



Integrated role of nanofertilizer in reducing alternaria leaf spot severity and enhancing growth of date palm under saline conditions

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Abstract

This study used “LOENERGY PLUS” as a nanofertilizer to mitigate the negative effects of salinity on physiological functions, nutrient uptake, and disease spread in date palm offshoots of the Halawi cultivar. Three different levels of salinity water were added (5, 10, and 15) dS.m⁻¹, with nanofertilizer added in some treatments and without it in others. The leaf nitrogen, phosphorus, potassium, and chlorophyll content were reduced significantly by salinity, while the results showed an increase in proline levels and enhanced susceptibility to *Alternaria alternata*. Application of nanofertilizer markedly alleviated these effects by improving nutrient accumulation, reducing proline accumulation, and preserving chlorophyll content. Most notably, the disease severity was significantly reduced under nanofertilizer treatment, with the damaged area decreasing from 58.29% to 32.12% at 15 dS.m⁻¹. It is evident that nanofertilizers play an important role in protecting plants against diseases. This indicates that nanofertilizers play an important role in improving plant physiological functions and reducing damage under saline conditions.

Keywords: *Alternaria alternata*, fungi, pathogenicity, oxidative stress, proline accumulation, chlorophyll stability

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