

Review of: "Synthesis, Characterization and Ameliorative Effect of Iron Oxide Nanoparticles on Saline-Stressed Zea Mays"

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Potential competing interests: No potential competing interests to declare.

The research titled "Synthesis, Characterization, and Ameliorative Effect of Iron Oxide Nanoparticles on Saline-Stressed Zea Mays" addresses a critical agricultural issue – soil salinity's adverse impact on crop production. Utilizing iron oxide nanoparticles synthesized from *Diodella sarmentosa* leaf extract, the study presents a comprehensive characterization employing various techniques.

The findings reveal the formation of polydisperse spherical iron oxide nanoparticles with favorable properties, including a maximum light absorption wavelength of 380 nm and a size range of 2.22 to 27.83 nm. The foliar application of these nanoparticles on saline-stressed Zea mays demonstrates significant improvements in vital parameters such as photosynthetic pigments, root length, and antioxidant enzyme activities.

The results indicate a substantial increase in total chlorophyll, chlorophyll a, chlorophyll b, and carotenoid levels, highlighting the positive impact of FeONPs on the plant's physiological processes. Notably, the study emphasizes a statistically significant enhancement in root length and antioxidant enzyme activities, emphasizing the potential of FeONPs to mitigate the detrimental effects of salt stress.

In conclusion, this research offers valuable insights into the application of iron oxide nanoparticles for ameliorating saline-stressed Zea mays. The findings suggest a promising avenue for improving crop growth and development under challenging soil conditions, contributing to enhanced food security.