

Biological processes at the cellular and molecular level

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Abstract (limit 600 words)

Because of the growing demand for high-quality foods, we've had to adapt and implement new automated technologies to reduce waste and improve the nutritional and sensory quality of processed foods. The emerging area of laser-based technology has shown significant potential to enhance the quality and safety of foods due to the better monochromaticity and directivity of laser beams. Base on the applications of lasers in food packaging and food detection, laser-assisted food processing is a growing area arousing considerable interest among scientists in the past decade. This review examines relevant material in order to assess the possibilities of laser technology in food processing. From the standpoint of both laser and food material qualities, the key to the success of laser-assisted food processing is outlined and studied. Aspects of the processing mechanism and use of laser technology are examined. The corresponding issues and future opportunities for laser-assisted food processing, as well as research and development requirements, are reviewed. Lasers have a lot of promise in the field of food processing, such as material pretreatment, drying, cooking, microbial suppression, laser marking, extraction, fermentation, and ageing of liquid meals, among other things. The quality of the products is influenced by the operational parameters of lasers as well as the optical and thermal properties of the targeted material. It is important to overcome various restrictions in order to apply existing laser technology to industrial food processing, particularly the control of heat damage, the construction of mathematical models/databases, and automation and safety processing equipment. By enhancing product quality, introducing new goods to the market, and lowering production costs, the development of innovative food processing processes can help the food industry become more competitive

Important of research (limit 200 words)

The current review looked at some of the current and future applications of PEF in the food business. Consumer demand for fresh-like products with high nutritional value, as well as demand for food produced using environmentally friendly methods, are driving the development of new food processing technologies. PEF is a technique that employs high-voltage amplitude electric waves. The product placed between the electrodes in the chamber receives short electrical impulses (ranging from microseconds to milliseconds) of high voltage (usually 10–80 kV/cm). This technology can be used alone or in combination with other methods to obtain products in more energy efficient (e.g. by lowering temperature and time of extraction) and environmentally friendly way. PEF can be used for pasteurisation, as well as the augmentation of processes such as drying, freezing, or extraction.

Biography (limit 200 words)

He is a Research Plant Physiologist in the Crop Genetics Research Unit at USDA-ARS in Stoneville, Mississippi. In 1989, he got his PhD in Plant Nutrition from the University of Leeds' Department of Pure and Applied Biology. He joined USDA-ARS in 2004 as a Research Plant Physiologist working on identifying the physiological and genetic mechanisms controlling soybean seed composition and mineral nutrition constituents (protein, oil, fatty acids, sugars, phytohormones, and mineral nutrition) under drought, heat, and disease pressure. Ahmed Zaffer and his collaborators demonstrated for the first time that the micronutrient boron is mobile in transgenic crops containing the sugar alcohol sorbitol; significantly advanced current knowledge of the relationship between glyphosate application and nitrogen and iron metabolism in glyphosate-resistant and glyphosate-susceptible soybean; quantified for the first time the effect of maturity genes, genetic

background, temperature, and their interactions in glyphosate-resistant and glyphos Ahmed Zaffer is a world-renowned expert in the field of plant nutrition.

Information of Institute (limit 200 words)

The University of Life Sciences in Lublin (Polish: Uniwersytet Przyrodniczy w Lublinie) is a multi-profile higher education institution, which integrates a wide range of agricultural, biological, veterinary, technical and socioeconomic sciences in Poland. Although the university was established in 1955, its history stems back to 1944 with the creation of the Agrarian and Veterinary Faculties within the new Maria Curie-Skłodowska University (UMCS). In 1955, these two faculties, together with the Faculty of Zootechnics (est. 1953), were spun off to create a new institution, originally called the Lublin Higher School of Agriculture. It was called the Lublin Agricultural Academy from 1972, and took its present name. The university's traditions trace back to 1944, when the newly established Maria Curie-Skłodowska University in Lublin established the first four faculties: medical, life sciences, agriculture, and veterinary medicine.



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