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## REVIEW ARTICLE

### Non destructive Evaluation of Agro-products by Intelligent Sensing Techniques (Editors: Jiangbo Li & Zhao Zhang)

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I have gone through the book, *Nondestructive Evaluation of Agro products by intelligent sensing techniques*. This is an excellent book creation, perhaps unique by having all possible intelligent evaluations of agro products. This book is a treasure of knowledge, which can contribute hugely to total quality management (TQM), supply chain management, post-harvest value addition, food safety, and standards with the highest precision and application.

The book comprises ten chapters. The first chapter briefly elaborates the principles and system components of some representative techniques, *viz.* near-infrared spectroscopy, infrared spectroscopy, fluorescence spectroscopy, Raman spectroscopy, laser-induced breakdown spectroscopy, traditional machine vision, hyperspectral and multispectral imaging, magnetic resonance imaging, X-ray imaging, thermal imaging, light backscattering imaging, electrical noise, and acoustics. The second chapter aims to present the basic concepts, components, and principles of imaging and spectroscopy techniques in a comparative manner for agriculture application. The third chapter gives a systematic introduction of biosensors for the evaluation of quality and safety of agro-products, emphasizing new biosensing principles

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and the advantages of exceptional analytical performance for rapid and in-field evaluation. The fourth chapter focuses on the working principle of each technique and provides an overall understanding of these techniques. Hyperspectral Imaging and Machine Learning were elaborated in the fifth chapter for rapid assessment of deoxynivalenol of barley kernels. Advances of HSI in the evaluation of the main mycotoxins, including aflatoxins, ochratoxins, deoxynivalenol, fumonisins, and their related fungal contaminants, are reviewed in the sixth chapter. In the seventh chapter, the Intelligent Sensing Technology for processing agro-products has been discussed. Automated sorting and quality grading of fruits and vegetables are crucial for providing commodities with consistent quality to the consumers and markets. This has been nicely depicted in the eighth chapter. Existing research problems of robotic fruit harvesting applications are mentioned, and future development directions of agriculture robots are described in chapter nine. Extraction and usage of texture and NDVI features to train an SVM model for wheat lodging detection has been elaborated in chapter ten.

It opens a new domain of non-corporeal handling of food products to assure both quality and safe trafficking. The cutting edge imagery techniques, AI, Expert systems, 3-D food, isolation of utility molecules, and long-duration preservation will help in the smartest possible way by eliminating both error and risks. However, the term nondestructive sounds a bit crude; else, it could have been noninvasive!

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