

## Effects of iron nanoparticles and humic acid on growth, development and vase life of cut rose flower cv. White Nablus under hydroponic conditions

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### Abstract

To evaluate the effects of different concentrations of iron nanoparticles (10, 100, 1000 and 2000 mg/L) and humic acid (100, 1000 and 2000 mg/L) on growth, flowering and characteristics of cut rose flower, cultivar White Nablus, under hydroponic system, an experiment was conducted based on completely randomized design with factorial arrangement and 5 replications in the Research Greenhouse of Mohaghegh Ardabili University in 2012-2013. Nutrient solution, formulated by Van Zinder and Baker, was used. This nutrient solution was dissolved in the twice-distilled water. Results of the experiment showed that chlorophyll content of leaves was significantly ( $P \leq 0.05$ ) affected by 1000 mg/L iron nanoparticles and 100 mg/L humic acid, compared to other concentrations. High concentration of iron nanoparticles and humic acid (1000 mg/L) had a significant effect on plant height, chlorophyll fluorescence, cut flower length, total dry weight of cut flower, leaf dry weight and total dry weight, compared to other concentrations. Different treatments of Iron nanoparticles and humic acid did not significantly ( $P \leq 0.05$ ) affect number of leaves, leaf area and time to flowering. Iron nanoparticles increased flower vase life, whereas humic acid did not significantly ( $P \leq 0.05$ ) affect the vase life.

**Keywords:** Soilless culture, Cut flower, Vase life, Humic substances.

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