

Current knowledge and findings on Nanofertilizers

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The management of plant nutrients has become a crucial challenge globally especially because of the threats it has been posing to the environment. A significant deal of the nutrients applied to the soil with mineral fertilizers never reaches the plant tissues. In fact, the leaching water moves nutrients into waterbodies. The application of slow release fertilizers such as the nutrient loaded nanoparticles, may increase the nutrient use efficiency and avoid the contamination of the ecosystems. The nutrient release rate of the nanofertilizer is smaller than the one of the traditional fertilizers. This increases the permanence time of nutrients in the rhizosphere, hence their availability to plants. By synchronizing the nanofertilizer soil application with the crop phenology, it is expected to decrease the dose of nutrients in input without altering the crop productivity. Also, nanofertilizers can be administered via foliar application which gives a rapid response of crops to the treatment with micro- and macronutrients loaded nanoparticles, as well. Nanofertilizers can penetrate through cuticle, ensuring controlled release and targeted delivery. Nevertheless, nanofertilizers can be obtained from wastes making the entire food chain even more environmentally friendly. This talk provides an outline on the development of the research on the application of nanotechnology on crop nutrition.