



Plant Life Under Changing Environment

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Chapter 13 - Nanoparticles in plants: morphophysiological, biochemical, and molecular responses

Fabián Pérez-Labrada¹, Hipólito Hernández-Hernández², Mari Carmen López-Pérez¹,
Susana González-Morales³, Adalberto Benavides-Mendoza¹, Antonio Juárez-Maldonado⁴

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Abstract

Nowadays the use of nanotechnology has increased in different areas of science as well as agriculture. Different nanoparticles (NPs) have been tested in different crops. It has been shown that these can induce positive morphological and biochemical responses that directly impact the ability of plants to tolerate stress. NPs can activate the defense system of plants, through the formation of reactive oxygen species. This defense system includes the production and accumulation of various antioxidant compounds, both enzymatic and nonenzymatic. These compounds participate in tolerance to damage caused by oxidative stress. Since abiotic stress induces oxidative stress from the production of reactive oxygen species, it is possible to reduce these damages from the production of different antioxidant compounds. Finally, all changes showed in plants are mediated by changes in gene and proteomic expression, resulting in tolerance to abiotic stress. This chapter presents the most recent information about the use of NPs to increase tolerance to abiotic stress in different crops.

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