

**ON THE IMPACT OF IRON OXIDE NANOPARTICLES ON PLANTS IN THE VEGETATIVE PERIOD
OF DEVELOPMENT**

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With the method of chemical deposition, a magnetic nanosized iron oxide with nanoparticle size of ~ 10 nm was synthesized, corresponding to the composition of the maghemite-magnetite solid solution ($\gamma\text{-Fe}_2\text{O}_3 - \text{Fe}_3\text{O}_4$). In a series of laboratory and field experiments under controlled conditions of intensive light culture, it was found that aqueous suspensions of this iron oxide nanopowder at concentrations of 0.01 and 0.001 mg l⁻¹ had the most pronounced stimulating effect on plant growth indicators after treatment of watercress seeds and also after non-root treatment of cucumber and lettuce plants during their development. Stimulation of cucumber and lettuce plants growth under the influence of suspensions of iron oxide nanoparticles is mainly due to increased metabolic processes and application of nutrients necessary for plants through above-ground part, as well as due to activation of photosynthetic pigments (chlorophylls) synthesis.

Keywords: iron oxide, nanoparticles, maghemite, magnetite, seeds, non-root treatment, watercress, salad, cucumber, growth, net productivity, chlorophylls, carotenoids, trace elements iron, copper, manganese, zinc.