

Nanofertilizers for sustainable crop management

Luca Marchiol

Dipartimento di Scienze AgroAlimentari, Ambientali e Animali, Università di Udine, via delle Scienze 206, 33100 Udine

ABSTRACT

The sustainability of agriculture is one of the most relevant issues of Green New Deal associated with the population increase expected in 2050. We need innovative strategies and tools far more effective compared to the current, to tackle this problem. Although the knowledge on the balance between the benefits and potential risk is under development, nanotechnology has the potential to enhance agricultural productivity and promote food security by a number of pathways. Crop fertilization is one of the most promising ones. This talk overview presents the state of the art on the use of nanoscale materials for plant nutrition. The nanofertilizers are classified into four groups: (i) macronutrient nanofertilizers, (ii) micronutrient nanofertilizers, (iii) nanomaterial-enhanced fertilizers and (iv) plant growth stimulating nanomaterials. Each group is discussed for its achievements and perspectives in new nanofertilizer. Much still remains to be done for sustainable global food security, however the development of nano-enabled agriculture will have a decisive role in this challenge.