

## Nanofertilizers: A New Technology Approach to Increase Fertilizers (NPK) Use Efficiency in Agriculture.

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### Abstract

Nitrogen, phosphorus and potassium (NPK) are the most critical element limiting agricultural production at a global scale. Despite many efforts, the NPK use efficiency in agriculture remains in a range of less than 50%. Reaching targeted crop yields has resulted in NPK overuse, which is an economic and environmental concern worldwide. The continuous exploration of innovative solutions has led to the synthesis of novel nanomaterials, resulting in a powerful tool for the development of new technological products. Nanofertilizers are one of the most promising engineered materials that are being tested, either for soil or foliar applications. Encouraging results have been obtained using Nanofertilizers in different plant species; however, limited information has been reported about its use in grasslands. Commonly, Nitrogen for example is applied to plants soil as granular

fertilizers, which may result in significant losses via surface runoff or leaching, ammonia (NH<sub>3</sub>) volatilization and N oxides (N<sub>2</sub>O, NO, NO<sub>x</sub>) emissions. NPK Nanofertilizers are expected to increase their efficiency by improving the effectiveness of NPK delivery to plants and reducing NPK losses to the environment. Information on the efficiency of the use of NPK Nanofertilizers in grasslands species is scarce and the application strategies that can be used to avoid NPK losses are poorly understood. New scenarios of increasing economic and environmental constraints may represent an opportunity for NPK Nanofertilizers application in grasslands.

### Keywords:

NPK Nanofertilizers, NPK losses, NPK use efficiency, Nanofertilizers in grasslands, NPK based nanomaterials.

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### Biography



Shehdeh Jodeh is a distinguished professor at An-Najah National University in Nablus, Palestine. Professor Jodeh did his post doctorate in 1991 at Los Alamos National Labs in USA (US Ministry of Defense) and got his PhD from Wayne State University USA 1991, Master of Science from University of Houston USA 1985, Bachelor of Chemical Engineering University of Mississippi, USA 1987. He was working at General Motors Research and Development USA for 12 years. He published more than 250 articles in Scopus journals.

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