The Torch
Vol. 2 (8)

Sustainable agriculture through nanotechnology

Shubham Datta

The advancement of nanotechnology has created a huge impact on the social lives of human beings. Human life is being dependent on nanotechnology for basic needs and advanced wants owing to its extensive benefits. Potential benefits of nanotechnology, such as enhancement of food quality, reduction of agricultural inputs, enrichment of nutrients obtained from soil, etc. have attracted agriculture scientists to rely on nanotechnology. The utilisation of nanofertlisers for nutrient management and nanopesticides for pest management in current agriculture practice has shown increased productivity of agro-foods without contaminating soil and water. This has eventually helped in maintaining the health of agricultural plants. Furthermore, carbon nanotubes (CNTs) have many applications in agriculture. The CNT sponges help in soaking up water contaminants, such as pesticides, fertilisers, oil and pharmaceuticals efficiently in agri-field and the development of sustainable agricultural conditions. Also, they have been recently observed to exhibit a positive effect on seed germination, which could have significant economic importance not only for agriculture but for the horticulture and the energy sector too. According to the research, the nanotube-exposed seeds are up to two times faster in sprouting than the untreated plants. CNTs with their other exciting achievements, such as root growth and increased biomass could be beneficial for crops. But understanding the potential risks of the application of CNTs in agriculture is essential before making nano-agriculture feasible. Therefore, intensive research pertaining to the toxicity level of many nanoparticles is necessary to understand their effects on human health and to exploit this technology in sustainable agriculture.

Keywords: Nanotechnology, Nanoparticles, Carbon nanotubes, Nanosponges, Nanopesticides, Nanofertilisers, Applications, Risks

Citation:
Shubham Datta. Sustainable agriculture through nanotechnology. The Torch. 2021. 2(8). Available from: https://www.styvalley.com/pub/magazines/torch/read/sustainable-agriculture-through-nanotechnology.