

TRENDS IN AGRICULTURAL SCIENCES

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**BEYONDLINE
PUBLISHER**

Title: Trends in Agricultural Sciences

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Published by: Beyond Line Publisher
Bangalore - 560 043

Publisher's Address: Beyond Line Publisher
513 Ground Floor
Arkavathi Layout, 19th Block
Chelikere, Kalyan Nagar
Bangalore - 560043

Edition Details (I,II,III): I

ISBN: 978-93-95659-58-1

Month & Year: April, 2026

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Pages: 208

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PREFACE

The agricultural sector stands at a critical crossroads, facing the dual challenge of feeding an ever-growing global population while preserving the ecological integrity of our planet. **Trends in Agricultural Sciences** captures this pivotal moment by assembling a diverse collection of research and insights that bridge the gap between traditional wisdom and cutting-edge innovation.

This volume explores the multifaceted nature of modern farming through several key pillars:

- **Soil and Resource Sustainability:** Investigations into **biochar** mechanisms offer transformative solutions for acid soil remediation, ensuring long-term land productivity.
- **Technological Frontiers:** From **speed breeding** and **nanotechnology** in seed coatings to the integration of **Artificial Intelligence** in livestock and aquaculture, these chapters highlight the precision tools driving the next "Green Revolution."
- **Ecological Intelligence:** The book emphasizes the economic value of **beneficial insects** and provides critical strategies for managing **invasive species** and enhancing **lac culture**.
- **Predictive Modeling and Protection:** Advanced **time series forecasting** and disease **forewarning models** are presented as essential frameworks for sustainable crop protection and climate resilience.
- **Human-Centric Extension:** Recognizing that technology is only as effective as its adoption, significant focus is placed on **Farmer Field Schools (FFS)**, **Participatory Rural Appraisal (PRA)**, and **digital inclusion** to empower rural communities.

By integrating technical advancements in **post-harvest systems** and **biopriming** with social science methodologies, this book serves as a comprehensive roadmap for researchers, policymakers, and practitioners. It is our hope that these pages inspire collaborative efforts toward a more secure, efficient, and sustainable agricultural future.

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