

Revolutionizing Pest Management for Sustainable Agriculture

Part of the Advances in Environmental Engineering and Green Technologies Book Series

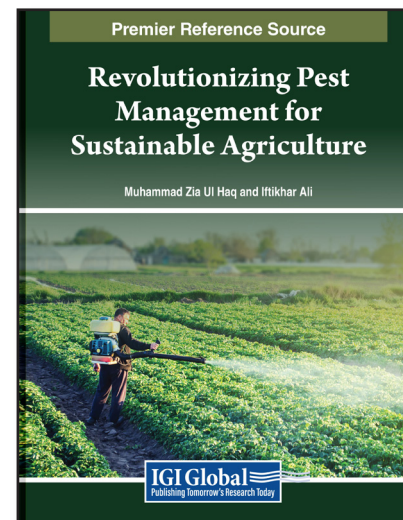
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Description:

In the industry of agriculture, farmers are facing a challenge worldwide: the need to simultaneously achieve substantial crop yields and mitigate the adverse environmental effects caused by persistent threats from agricultural parasites. The escalating demand for food in tandem with population expansion exacerbates this intricate dilemma, highlighting the shortcomings of conventional approaches to insect management. As climate change, the development of pest resistance, and the call for reduced chemical inputs intensify, a fundamental change in our approach to pest management becomes imperative. **Revolutionizing Pest Management for Sustainable Agriculture**, is an exploration into the convergence of technology and tradition, revealing how data-driven methodologies and state-of-the-art technologies are transforming the field of agricultural pest management.

The exploration commences with a comprehensive analysis of precision agriculture, leveraging technological advancements such as satellite imagery and drones to provide farmers unparalleled visibility into their fields. The book further explores the integration of the Internet of Things (IoT) in insect management, creating digitally orchestrated ecosystems with automated pest-control devices activated by real-time data. An exhaustive examination of biological control, biopesticides, climate-responsive pest management, and blockchain technology for farm-to-fork traceability completes the comprehensive guide.

Revolutionizing Pest Management for Sustainable Agriculture serves as more than a compilation of developments; it is a strategic guide for policymakers, researchers, and farmers navigating the complexities of contemporary agriculture responsibly. With an objective to bridge the gap between traditional pest management and innovative technology, the book provides practical strategies, case studies, and valuable insights, inviting readers to explore the symbiotic relationship between technology and soil cultivation, paving the way for a paradigm shift in the agricultural industry. This carefully crafted resource is designed for a diverse audience, including agricultural researchers, Agri-tech professionals, policymakers, and educators, empowering them with the knowledge and resources needed to embrace smart solutions, contributing to increased productivity, reduced environmental impact, and the sustainability of agricultural systems.



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Topics Covered:

- Biological Control Agents
- Biopesticides and Botanicals
- Climate-Smart Pest Management Strategies
- Community-Led Integrated Pest Management (IPM) Programs
- Economic Viability of Smart Pest Management Practices
- Farm-to-Fork Traceability
- Machine Learning Algorithms for Predictive Pest Modeling
- Nanotechnology in Crop Protection
- Pest-Resistant Crop Varieties
- Remote Sensing Technologies in Pest Detection
- Smart Trap Technologies for Pest Monitoring
- Sustainable Crop Rotation and Diversification

Subject: Environmental, Agricultural, and Physical Sciences

Classification: Edited Reference

Readership Level: Advanced-Academic Level (Research Recommended)

Research Suitable for: Advanced Undergraduate Students; Graduate Students; Researchers; Academicians; Professionals; Practitioners

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