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Nanotechnology in Agri-Food Applications.

Sommario/riassunto   Nanobiotechnology has been intensively investigated for decades and is thus well-recognized as a promising approach for advancing sustainable agriculture, particularly proving precision and smart tools based on engineered nanoparticles/nanomaterials. Among them, nanosensors and nanobiosensors have the potential to revolutionize agricultural practices by sensing, detecting, and monitoring cellular processes such as signal transduction and plant hormone dynamics, crop performances, and soil/environmental conditions for precision and even real-time management of fertilizers, pesticides, plant growth/yield/quality, stress responses, and post-harvest processes. In the international book market, there is a gap in providing an updated comprehensive book resource for readers who are interested in materials science and nano-biotechnology particularly, the detailed part of nano-biosensors for agri-food applications. Therefore, this book bridges the knowledge gap by providing a complete guide to nano-biosensors from their fundamentals to current agricultural applications, which presents a series of review-type chapters organized by diverse experts. This book consists of 14 chapters, including subtopics such as optical nanobiosensors, calorimetric nanobiosensors, immuno-nanobiosensors, enzymatic nanobiosensors, and apta-nanobiosensors, for their synthesis, action, and applications. This book provides an updated overview of ethical considerations and regulations for nanotechnology in agri-food applications.