Growth of Organic Farming in the World as well as India</b><br><i>Dropati Saran and Anil Nath</i>                                               | 116-125  |

|            |                                                                                                                                                                                                |                |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| <b>9.</b>  | <b>Supply Chain Analysis of Agro- Product</b><br><i>Veena Rathore, Sheetal Patel, Sanjana Shrivastava</i>                                                                                      | <b>126-133</b> |
| <b>10.</b> | <b>Prospective of E-Commerce in Agriculture</b><br><i>Sheetal Patel, Sanjana Shrivastava, Veena Rathore, Prashant Singh Kourav</i>                                                             | <b>134-146</b> |
| <b>11.</b> | <b>Drying Techniques on Flower Crops</b><br><i>Kamal Kishor Nagar, R. K. Dubey and Rakesh Kumar</i>                                                                                            | <b>147-159</b> |
| <b>12.</b> | <b>Nerine: A New Flower Crop for Innovative Gardening</b><br><i>Rakesh Kumar, Ranjit Singh and Kamal Kishor Nagar</i>                                                                          | <b>160-169</b> |
| <b>13.</b> | <b>Economically Importance of Life Cycle Maize Cyst Nematode and their Management</b><br><i>Ram Narayan Kumhar, Jagdish Yadav</i>                                                              | <b>170-181</b> |
| <b>14.</b> | <b>Significance and Consequences of Adequate and Excessive use of Chemical Fertilizers on Soil Health</b><br><i>Bhawani Singh Prajapat, K.L. Naga, Ram Narayan Kumar and Yogita Khandelwal</i> | <b>182-197</b> |
| <b>15.</b> | <b>Approaches of Germplasm Conservation of Agricultural Crops</b><br><i>Banshidhar, Priyanka Jaiswal, Satya Prakash</i>                                                                        | <b>198-206</b> |
| <b>16.</b> | <b>Medicinal Properties of Broccoli</b><br><i>Roopali Patel and Satish Sharma</i>                                                                                                              | <b>207-212</b> |
| <b>17.</b> | <b>Techniques of Ex-Situ Conservation of Plant Genetic Resources for Long Term</b><br><i>Neeru, Satyender Yadav, Vikash Kumar, Rupender Kumar and Bajrang Lal Sharma</i>                       | <b>213-229</b> |
| <b>18.</b> | <b>Cell and Cell Organelles</b><br><i>Ravi Prakash Chaudhary, Govind Mishra, Mitendra Kumar and Arvind Kumar</i>                                                                               | <b>230-236</b> |
| <b>19.</b> | <b>Integrated Farming System (IFS) for Sustainable Livelihood Security</b><br><i>Nisha Singh and Balkrishan Singh</i>                                                                          | <b>237-251</b> |
| <b>20.</b> | <b>SRI (SYSTEM OF RICE INTENSIFICATION)</b><br><i>Kaptan Baboo, Vishuddha Nand</i>                                                                                                             | <b>252-263</b> |
| <b>21.</b> | <b>Insect Pests of Sugarcane and their Management</b><br><i>Arvind Kumar, Manish Kumar, Pradeep Yadav, Shivam Kumar and Vijay Kumar</i>                                                        | <b>264-281</b> |

|            |                                                                                                             |                |
|------------|-------------------------------------------------------------------------------------------------------------|----------------|
| <b>22.</b> | <b>Phytohormones Seed Priming to Mitigate Abiotic Stress</b>                                                | <b>282-294</b> |
|            | <i>Bittu Ram and Satender Kumar</i>                                                                         |                |
| <b>23.</b> | <b>Soil Health and Fertilizer Use in Indian Agriculture</b>                                                 | <b>295-308</b> |
|            | <i>Ankush Kamboj, Satender Kumar, Vishal Goyal, Uday Pal Singh, Dharam Pal, Mamta Rani</i>                  |                |
| <b>24.</b> | <b>Mushroom Processing and Value Addition</b>                                                               | <b>309-320</b> |
|            | <i>Tariq Ahmad Sofi, Shahnaz Anjum, Arfa Ji, Kamran Muneer, Saira Banoo, Syeda Uzma, Suhaib Shabir Bhat</i> |                |
| <b>25.</b> | <b>Organic Mushroom Farming Practices</b>                                                                   | <b>321-332</b> |
|            | <i>Kamran Muneer, Shahnaz Anjum, Arfa ji, Saira Banoo, Syeda Uzma, Suhaib Shabir Bhat, Tariq Ahmad Sofi</i> |                |
| <b>26.</b> | <b>Entrepreneurship and Marketing in the Mushroom Industry</b>                                              | <b>333-346</b> |
|            | <i>Syeda Uzma, Saira Banoo, Shahnaz Anjum, Arfa ji, Kamran Muneer, Suhaib Shabir Bhat, Tariq Ahmad Sofi</i> |                |
| <b>27.</b> | <b>Edible and Medicinal Mushroom Species</b>                                                                | <b>347-358</b> |
|            | <i>Syeda Uzma, Shahnaz Anjum, Arfa Ji, Kamran Muneer, Saira Banoo, Suhaib Shabir Bhat, Tariq Ahmad Sofi</i> |                |
| <b>28.</b> | <b>Landscape Design Principles and Garden Planning</b>                                                      | <b>359-370</b> |
|            | <i>Sudhir Kumar Pathak</i>                                                                                  |                |

