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Nanotechnology in agriculture and food sciences – politics of governing nanotechnology

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Due to the growing world population and increasingly varying climate changes, feeding global population will become an international major issue and for this nanotechnology may be an important role. It is envisaged that the convergence between nanotechnology, plant science and agriculture will lead to revolutionary developments and advances in the next decades to improve food security and sustainability. The development of nanoscience-based food with improved nutritional and palatable benefits will allow to increase food nutritional efficiency and the addition of nanoscale materials for food packaging will extend shelf life and retain quality, both contributing to waste reduction. The applications offer plenty of new opportunities for the agrifood sector but raise concerns about their potential impacts on environment and human health. Ethical questions, issues on food safety, risk and benefits, and consumer mistrust become key elements. Assessment of nanomaterials/substances on the environment, health, social and economic impacts becomes a vital aspect and agencies of the regulation of new agrifood nanomaterials and nanoproducts need to be informed. There is a strong need to develop nanotoxicology and nanoecotoxicology of nanomaterials by investigating the uptake and the translocation of nanomaterials by the gastrointestinal tract. To guarantee humans safety, to convince the consumer and to control the industrial producer, it is vitally important to have sound regulations from government. This is the great problem in all developed countries although that a large series of products are already on the market. This contribution will provide roadmaps to make steps forwards to the development of safe guidelines and regulations.