Nanotechnology in Agriculture and Environmental Sectors - Current Situation and Future Vision

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Abstract

In developing countries for agriculture is the backbone of the national economy. At present, in these countries are facing problems such as food scarcity in agriculture mainly due to the negative impact of environmental factors and the reduction of agricultural land due to competition in economic development activities. To this end, structural changes have taken place in the agricultural sector with the use of technological innovations that need to be used in view of the challenges such as sustainable production in food security, which is safe, cost-effective and improving public health. Many technologies have been developed that show the potential increase in agricultural productivity, as well as reduce environmental costs and resources related to agricultural production.

Nanotechnology has a greater potential in agriculture and the food industry, by improving the quality of life through its applications. In developing countries day after day as consumers face shortages of food and crops due to climate change, urbanization, unsustainable use of natural resources and other environmental issues such as the accumulation of pesticides and fertilizers in the agricultural environment. To overcome this problem, nanotechnology tools are used to enhance the ability of plants to absorb nutrients etc. In the near future, nanostructured catalysts will be prepared for use which will increase the efficiency of fertilizer use whether it is used to add soil or spray to plants, allowing lower doses to be used. Nano fertilizers are synthesized in order to regulate the release of nutrients depending on the requirements of the

crops, and it is also reported that Nano fertilizers are more efficient than ordinary fertilizer.

Thus, nanotechnology promises a breakthrough in improving the nutrient use efficiency through Nano formulation of fertilizers, breaking yield and nutritional quality barriers through bio nanotechnology .

Despite of these potential advantages, agro-nanotech innovative products are experiencing difficulties in reaching agricultural market. This study provides a review of the current challenges of sustainability, food security and climate change that are exploring by the researchers in the field of nanotechnology in the improvement of agriculture and environmental sectors.

Key words: Nanotechnology, Agriculture sector, Environmental sector Food security, Climate change.