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Nanosafety in food and agriculture sector for underdeveloped countries

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Nanotechnology offers substantial prospects for the development of innovative products and applications in many industrial sectors, including agricultural production, animal feed and treatment, food processing and food contact materials and water. Increasing crop yields is a primary goal of farmers in undeveloped countries. Nanotechnologies may improve the effectiveness of pesticides and fertilizer to boost crop yields. Also, nutrition delivery or genetic manipulation of the nanostructure of plants and animals may also be possible to further improve farming yields. The rapid development of nanotechnology has indeed promoted a new generation of products and processes and created a tremendous growth potential for a large number of industry sectors. This rapid growth also created some concerns about their possible effects on human health, safety and environment. Nanotechnology presents opportunities to create new and better products. It also has the potential to improve assessment, management and prevention of environmental risks. New and emerging applications such as water purification systems, rapid pathogen and chemical contaminant detection systems and nano-enabled renewable energy technologies applied along the food chain are expected to provide underdeveloped countries with new tools to address some of the challenges to sustainable agricultural and irrigation development as well as food safety and food security. Food and related industries such as agriculture, packaging and food processing have seen huge changes because of the unique properties of nanomaterials. But these unique properties may occasionally lead to ambiguous and sometimes dangerous side-effects to ecosystems and even in people.

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