

*Volume 3, Book 3, 2024, IIP Series*

*Futuristic Trends in*  
**Agriculture Engineering &  
Food Sciences**



*Futuristic Trends in*

# AGRICULTURE ENGINEERING & FOOD SCIENCES

*Volume 3, Book 3, 2024, IIP Series*



**Title of the Book: Futuristic Trends in Agriculture Engineering & Food Sciences**

**Edition: Volume 3, Book 3, 2024, IIP Series**

**Copyright © 2024 Authors**

No part of this book may be reproduced or transmitted in any form by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the copyright owners and publisher.

**Disclaimer**

The authors are solely responsible for the contents published in this book. The publisher or editors do not take any responsibility for the same in any manner. Errors, if any, are purely unintentional and readers are requested to communicate such errors to the editors or publishers to avoid discrepancies in future.

**E-ISBN: 978-93-5747-402-3**

**Publisher, Printed at & Distribution by:**

Selfypage Developers Pvt. Ltd.,  
Pushpagiri Complex,  
Beside SBI Housing Board,  
K.M. Road Chikkamagaluru, Karnataka.  
Tel.: +91-8861518868  
E-mail: info@iipseries.org

**IMPRINT: I I P Iterative International Publishers**

# PREFACE

Agriculture and Food Science Book series aims to bring together leading academic scientists, researchers and research scholars to publish their experiences and research results on all aspects of Agriculture and Food Science. It also provides a premier interdisciplinary platform for researchers, practitioners and educators to present and discuss the most recent innovations, trends, and concerns as well as practical challenges encountered and solutions adopted in the fields of Agriculture and Food Science. High quality research contributions describing original and unpublished results of conceptual, constructive, empirical, experimental, or theoretical work in all areas of Agriculture and Food Science are cordially invited for publication. It also focuses on a range of issues but not limited to

1. Textile Engineering
2. Agronomy
3. Soil Science
4. Microbiology
5. Phsiology
6. Ecology
7. Epidemiology
8. Genetics & Plant Breeding
9. Plant Pathology
10. Entomology
11. Agricultural Biotechnology
12. Environmental Sciences
13. Agricultural Engineering
14. Food Science
15. Waste Management
16. Animal Husbandry and Dairying
17. Agricultural Statistics
18. Food Storage and Preservation
19. Food Technology and Processing
20. Agricultural Sustainability
21. Irrigation
22. Root Morphology Sensing
23. Yield-Monitoring
24. Industrial Crops and Products Engineering
25. Artificial Intelligence in Agriculture
26. Poultry Science
27. Forestry
28. Horticulture
29. Fisheries Science
30. Agriculture Equipments & Smart Technologies
31. Veternary Sciences
32. Contract & Integrated Farming
33. Sericulture

# **EDITORIAL BOARD MEMBERS**

## **Dr. Sunil Kumar Ghosh**

Associate Professor

Bidhan Chandra Krishi Viswavidyalaya (BCKV-Ag.University)

Department of Agricultural Entomology

Mohanpur, Nadia, West Bengal, India.

## **Dr. Shiwanand Pandey**

Teaching Associate

Chandra Shekhar Azad University of Agriculture and Technology

Kanpur, Uttar Pradesh, India.

## **Dr. S. Srilakshmi**

Associate Professor

Maharani Lakshmi Ammanni College for Women, Autonomous,

Bangalore, Karnataka, India.

## **Goutam Guruprasad Jena**

Research scholar

ICAR-Indian Agricultural Research Institute

Assistant Engineer, Agricultural Engineering

New Delhi, India.

# CONTENTS

	Page No.
<b>PART 1</b>	
<b>Chapter 1</b> PRINCIPLES OF FOOD GRAIN STORAGE.....	<b>1-15</b>
<b>Chapter 2</b> BIOLOGICAL MANAGEMENT OF MAJOR VEGETABLE INSECT PESTS WITH MICROORGANISMS FOR FOOD SAFETY AND SECURITY.....	<b>16-30</b>
<b>Chapter 3</b> AGRICULTURE AND BIODIVERSITY LOSS: A CASE STUDY OF WEPPA FARMS, AGENEBODE, EDO STATE, NIGERIA.....	<b>31-42</b>
<b>Chapter 4</b> ROOT MORPHOLOGY SENSING.....	<b>43-56</b>
<b>Chapter 5</b> MANGEMENT OF FRUIT FLIES: AN INTEGRATED APPROACH.....	<b>57-67</b>
<b>Chapter 6</b> TOMATO PROCESSING.....	<b>68-78</b>
<b>Chapter 7</b> CURRENT ADVANCES AND FUTURE PROSPECTS IN AGRICULTURE ENGINEERING.....	<b>79-87</b>
<b>Chapter 8</b> IMPORTANT NON-ONCOGENIC IMMUNO SUPPRESSIVE VIRAL DISEASES OF CHICKENS.....	<b>88-108</b>
<b>Chapter 9</b> ENVIRONMENTALLY SOUND MANAGEMENT OF BRINJAL STEM BORER ( <i>EUZOPHERA PERTICELLA</i> RAGONOT) FOR SAFE FOOD PRODUCTION.....	<b>109-120</b>
<b>Chapter 10</b> INSECT FAUNA ASSOCIATED WITH ECONOMICALLY IMPORTANT FOREST FLORA.....	<b>121-149</b>
<b>Chapter 11</b> CHALLENGES AND OPPORTUNITY FOR HIGHER CROP PRODUCTIVITY IN RED-LATERITE BELT OF WEST BENGAL.....	<b>150-161</b>

<b>Chapter 12</b> CULTIVATION PRACTICES AND PROSPECTS OF RHIZOMATOUS ORNAMENTAL CROPS IN ODISHA.....	<b>162-187</b>
<b>Chapter 13</b> OPPORTUNITY OF APPLICATION OF DRONE TECHNOLOGY IN AGRICULTURE-WITH SPECIAL REFERENCE TO PESTICIDE SPRAYING.....	<b>188-213</b>
<b>Chapter 14</b> POWER OF LACTIC ACID BACTERIA: THEIR CURRENT APPLICATION IN AGRICULTURE.....	<b>214-230</b>
<b>Chapter 15</b> FUTURISTIC TRENDS IN AGRICULTURE ENGINEERING AND FOOD SCIENCES.....	<b>231-238</b>
<b>Chapter 16</b> EFFECT OF VERMIWASH ON GROWTH AND SOIL CHARACTERISTICS OF A FEW COMMERCIALY IMPORTANT SPINACH SPECIES.....	<b>239-246</b>







*IIP Series is online, open access, peer-reviewed, interdisciplinary Journal. IIP Series provides a comprehensive solution for conferences and edited books that covers research topics across various scientific, technical, and medical disciplines. It aims at disseminating high-level research results and developments to researchers and research groups. It mainly focuses on presenting practical solutions for the current problems in Applied Sciences and Applied Social Sciences. It features original research work, reviews, case reports, tutorial papers, and accounts of practical developments.*

## ***Futuristic Trends in Agriculture Engineering & Food Sciences***

***Volume 3 Book 3, 2024, IIP Series***

**ISBN : 978-93-5747-402-3**

